



Astronomy Club of Tulsa

Observer

October 2012



Photo: Club members and guests enjoy a video at a public star party, by Tamara Green.

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November 2012

Tulsa, Oklahoma

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 Sunrise: 7:46am Sunset: 6:28pm Moonrise: 6:29pm Moonset: 10:17am	2 Public Star Party Sunrise: 7:47am Sunset: 6:27pm Moonrise: 9:16pm Moonset: 11:06am	3 Sunrise: 7:48am Sunset: 6:26pm Moonrise: 10:10pm Moonset: 11:51am
4 DST Ends Sunrise: 6:49am Sunset: 5:25pm Moonrise: 10:05pm Moonset: 11:33am	5 Sunrise: 6:50am Sunset: 5:24pm Moonrise: 11:02pm Moonset: 12:11pm	6 Sunrise: 6:51am Sunset: 5:23pm Moonrise: none Moonset: 12:47pm Last Qtr: 6:37pm	7 Sunrise: 6:52am Sunset: 5:22pm Moonrise: 12:01am Moonset: 1:20pm	8 Sunrise: 6:53am Sunset: 5:21pm Moonrise: 1:01am Moonset: 1:53pm	9 M.O.O.N. Sunrise: 6:54am Sunset: 5:21pm Moonrise: 2:04am Moonset: 2:27pm	10 Sunrise: 6:55am Sunset: 5:20pm Moonrise: 3:09am Moonset: 3:02pm
11 Sunrise: 6:56am Sunset: 5:19pm Moonrise: 4:16am Moonset: 3:40pm	12 Sunrise: 6:57am Sunset: 5:18pm Moonrise: 5:27am Moonset: 4:23pm	13 Sunrise: 6:58am Sunset: 5:18pm Moonrise: 6:38am Moonset: 5:12pm New Moon: 4:09pm	14 Sunrise: 6:59am Sunset: 5:17pm Moonrise: 7:49am Moonset: 6:06pm	15 Sunrise: 7:00am Sunset: 5:16pm Moonrise: 8:56am Moonset: 7:11pm	16 A.C.T. Dinner Meeting Sunrise: 7:01am Sunset: 5:15pm Moonrise: 9:56am Moonset: 8:17pm	17 Sunrise: 7:02am Sunset: 5:15pm Moonrise: 10:49am Moonset: 9:25pm
18 Sunrise: 7:03am Sunset: 5:14pm Moonrise: 11:34am Moonset: 10:32pm	19 Sunrise: 7:04am Sunset: 5:14pm Moonrise: 12:13pm Moonset: 11:37pm	20 Sunrise: 7:05am Sunset: 5:13pm Moonrise: 12:48pm Moonset: none First Qtr: 6:33am	21 Sunrise: 7:06am Sunset: 5:13pm Moonrise: 1:20pm Moonset: 12:39am	22 Thanksgiving Sunrise: 7:07am Sunset: 5:12pm Moonrise: 1:50pm Moonset: 1:39am	23 Sunrise: 7:08am Sunset: 5:12pm Moonrise: 2:21pm Moonset: 2:37am	24 Sidewalk Astronomy Sunrise: 7:09am Sunset: 5:11pm Moonrise: 2:52pm Moonset: 3:34am
25 Sunrise: 7:10am Sunset: 5:11pm Moonrise: 3:26pm Moonset: 4:30am	26 Sunrise: 7:11am Sunset: 5:11pm Moonrise: 4:02pm Moonset: 5:25am	27 Sunrise: 7:12am Sunset: 5:10pm Moonrise: 4:42pm Moonset: 6:20am	28 Sunrise: 7:13am Sunset: 5:10pm Moonrise: 5:26pm Moonset: 7:13am Full Moon: 6:47am	29 Sunrise: 7:14am Sunset: 5:10pm Moonrise: 6:14pm Moonset: 8:03am	30 Sunrise: 7:15am Sunset: 5:10pm Moonrise: 7:05pm Moonset: 8:49am	

Courtesy of www.sunrisesunset.com
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UPCOMING EVENTS:

Sidewalk Astronomy	Sat, Oct 27	Bass Pro	6:30 PM
Public Star Party	Fri, Nov 2	ACT Observatory	6:00 PM
Members' Night	Fri, Nov 9	ACT Observatory	6:00 PM
Dinner Meeting	Fri, Nov 16	TASM	7:00 PM
<i>(Dinner Meeting is for Club members and their families only please.)</i>			
Thanksgiving Day	Thurs, Nov 22		
Sidewalk Astronomy	Sat, Nov 24	Bass Pro	6:00 PM

2013 Astronomy Calendars and Observing Guides

It's time again to place your orders for the 2013 Astronomy Calendars and Canadian Observers Handbook. Since we won't have a December meeting all orders need to be placed ASAP – on or before our Oct 26 club meeting. Delivery will be made at our annual club dinner on Nov 16th.

