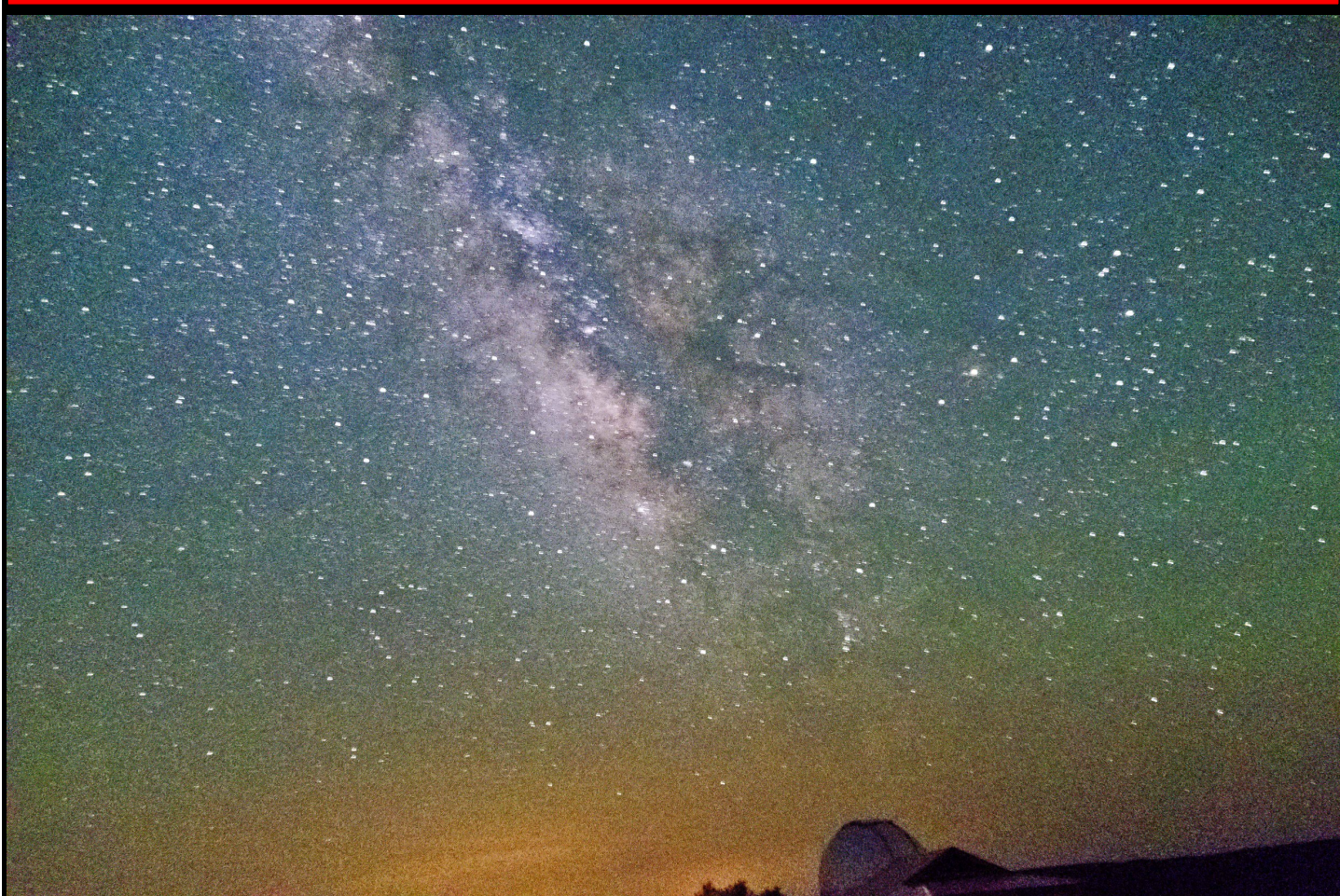




Astronomy Club of Tulsa

Observer

August 2013



*Photo: The Night Sky from 3RF, by Jerry Mullenix. Thank you Jerry!*

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Inside This Edition:

Article/Item	Page
Calendar and Upcoming Events	3
President's Message, by Lee Bickle	4
Treasurer's and Membership Report, by John Land	5
The Secretary's Stuff, by Tamara Green	7
<i>NITELOG</i> , by Tom Hoffelder	10
<i>Size Does Matter, But So Does Dark Energy</i> , by Dr. Ethan Siegel	14
Where We Meet	17
Officers, Board, Staff and Membership Info	18







The Editor wishes a big fat

To Owen Green, whose birthday is August 29!




Many Happy Returns Owen!