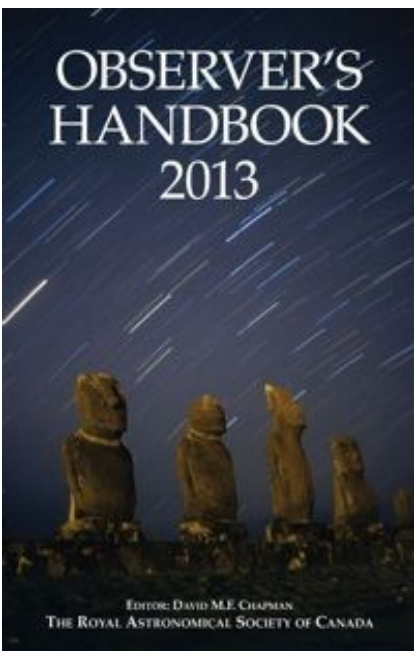
To order or questions Contact John Land astroclubbiz AT windstream.net



\$ 10 each 2013 Astronomy Wall Calendar

Preorder or available at meetings –limited supply available

The calendar is filled with stunning images of stars, planets, galaxies, and other deep space wonders. A highly informative essay accompanies each inspiring photograph. For each month, celestial viewing opportunities, historical events, and national holidays are listed. [**View a portion of this product!**](#)



\$ 27 each – 2013 Observer's Handbook—Orders must be PRE-PAID ONLY.

Include \$ 3.50 Extra to have issue mailed to you

The Observer's Handbook is a 352-page guide published annually since 1907 by The Royal Astronomical Society of Canada. Through its long tradition and the expertise of more than 50 contributors, the Observer's Handbook has come to be regarded as the standard North American reference for data on the sky. The material in the Handbook is of interest to professional and amateur astronomers, scientists, teachers at all levels, students, science writers, campers, Scout and Guide leaders, as well as interested general readers. The Observer's Handbook is an integral part of many astronomy courses at the secondary and university levels, and it should be on the reference shelf of every library. <http://rasc.ca/handbook>



President's Message

By Ann Bruun

The end of my presidency is rapidly approaching. It has been an honor and a privilege to serve as the President of the Astronomy Club of Tulsa. While taking care of club business I always joke about running my "Astronomy Empire". Well maybe our club is not an empire but it is a very special, unique place where all different sorts of individuals join for a common purpose, to enjoy the night sky. Even though we may enjoy different aspects of astronomy our hobby has brought us all together. It is a feeling of camaraderie that I don't get anyplace else. I am looking forward to future star parties; maybe this will be the year I finish my Herschel list.

We will have a workday at the observatory October 27th starting at 10am. In addition to general cleaning we need to finish the concrete work on the new walk gate and take care of some fence repair. We also have steps leading to the dome that need to be replaced and painted. If that isn't enough to keep us busy the SW corner needs to be cleared with heavy-duty weed eaters/brush blades. Chris Proctor will be heading up the workday so contact Chris if you have any questions.

Finally the elections are almost here. If you are interested in serving on the board or running for office please contact Tamara Green our secretary. If you enjoy the club and feel you would like to have some input this is your opportunity. Please consider participating in the leadership of the club and helping us move forward.

Ann Bruun
Astronomy Club of Tulsa
President



Land's Tidbits

By John Land

Notice: Be sure your membership is current in order to vote at the club's annual elections at our October meeting.

Astronomy Club of Tulsa - Treasurer Report by John Land			
The club has 113 members including 25 new memberships this year			
In 2012 - 161 people requested information on the website visitor section			
Newest Members	Jameisha	McCutchen	
Expenses	Deposits	Balance	Checking Account
		\$ 1,398.02	Sept 18 Balance
	\$ 546.00	\$ 1,944.02	Deposits
\$ 253.70		\$ 1,690.32	Routine Expenses
\$ 323.75		\$ 1,366.57	2013 calendar for Sales
\$ 34.00		\$ 1,332.57	Member Mag Subscriptions
		\$ 1,332.57	Oct 11 Balance
		\$ 7,004.37	Sept 18 Saving
		\$ 7,004.37	Oct 11 Balance
Investment Account - End of mon		Account Value varies with Market	
\$ 15,305.62	Dec-11	May	\$ 15,611.46
\$ 15,682.28	Jan-12	June	\$ 16,231.22
\$ 16,067.68	Feb	July	\$ 16,506.73
\$ 16,217.08	Mar	August	\$ 16,663.61
\$ 16,240.96	Apr	Sept	\$ 16,888.29



The Secretary's Stuff

By Tamara Green

ASTRONOMY CLUB OF TULSA – MINUTES – GEN. MEETING FRI SEP 28, 2012

PRESENT:

Ann Bruun, President

Tamara Green, Secretary/Obs. Co-Chair/NL Editor

John Land, Treasurer

Stan Davis, Board

Teresa Davis, Board

Tim Davis, Board

Tom McDonough, Board

Jennifer Jones, Webmaster

Owen Green, PR/Outreach/Sidewalk

Christopher Proctor, Facilities Manager

The meeting was held at Tulsa Community College, Northeast Campus. There were 50+ attendees, approximately 12 of them were guests.

WELCOME AND INTRODUCTION:

Ann called the meeting to order at 7:02 PM and welcomed all attendees.

PROGRAM:

Dr. Yun Wang, Professor of Cosmology, University of Oklahoma.

OFFICERS'/STAFF REPORTS:

PRESIDENT – Following the presentation, Ann introduced Jennifer Jones, who debuted our new website, which goes live September 29, 2012. Jennifer then gave us a tour of the new website. Ann then mentioned next month's elections and gave a friendly hint that we need people to think about an office or board position. Then she mentioned the Grand Opening of Astronomics on September 29 from 9 AM to 6 PM. The Dinner meeting will be in November at TASM.

VICE PRESIDENT- Tony not present, no report.

SECRETARY –Tamara asked the membership to send any nominations for officers and board members to her so she can put the ballot together.

TREASURER –John announced that we have the 2013 calendars in, they are \$10 each. We have 109 members now, 24 new members this year. He then went over the Club's financial information.

FUNDRAISING – Catherine not present, no report.

OBSERVING –Tamara mentioned that Brad Young has recently completed the requirements for the AL Basic Outreach Award, but has not yet told her whether or not he has received his certificate and pin.

GROUPS – Jennifer has been using the Night Sky Network to schedule groups. She said it would be helpful if we could print brochures to give out to people.

FACILITIES – HVAC is still offline, Chris and Tony will be working on getting it fixed. There will be a work day in October. He will need people with carpentry skills to work on the stairs and people with equipment to clear brush and strong people to drive posts into the ground.

PR/OUTREACH/SIDEWALK – Owen mentioned that he and Tamara are going to the Grand Opening of Astronomics and therefore they did not know if they will be at Sidewalk Astronomy, but for those who plan to go, Sidewalk is at Bass Pro at 7:00 PM

NIGHT SKY NETWORK—Teresa mentioned that we send out emails to everyone in the club regarding events, and then those who will be going to the group events can RSVP and those who won't be going can say so, simply by clicking on "yes" or "no". We can log our outreach hours through this as well. NSN sends us kits and other educational materials for doing outreach events. The emails will go out one week before each event. She wants to put everyone in the club on the NSN as members so we can all be notified of group events.

FUNDRAISING – Catherine not present, no report.

OTHER BUSINESS: Richie Shroff brought new club logo stickers. Ann then announced upcoming events. John then said that those who want to vote or hold office or board positions need to make sure their dues are current. Ann adjourned the meeting at 9:00 PM.



Photo Credit: Tamara Green

Once again, the panhandle of Oklahoma beckons, my fourth Okie Tex Star Party. As last year, East to Limon CO, then Highway 287 to Boise City OK, then Northwest to the camp, just outside of Kenton OK, population 17 (we think). A pleasant trip, about 6 hours, just short of 350 miles, and, other than a stretch of I-225 here in the metro area, no highway construction on 287. As before, I arrived just in time for dinner, and after a great meal (Chicken and Beef Mexican Casseroles plus trimmings) it was off to set up camp and the telescopes. I set up the tripod for the 6-inch refractor and carefully aligned the polar axis, which paid off with more accurate tracking, especially when observing double stars at high magnification. Other 'scopes taken along were the 6-inch F/4.8 Maksutov-

Newtonian comet hunter, by Explore Scientific, my very small 40-mm Newtonian and an even smaller 23.5mm Newt, made many years ago by a good friend, Joe Meyers.