## August 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 MN	3 MNB
4	5	6 	7	8	9	10
11	12	13	14 	15	16	17 SW
18	19	20 	21	22	23 PSP	24 PSPB
25	26	27	28 	29	30	31

## September 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5 	6 MN	7 MNB
8	9	10	11	12 	13	14
15	16	17	18	19 	20 CM	21 SW
22	23	24	25	26 	27	28 PSPB
29	30					

### UPCOMING EVENTS:

Sidewalk Astronomy	Sat Aug 17	Bass Pro	7:45 PM
Public Star Party	Fri Aug 23	ACT Observatory	7:30 PM
Labor Day	Mon Sep 2		
Members' Night	Fri Sep 6	ACT Observatory	7:00 PM
General Meeting	Fri Sep 20	TCC NE Campus	7:00 PM
Sidewalk Astronomy	Sat Sep 21	Bass Pro	7:15 PM
Public Star Party	Fri Sep 27	ACT Observatory	6:30 PM

*OKIE-TEX STAR PARTY is Sep 28 thru Oct 6 at Black Mesa!*



## President's Message

By Lee Bickle

Hello everyone! Although July was a little unusual for us in the way of cooler temps and rain, we still had a busy month. We observed during the sidewalk astronomy at Bass Pro, the public night near Mounds, and there was a well-attended solar viewing at All Souls church. But we also had to postpone/cancel a couple of events due to poor weather. We did have our members night, which I believe there ended up being a decent clearing for. There was also a board meeting held to discuss insurance renewal.

The public night at our observatory went very smoothly. A great group of new guests joined us and thoroughly enjoyed the evening, and our helpers were fantastic. Clouds toyed with us on and off through the night, but we did get a nice period where the Milky Way was fairly high and easily visible. I enjoyed "discovering" a couple of faint fuzzies and identifying them later. Something about that simple activity is so enjoyable to me. It's always interesting to talk to guests and members at our public events and find out what drew them to astronomy and what keeps them coming back.

Besides the amazing discoveries it seems like professional astronomers are publishing every other day, there were a few notable events last month that many amateurs could see firsthand. A couple of new (to us) supernovae brighter than magnitude 13 were discovered, one being in M74. I have not seen it yet, and am hoping its duration of brightness will outlast the current spate of clouds! There is also the Perseid meteor shower, which is peaking as I write this. It would probably be more impressive if it wasn't raining right now!

One other curious event is the lunar X which took place on Aug 13. If you took images of this, please consider sharing them with us for the next newsletter!

We've been getting more questions and comments about who we are, what we do, and about astronomy in general on our club's Facebook page. Activity there from the general public is daily now, and I think we've been seeing some of that translate into a wider demographic at some of our events.

Finally, thank you to all of our members and volunteers who help make the club what it is. See you soon at one of our next events & wishing everyone clearer skies,

Lee Bickle



# Treasurer's and Membership Report

By John Land

**Astronomy Club of Tulsa 114 members including 27 new members**

**New members this month David Wagner, Melissa Wilson, Darrel Sissons**

**Club Accounts Aug 5, 2013: Checking: \$2,809.01; Savings: \$7,014.89; Investment account: \$18,854.09  
(Value Fluctuates with Market); PayPal: \$00**

**NOTE: The Club has two large annual payments due in mid Summer.**

**Our Astronomical League membership of \$585.00      Paid June 24**

**Annual Property and Liability Insurance \$1,669.00      Paid July 17**

**On July 15 the board met to review options for the club's Liability & Property Insurance.**

**After discussion the board voted to continue coverage with Philadelphia Insurance, but drop the additional Directors & Officers policy, saving the club \$1,000.00.**



**At this Time the PayPal feature is NOT WORKING on the website.**

**NEWS NOTE:** Both Sky & Telescope and Astronomy have **free Digital subscriptions** available with print subscriptions or Digital subscriptions may be purchased separately. Contact their websites for details.

**Membership rates for 2013 are as follows:**

**Adults: \$45.00 per year, includes Astronomical League Membership.**

**Sr. Adults: \$35.00 per year for those 65 or older, includes Astronomical League Membership.**

**Students: \$30.00 with League membership; Students: \$25.00 without League membership.**

**Additional Family membership: \$20.00 with voting rights and League membership.**

**\$15.00 with voting rights but without League Membership.**

**The regular membership allows all members in the family to participate in club events, but only ONE Voting Membership and one Astronomical League membership.**

**Join Online – Add or renew magazine subscriptions. <http://www.astrotulsa.com/page.aspx?pageid=16>**

**Magazine Subscriptions:** If your magazines are coming up for renewal, try to **save the mailing label** or renewal form you get in the mail. Forms are available on the club website.