Telescopes ranged from that tiny 23.5mm Newtonian to numerous large Dobsonian mounted Newtonian reflectors in the 20--28 inch range and at least one 30". Globular clusters, in particular, are spectacular in these large instruments. Also represented were a few Apo refractors up to 175mm aperture and, of course, Tim Haven's twin Takahashi 152 ED refractors. An impressive array of telescopes.

Attendance was estimated at around 343 total, including students from Norman North and Norman high schools and Tulsa Community College.

The weather was hot and dry, pushing near 100 during the day down to the high 40s and 50s for the first few nights., a rainy Wednesday night, then pleasant temperatures the rest of the party. All in all very pleasant indeed. There was considerable smoke and haze on the way down and noticeable haze at the camp but the skies were good. Not great, but good enough for very enjoyable exploration of the Milky Way, especially in Scorpio and Sagittarius. I'd give the sky a 3.5 on the Bortle dark sky scale, a subjective measure of sky darkness, (see Sky & Tel, Febuary 2009)*. Sky Quality Meter readings were on average the order of 21.2 to 21.35.



Photo Credit: Tamara Green

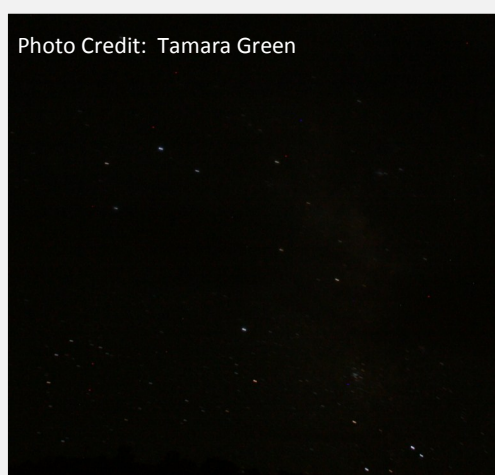


Photo Credit: Tamara Green

The party was the second week of September, about 3 weeks earlier than before. This allowed early evening exploration of the Scorpius region, including NGC 6144 (See Denver Observer May 2010 p-6). Sunday I set up the rest of the 6-inch refractor and, with its 75mm "comet" eyepiece (31X, 1.2 degrees on the sky), the Scorpius/Sagittarius milky way, Andromeda Galaxy and friends (M-31, 32 and 110, I was even able to see these three objects in the 40mm Newtonian!) and M-33 were spectacular. No chance here at home with all the smoke from the wildfires in the Northwest.

The seeing was rather good, allowing the splitting of a few close double stars. One of our (DAS) memebers mentioned Xi Sco and Struve 1999 as a nice "double-double), I set out to find it. After several false starts (wrong Greek letter, wrong constellation) I did find this intriguing object. A pair of rather easy doubles, separated by 4.7 arc minutes.

Okie-Tex, 2012, by Jack Eastman, ct'd.

Struve's separation is about 11 arc seconds (") and that of Xi AC is 7.9" The brightest component of Xi (A) is itself a close double at a current AB separation of just 0.99 arc second. It was easily split in the refractor at 189X. Also was Zeta Aquarii at a separation of 2.2 arc seconds.

As I mentioned, the Milky Way was fun to just explore, using the Comet Hunter with its 20mm 100-degree eyepiece (2.8 degree real field), as was the looking up of M-31 and friends, M-33 and the Helix Nebula in Aquarius. Both M-33 and the Helix are large and faint, low surface brightness therefore requiring low magnifications. Even so, the Helix showed some structure in Cody Lawson's (from Tulsa) 12.5-inch Newt. As the night drew to a close, the Zodiacal Light became very prominent in the pre dawn sky.



Photo Credit: Tamara Green

Although I brought the bicycle, with intent to make that ride North to the Colorado state line, and another West to the New Mexico line, it was too hot for comfortable rides. I only got a quarter mile, that was to the main hall to get it out of Wednesday's rain. Rain? Yes, after four hot days and uninterrupted observing, Wednesday it cooled off, a strong wind developed blowing in a front with a bit of rain that evening, and blowing one of the pink flamingo mascots of the Okie-Tex event away. (Turns out a wind from the opposite direction the next day blew it back, a rescue was made and all was once again well!) It clouded up and rained all night! Good! halfway through the festivities and excuse for a guilt-free night off for a whole night's sleep! Thursday, we were back at it 'till Sunday AM when we had to be out of the camp.

Wednesday afternoon, as in parties past, the talks began. Mike Lockwood was to speak on Large Telescope Projects and have an optical Q and A session but he was unable to attend. Instead Jim Edlin spoke of an extended starparty/working session on spectroscopy held at the Haute Province Observatory in France. I am amazed at the quality of the work in this area done by amateurs with relatively modest equipment. Jim was followed by John Davis discussing the DSLR camera, its care and feeding for astrophotography with numerous fine examples of his work. That evening was a great retrospective of the Apollo Moon program by Dan Schneider who was deeply involved in many aspects of Apollo. A very, very interesting discussion, indeed. Then it was off for some well needed sleep, this was the wet and soggy night.

Thursday's talks began with Becky Ramotowski-Tijeras talking of a unique method for tracking the Sun's path in the sky using tiny pinhole cameras, made from 35mm film cans and similar small containers, using photographic print paper as the detector. No development needed as the path "burned in" on the raw paper. The image is then preserved by scanning it into a computer before it fades due to ambient light. Tom Hoffelder then spoke of his experiences doing "Messier Marathons". He was followed by Neta Apple with an update on some of the results from the Fermi Project, a sensitive Gamma Ray telescope already making astonishing discoveries in the area of high energy astrophysics. The second part of her presentation involved the search for other Earth-like planets. Then it was back out to the 'scopes for more observing.

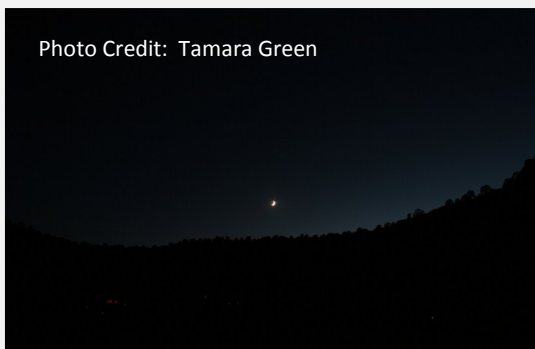


Photo Credit: Tamara Green

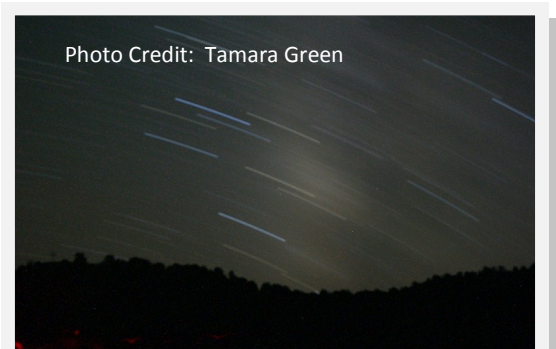


Photo Credit: Tamara Green

Okie-Tex 2012, by Jack Eastman, ct'd.

Friday, Jim Edlin was back with a discussion of Amateur Supernovae Spectroscopy. Again, I am truly amazed by the quality of this work, something the Pros could only dream about in the not so distant past! John Davis was back with a discussion of the making of mosaics, stitching together of his astrophotos for very wide views. Our own Joe Gafford had done this many years ago with film photos. Joe's Milky Way, from film photos, is truly spectacular.

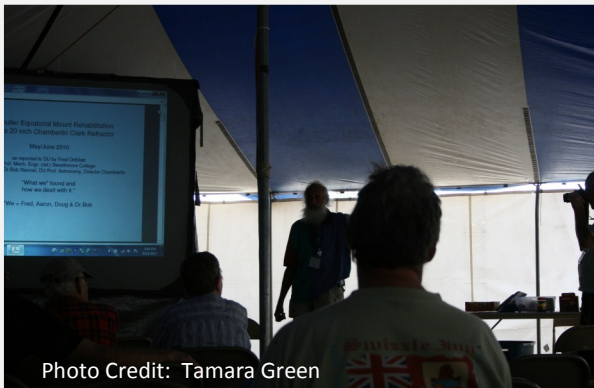


Photo Credit: Tamara Green

After John, it was my turn with a discussion of the overhaul of Chamberlin's Saegmuller mount of the 20-inch refractor. The evening talk was our own Naomi Pequette's discussion of the results of Dr. Bob's research on the current eclipse of Epsilon Aurigae, essentially the talk Dr. Bob presented at DAS several months ago.