**Astronomy is \$34.00 for 1 year or \$60.00 for 2 years.      [www.astronomy.com](http://www.astronomy.com)**

To get the club discount you must go through the club group rate

**Sky & Telescope is \$33.00 per 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** by calling the number on the renewal form – be sure to ask for the club rate.

**NEW SUBSCRIPTIONS** must still be sent to the club.



**30<sup>th</sup> Okie-Tex Star Party**

**Sept 28<sup>th</sup> to Oct 6<sup>th</sup>**

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

Details for registration and meals at website.

**\*\*\* Meal Reservations must be made by Sept 6 – there are no stores within 40 miles \*\*\*** Dozens of our Tulsa members join with more than 300 fellow astronomers each fall to marvel at the dark skies in the tip of the Oklahoma Panhandle. Al Nagler of

Tele-Vue optics proclaimed it as one of the darkest sites in America.

**UPCOMING EVENTS - NOTE EARLIER START TIMES DUE TO EARLIER SUNSETS**

	Month	Day	Start Time	Event	Location	Open To	Sunset	& Moonrise
Sat	Aug	17	7:45	Sidewalk Astronomy	Bass Pro in BA	Public	8:12	WxG 05:23 P
Fri	Aug	23	7:30	Public Night	Observatory	Public	8:05	WnG 09:31 P
Fri	Sept	6	7:00	Members Night	Observatory	Club Members	7:45	Set 08:14 P WxC
Fri	Sept	20	7:00	TCC NE Meeting	TCC NE Campus	Public	7:25	WnG 08:03 P
Sat	Sept	21	7:15	Sidewalk Astronomy	Bass Pro in BA	Public	7:23	WnG 08:40 P
Fri	Sept	27	6:30	Public Night	Observatory	Public	7:14	WnC 12:23 A
Fri	Oct	4	6:30	Members Night	Observatory	Club Members	7:04	New 08:01 A
Fri	Oct	18	7:00	TCC NE Meeting	TCC NE Campus	Public	6:45	Full 06:35 P



# The Secretary's Stuff

## By Tamara Green

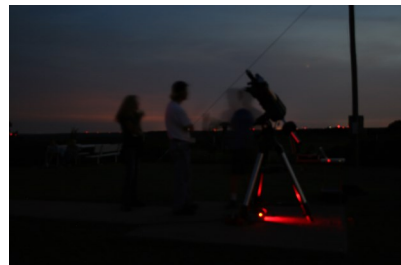
Hello All!

Still another month before we have our next General Meeting, so therefore no minutes. But in the meantime, please enjoy these really nice pictures!

From our Sidewalk Astronomy Event, Sat, Jul 20:

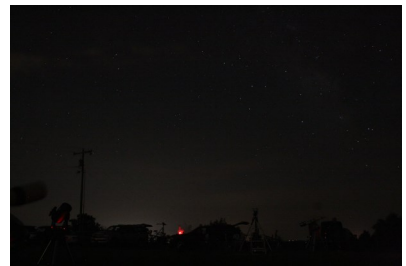


From our Public Star Party, Sat, Jul 27:



*The Secretary's Stuff, Ct'd.*

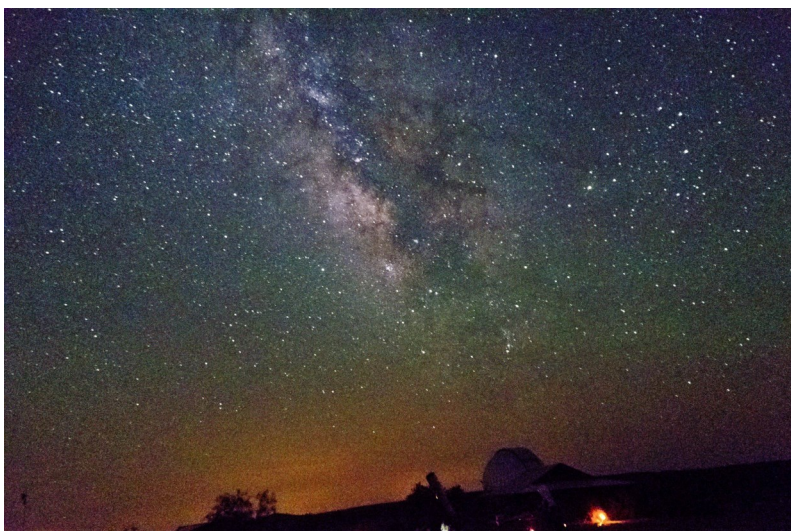
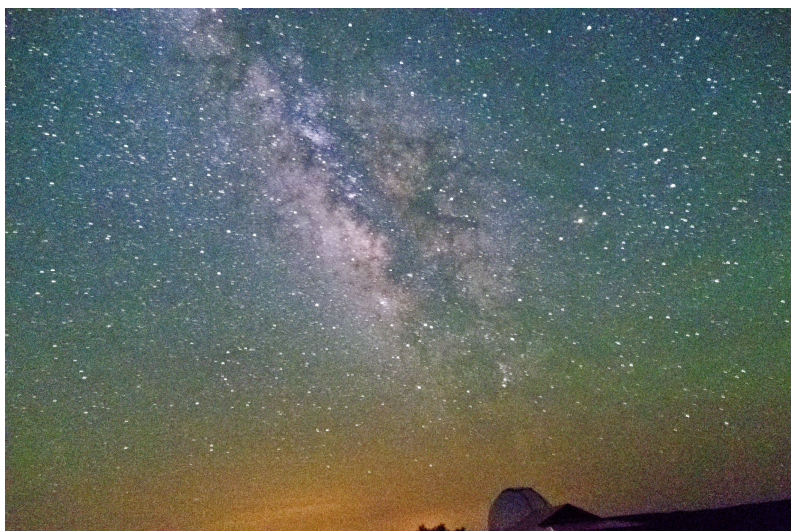
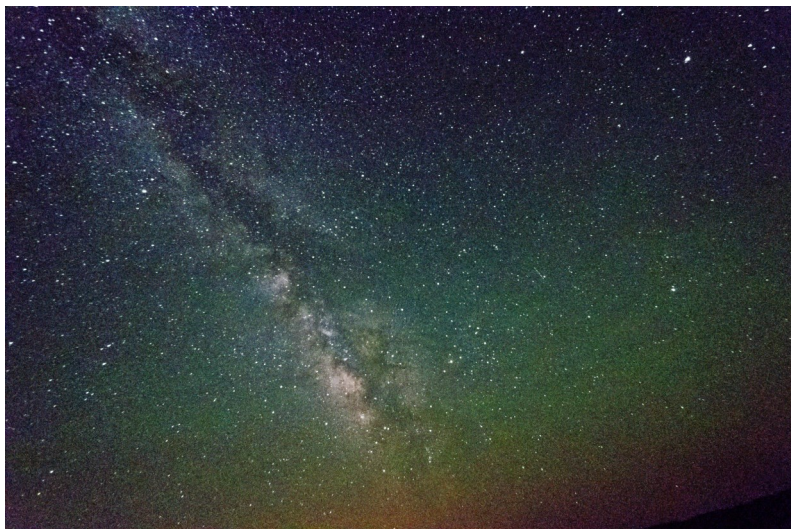
Public Star Party Pics. Ct'd.





*The Secretary's Stuff, Ct'd.*

Here are some really great shots from Jerry Mullenix, taken at 3RF!! He just shot these from a tripod (no tracking) and they show how beautiful the sky is! Thank you for sharing these marvelous images Jerry!



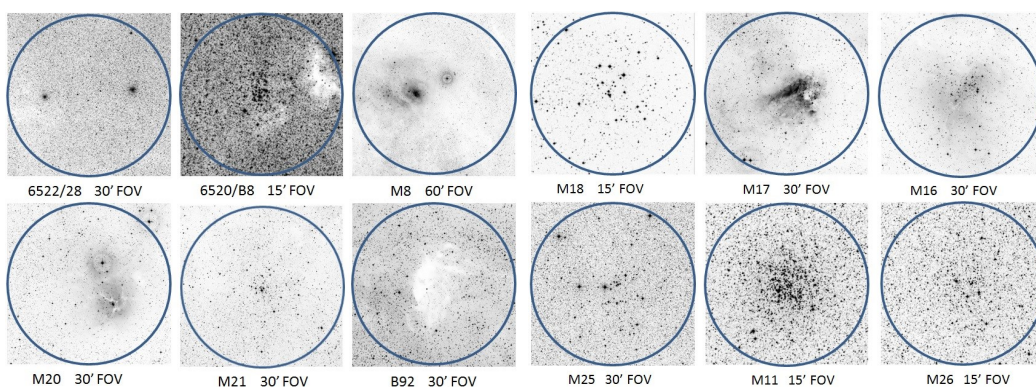
## NITELOG - Norway InTErurban Local Observing Group

by Tom Hoffelder

It's August – we've turned the corner – it is dark by 10 PM! (All times apply to Maine/New England; if you are south of us, you'll have to check out your own times, sorry.)

Two changes starting now. First, the excel file has two sheets: objects (as before) AND (by popular demand) a key to the column headings. Second, during the next 24 months I plan to list all the Messier and all the Herschel 400 objects. I know some of you have seen all 509\* of them, but some haven't. I will try to get all the Messier Objects listed in 12 months. So for those beginners who haven't seen all the M's, average 9 a month and in a year you'll have seen them all. (Which is the way you should see them the first time; then you can do a marathon!) If you can average 21 objects a month, then it two years you will also have seen all the Herschel 400.