Saturday's afternoon talk was a presentation by Don Wells of Boise City, OK discussing the history of the dust bowl years in Oklahoma, the hardships suffered by the folks of the area during those trying times. It was a very interesting and informative history lesson from one who lived through it. That evening was Gary Hug speaking

about the role of the amateur in astrometry and photometry of small solar system objects, keeping track of asteroids, comets and the like, a project being done by, among others, our own Joe Gafford.

The traditional swap meets were held Tuesday and Saturday with the usual array of equipment, books and such. All I got this time was a copy of Wil Tirion's Sky Atlas 2000. What!? No eyepieces? Nope, not this time. The door prize drawings were held Thursday and Saturday evenings, and were over (unlike RTMC) while it was still light out. Dano Black, the fellow who was doing the light pollution documentary last year won the Grand Prize, a 76mm ED refractor, but wasn't there to collect it, he was off setting up his camp. One must be present to win. All wasn't totally lost however, one of his kids won a Starblaster dob at Saturday's drawing.

All too soon, it was over, time to pack up and head Northwest, back to Denver. All in all a very pleasant, fun filled week. Yes, I'm definitely hooked and will have at it again next year.

*Bortle scale: (see <http://www.skyandtelescope.com/resources/darksky/3304011.html>)

Globular Goodness

By Tamara Green



What's not to like about globular clusters? These glowing, sometimes sparkling balls of ancient stars that seem to float about outside of our galaxy like little party lanterns are really something magical. They're fun, both to find and to look at. You might think of me as being a bit silly, but they always enchant and delight me when I see them.

Globulars are densely-packed clusters of very old stars, numbering in the hundreds of thousands. The stars are very tightly bound by gravity, and the centers of these clusters have higher stellar densities than the edges. This is what gives them their spherical, or ball-like shape. Through our amateur telescopes, they can look like faint gray lint balls or like sugar that has been spilled on a black velvet tablecloth. Some even resemble fireworks, with stars of different colors spraying out everywhere! Even though they pretty much are all shaped the same

(which makes them easy to identify as "globs"), each one has its own unique look. Each glob is special in its own right.

Some are easy to find, and very bright, and in especially nice ones you can see individual stars all the way to the core. Others are very difficult to find and look like nothing more than a barely-there grayish smudge. But even these are satisfying to find, even if you don't get to see them very well!

I had the pleasure of attending Okie-Tex Star Party again this year, and decided to do one of their "Challenge Lists". The one that I chose to work on was called the "Glob Trot". It is a list of globular clusters to find and log. You had to find and log at least twenty of the twenty-five selected objects, and at least three of them had to be labeled "Difficult". I was, at first, a bit surprised to find that the famous M13 in Hercules was absent from the list. However, as I worked on the list, I kind of figured out why: There are many more globs that are just as nice to look at, and not so easy to find. It was a challenge list, after all! There were some that I could barely even see, and some that were really spectacular. The following were my favorites:

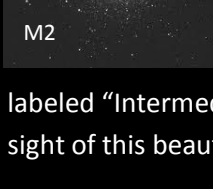
M92 in Hercules. This is a really nice little glob. To me, it looks like a miniature M13. It is a bright little cluster, and I could see individual stars almost to the center. It was not hard for me to find, either. This was one of their "Easy" ones.

M15 in Pegasus. This one took me a little time to find, despite it being another "Easy" one, but it was well worth the effort. This one seems to take on a different appearance when you look at it straight-on and with averted vision. Looking at it straight-on, it looks bluish, with a bright white core, with individual stars around the edge. With averted vision, it looks like a bright bluish-white glowing sphere. This one has always been one of my favorite globs.





M2 in Aquarius. This one, when I look at it straight-on, looks like a globe of frosted blue glass with a bright white light inside. I can also see some individual stars. Using averted vision, I can see even more individual stars. This one was labeled “Intermediate”, but it is also well worth the effort to find.



M14 in Ophiuchus. Another nice one. It is a big, bright bluish-gray ball of glowing light. Like M2, it also kind of looks like a frosted glass globe. This one was also labeled “Intermediate”, and it did take some effort to find, but that effort was rewarded with the sight of this beautiful glob.



M9 in Ophiuchus. This one is also very pretty. Not as big as M14, but has the same nice bluish-gray color. Using averted vision, I can see individual stars, but not all the way to the core. This one was also an “Intermediate”.