**OBSERVING:** Nothing scheduled in Maine this month, but if you see a clear sky and want to do some observing, send me an email!



**METEORS:** The Perseids, one of only two showers I bother to mention, peak on the night of the 11th/12th. However, you will probably see more the night before and after than you will during the peak activity of showers I don't mention, so if you are a meteor person, all three nights are good. Yes, meteor counts will be higher

after midnight as the radiant rises higher and higher, but the ones seen as soon as the radiant rises are the most spectacular. In New England, the radiant rises before the end of twilight. Sky timing in Maine on the 11th this year is quite good, as the moon sets at the end of astronomical twilight, 9:45 PM EDT.

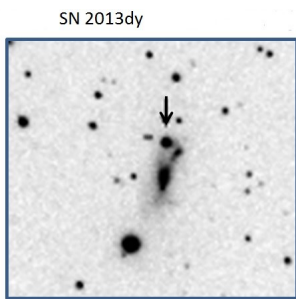
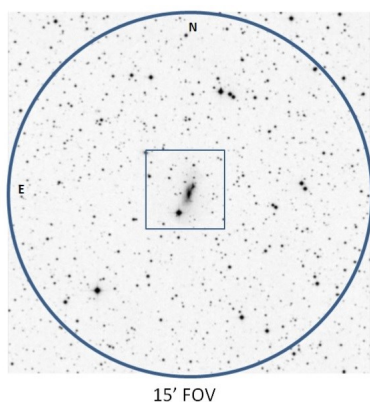
**COMETS:** Comet Lemmon should be around 9th magnitude early in the month when the moon is out of the way. Its small daily motion means you only need one star to find it and the location for days other than the two listed is easily extrapolated from the daily change numbers. The big difference in magnitudes from the two sources reflects the fact the Minor Planet Center is in business to provide the ephemerides only. They use the standard calculation to determine the predicted magnitude and they are done. But since comets are like cats, per David Levy, they have tails and do what they want, predictions can be meaningless. Comets' actual performances are monitored at the other source noted and magnitudes are updated as required. Next month our first view of ISON???

**PLANETS:** Saturn is low in the southwest in the early evening; still near Spica and with both at 1st magnitude, compare the twinkling of the star to the steadiness of the planet. Venus is there in the west also, but not very attractive telescopically until it reaches max eastern elongation in Nov. On Aug 9th you might want to check without a telescope, since a less than 2 day old crescent moon will be near the bright planet.

**STARS:** Three of the reddest stars out there! Theoretically the larger the B-V, the redder the star, but my eye says the one with the smallest value listed is the reddest. Also four doubles - one involving one of the carbon stars - plus an interesting quadruple system. All involve some color contrast.

**THE GOOD STUFF:** All those goodies in Sgr (and nearby); most of them are M objects this month, driven by the goal of listing them all in one year's time.

NITELOG, by Tom Hoffelder, Ct'd.



NGC 7250 22 18.3 +40 34  
 2.5° S, 2.5° W of 6 Lac  
 (6 Lac is 13 N, 2 W of η Peg)

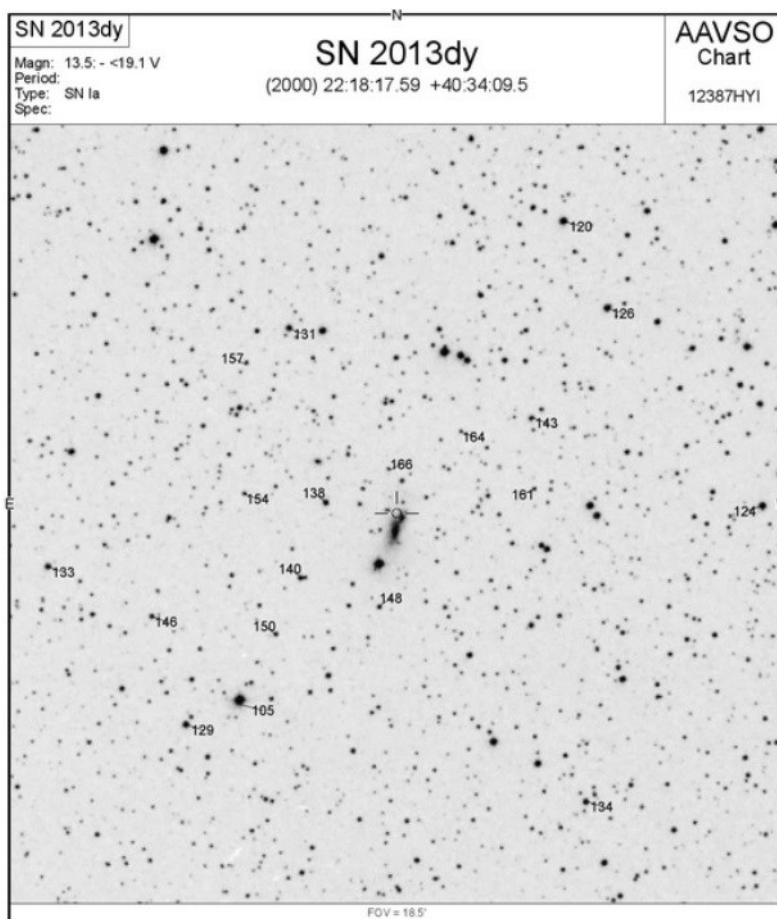
**Supernovae:** There is a relatively bright (approaching 13th mag) supernova currently well placed, meaning it is high in the sky at the end of twilight. It is not placed very well as far as the constellation, since who can point out Lacerta without looking at charts, and even then it isn't easy. It is SN 2013dy in NGC 7250 (distance ~ 62M ly); I sent info previously to a limited distribution when it was PSN J22181760. I am sending this a little early because the observing window opens on July 28th when there is an hour between end of astro twilight and moonrise; the window of course improves after that.