M19 in Ophiuchus. This one was labeled “Easy”, and it was easy to find. It is a decent-sized, bright gray ball with a bright white core.



M69 in Sagittarius. This one looks very much like M19 to me. It is a bright gray ball with a brighter white core. Another “Intermediate”.



NGC 6624 in Sagittarius. This one was one of the “Difficult” ones. Like M19 and M69, this was another gray ball of light with a brighter white core. It is smaller, however, and it did take a while to find. It still is a nice object to look at, despite the difficulty in finding it.



M54 in Sagittarius. Another “Intermediate”. This tiny little glob is really cute. White in color, with a brighter, whiter core. It looks like a little snowball!

There were some that I wanted to observe and log, but unfortunately, by the time it got dark enough for me to see them, they were too low in the sky for my telescope (which locks up when I try to point it at something that’s too low). Ultimately, I ended up with twenty out of twenty-five globes observed and logged, and did seven that were labeled “Difficult”.

Other globes that I will never grow tired of looking at include M22 in Sagittarius, a big, bright cluster that, due to a nice spray of individual stars that I can see almost to the core, resembles a firework going off; M4 in Scorpius; and the beautiful M13 in Hercules, with its magnificent spray of stars that make it look like someone at DeBeers poured a bunch of diamonds on a black tablecloth. And, when the conditions are just right, and at the right time of the year, I always enjoy a view of Omega Centauri and wish I owned a 20” or bigger scope and had enough money to travel south of the equator with it. I can’t help wondering how glorious it would be to see all those stars in such a compact ball.



M22. Photo from Wikipedia.



M4. Photo from Wikipedia.



M13. Photo from Wikipedia.

Globular Goodness, by Tamara Green , ct'd.

These little spheres of light have delighted me ever since I first looked at M13 (however many years ago it was) and continue to do so to this day. There's just something about them that brings a smile to my face. I enjoy other deep-sky objects as well, especially galaxies, but an observing session is simply not an observing session without at least a small helping of Globular Goodness.



Omega Centauri. Photo from Wikipedia, Credit ESO
(European Southern Observatory)

Images came from the following sources:

M92, M15, M14, M19, M54, M13, Omega Centauri (Courtesy ESO), M22 and M4—Wikipedia.

M2, M9 and M69—universetoday.com.

NGC 6624—astronomynow.com.

All images were searched for and found using Google Image Search (GIS).

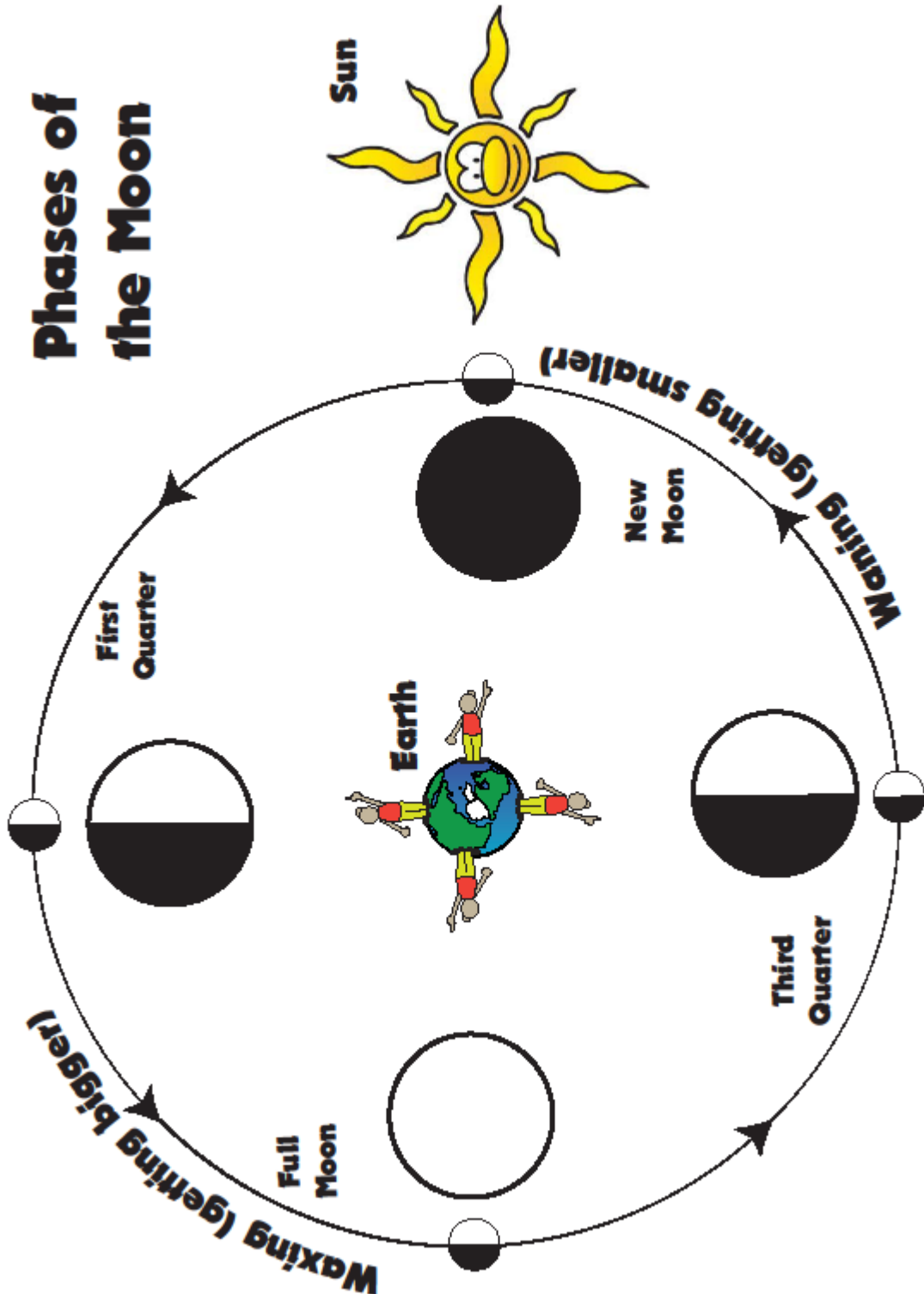


For the Kids

From The Space Place!

Use this fun activity sheet to teach kids about the phases of the Moon and why it looks different each day!

Phases of the Moon



science.nasa.gov/kids

spaceplace.nasa.gov



All Astronomy Club of Tulsa
Members and their Families
Are invited to join in the fun



ANNUAL DINNER MEETING



FRIDAY, NOVEMBER 16
TASM PLANETARIUM
3624 N. 74th E. Ave. Tulsa,
OK



7:00 PM

Catered by Billy Simm's BBQ

Great Food

Door Prizes

Group Photo



Hope to see you there!



Where We Meet:

TCC Northeast Campus, 3727 E. Apache St., Student Union Bldg. 2, Room 1603

There is PLENTY of parking, lighting and security on this campus.

To get to TCC NE Campus, take the Harvard Exit off of Hwy. 11 (Gilcrease Expressway). Go south for about 1/2 mile to the campus located at the corner of N. Harvard and Apache. Turn east on Apache and take the entrance in front of Bldg. 3 (the large round building). Then turn right and park in front of Student Union Building #2. Room 1603 is just off of the lobby.

Google-type driving direction map at <http://www.tulsacc.edu/13273/>

We hope to see you there!



Next General Meeting will be in January of 2013, date, time and program TBA.

No General Meeting in December 2012 due to close proximity to the Christmas Holiday.

CLUB OFFICERS

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

BOARD MEMBERS AT LARGE

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MEMBERSHIP INFORMATION

MEMBERSHIP RATES FOR 2012 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.

MAGAZINES:

Astronomy is \$34 for one year or \$60 for 2 years.

www.astronomy.com

Sky & Telescope is \$33 per year.

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. At this time we do not have an option for credit card payment, but we may explore that at a later time.

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



Astronomy Club of Tulsa



Wishing You and Yours

A Very Happy Thanksgiving Day!



Image: www.hillstockimages.com

Clear Skies, Good Food and Good Cheer!

From Your Editor

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

For more information please visit www.astrotulsa.com.



The Observer is a publication by the Astronomy Club of Tulsa. The Astronomy Club of Tulsa is a 501C 3 non-profit organization open to the public. The Club started in 1937 with the single mission to bring the joy and knowledge of astronomy to the community of Tulsa, OK and the surrounding area. Today our mission remains exactly the same. We travel to local schools, churches and many other venues with scopes and people to teach. Our observatory is located in Mounds and many public programs are offered there. To join the Astronomy Club of Tulsa please visit www.astrotulsa.com where you will find all the information necessary to become a member.