**QUESTIONS:** As always, questions and comments are welcome!

\*My version of the Herschel 400, which I've had for many years, is really the Herschel 399; I don't know if they ever revised it to add one more object.

tom hoffelder  
[rocksnstars@gmail.com](mailto:rocksnstars@gmail.com)

*Come with me now, Pilgrim of the stars,  
 For our time is upon us and our eyes  
 Shall see the far country  
 And the shining cities of infinity ~ Robert Burnham, Jr.*



		8/2				8/9			
SS	CTE	NTE	ATE	MR	SS	CTE	NTE	ATE	MS
20:05	20:38	21:19	22:06	02:43	19:56	20:28	21:08	21:52	20:49

Comet	RA <sup>2</sup>	Dec <sup>2</sup>	Star	N/S	E/W	N/S/day	E/W/ day	Mag <sup>1</sup>	Mag <sup>2</sup>	Urano	Date*
Lemmon C2012 F6	21 44.2	+70 01	β Cep	0.7 S	1.3 E	0.1 N	0.5 W	9	15	33	8/2
Lemmon C2012 F6	21 00.8	+70 32	β Cep	0.2 S	2.4 W	-	0.3 W	9	15	33	8/9

<sup>1</sup>from <http://www.aerith.net/comet/future-n.html>

<sup>2</sup>from <http://www.minorplanetcenter.net/iau/Ephemerides/Comets/>

\*at 8 PM EDT

Object (Type)	RA	Dec	Star	N/S	E/W	Mag*/(# of Stars)	Size ('/) Sep ('')	Spect/ M# or H#	Dist (ly)	Urano I Page	Comment [B-V] (optimum x)
T Dra (CS)	17 56.4	+58 13	ξ Dra	1.3 N	0.4 E	7.2 - 13		Nevar		53	B-V = 5.6
T Lyr (CS)	18 32.3	+37 00	α Lyr	1.8 S	0.9 W	7.5 - 9.3		C		117	B-V = 3.7
V Aql (CS)	19 04.4	-05 41	λ Aql	0.8 S	0.5 W	6.6 - 8.1		CII		251	B-V = 3.9
T Dra (MS)	17 56.4	+58 13	ξ Dra	1.3 N	0.4 E	7.2- 13,10	16			53	(50)
95 Her (MS)	18 01.5	+21 36	μ Her	6.0 S	3.5 E	5, 5	6.3	A7, G5		159	(120)
OΣ341 (MS)	18 06.0	+21 24	priv	0.2 S	1.0 E	7, 9, 9, 9	28,38,6 3			159 (ni)	(25)
δ Cyg (MS)	19 45.0	+45 48	-	-	-	3.0, 6.5	2.4	A0, dK2	270	84	(340)
OΣ393 (MS)	19 57.5	+44 20	priv	0.9 S	2.2 E	7.5, 8.5	19	K0, A0		84 (ni)	(40)
NGC 6517 (GC)	18 01.8	-08 58	ν Oph	0.9 N	0.7 E	10.1	4.0	H199-2*	30K	294	
NGC 6528* (GC)	18 04.8	-30 03	γ Sgr	0.3 N	0.2 W	9.6	5.0	H200-2*	23K	377	
NGC 6522* (GC)	18 03.6	-30 02	priv	0.1 N	0.3 W	9.9	9.4	H49-1*	30K	377	

NGC 6520* (OC)	18 03.4	-27 53	pV	2.1 N	-	(25)	5.0	H7-7*	5100	377	dN B86 is 0.1 W
NGC 6540 (GC)	18 06.1	-27 46	pV	0.1 N	0.6 E	14.6	1.5	H198-2*	5100	377	
NGC 6523* (DN)	18 03.7	-24 23	$\gamma$ Sgr	1.0 N	5.5 W	5.0	45x30	M8	2500	339	Lagoon
NGC 6514* (DN)	18 02.7	-22 58	pV	1.3 N	0.6 W	6.3	20	M20	2700	339	Trifid (also H41-4*)
NGC 6531* (OC)	18 04.2	-22 29	pV	0.5 N	0.5 E	(50)	16	M21	4000	339	
M24 Star Cloud	18 17.0	-18 40	$\mu$ Sgr	2.3 N	0.8 E	-	120x30	M24	10K	339	OC 6603 0.5 NW of ctr
B92* (dN)	18 15.5	-18 13	$\mu$ Sgr	2.8 N	0.4 E	-	15x10	-		339	
NGC 66138* (OC)	18 20.0	-17 06	$\mu$ Sgr	4.0 N	1.5 E	(12)	7.0	M18	4200	339	
NGC 6618* (DN)	18 20.8	-16 10	pV	1.0 N	0.3 E	6.0	20x15	M17	5900	294	Swan
NGC 6611* (O/D)	18 18.8	-13 48	pV	2.2 N	0.6 W	6.0	35	M16	5600	294	Eagle
IC 4725* (OC)	18 31.8	-19 07	$\mu$ Sgr	2.0 N	5.4 E	(50)	26	M25	2000	340	
NGC 6626 (GC)	18 24.5	-24 52	$\lambda$ Sgr	0.6 N	0.7 W	6.9	14	M28	15K	340	
NGC 6637 (GC)	18 31.4	-32 21	$\epsilon$ Sgr	2.0 N	1.5 E	8.3	7.1	M69	23K	378	
NGC 6681 (GC)	18 43.2	-32 17	pV	-	2.7 E	7.8	8.0	M70	65K	378	
NGC 6715 (GC)	18 55.1	-30 29	pV	1.8 N	2.6 E	7.7	12	M54	50K	378	
NGC 6656 (GC)	18 36.4	-23 54	$\lambda$ Sgr	1.5 N	1.9 E	5.2	32	M22	10K	340	
NGC 6705* (OC)	18 51.1	-06 16	$\beta$ Sct	1.5 S	1.0 E	(200)	11	M11	6000	295	
NGC 6694* (OC)	18 45.3	-09 23	pV	3.1 S	1.3 W	(20)	10	M26	5000	295	
NGC 6720 (PN)	18 53.6	+33 02	$\beta$ Lyr	0.3 S	0.8 E	8.8	2.5	M57	2800	117	Ring

\*[Surf  
Brtnss  
for GX's]

\*DSS image

\*H400

ni=shown but

mag per  
square  
arcmin

not  
identi-  
fied

## Size Does Matter, But So Does Dark Energy

By Dr. Ethan Siegel

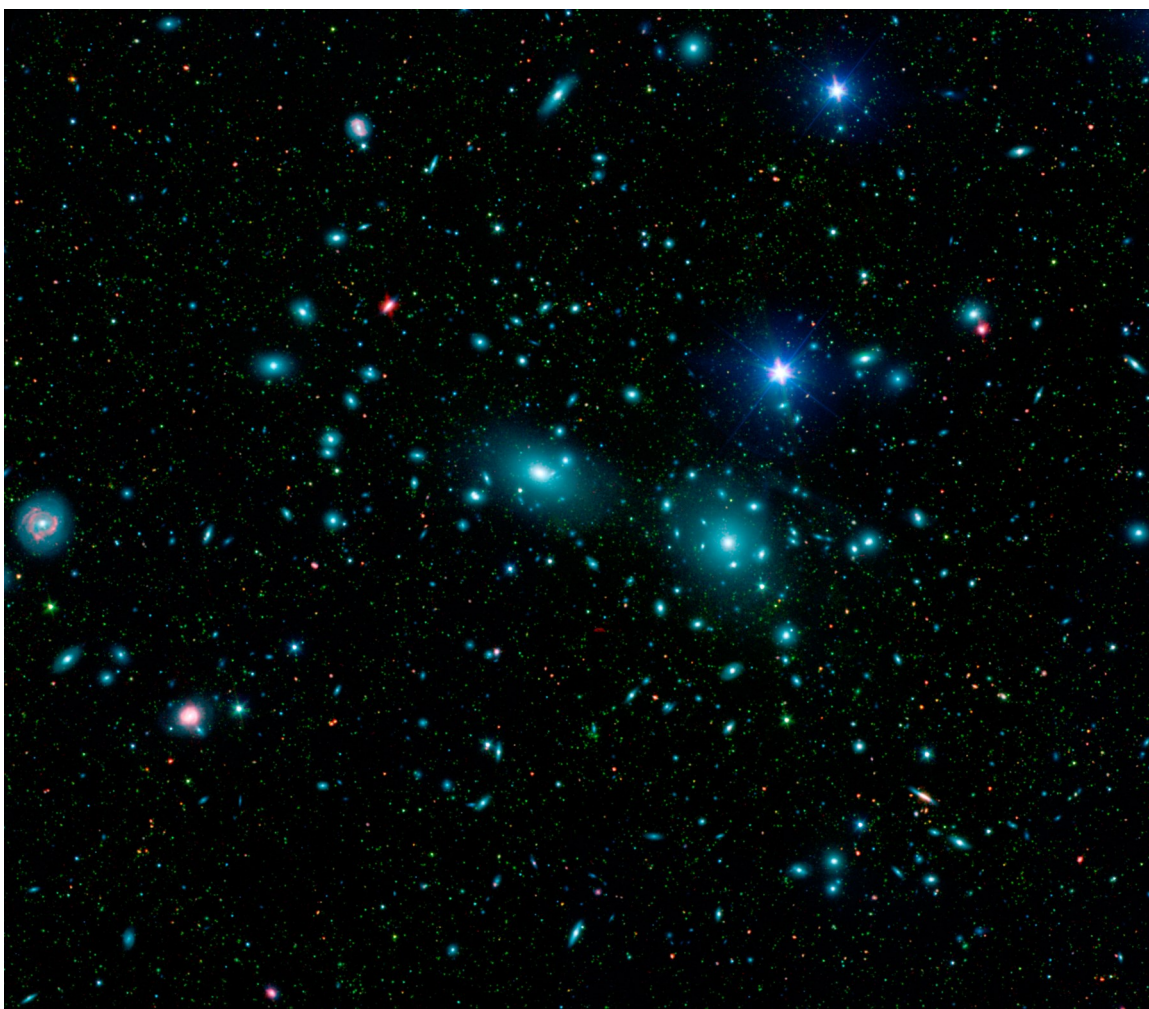
Here in our own galactic backyard, the Milky Way contains some 200-400 billion stars, and that's not even the biggest galaxy in our own local group. Andromeda (M31) is even bigger and more massive than we are, made up of around a *trillion* stars! When you throw in the Triangulum Galaxy (M33), the Large and Small Magellanic Clouds, and the dozens of dwarf galaxies and hundreds of globular clusters gravitationally bound to us and our nearest neighbors, our local group sure does seem impressive.

Yet that's just chicken feed compared to the largest structures in the universe. Giant clusters and superclusters of galaxies, containing thousands of times the mass of our entire local group, can be found omnidirectionally with telescope surveys. Perhaps the two most famous examples are the nearby Virgo Cluster and the somewhat more distant Coma Supercluster, the latter containing more than 3,000 galaxies. There are millions of giant clusters like this in our observable universe, and the gravitational forces at play are absolutely tremendous: there are literally *quadrillions* of times the mass of our Sun in these systems.

The largest superclusters line up along filaments, forming a great cosmic web of structure with huge intergalactic voids in between the galaxy-rich regions. These galaxy filaments span anywhere from hundreds of millions of light-years all the way up to more than a *billion* light years in length. The CfA2 Great Wall, the Sloan Great Wall, and most recently, the Huge-LQG (Large Quasar Group) are the largest known ones, with the Huge-LQG -- a group of at least 73 quasars -- apparently stretching nearly 4 billion light years in its longest direction: more than 5% of the observable universe! With more mass than a million Milky Way galaxies in there, this structure is a puzzle for cosmology.

You see, with the normal matter, dark matter, and dark energy in our universe, there's an upper limit to the size of gravitationally bound filaments that should form. The Huge-LQG, if real, is more than *double* the size of that largest predicted structure, and this could cast doubts on the core principle of cosmology: that on the largest scales, the universe is roughly uniform everywhere. But this might not pose a problem at all, thanks to an unlikely culprit: **dark energy**. Just as the local group is part of the Virgo Supercluster but recedes from it, and the Leo Cluster -- a large member of the Coma Supercluster -- is accelerating away from Coma, it's conceivable that the Huge-LQG isn't a single, bound structure at all, but will eventually be driven apart by dark energy. Either way, we're just a tiny drop in the vast cosmic ocean, on the outskirts of its rich, yet barely fathomable depths.

Learn about the many ways in which NASA strives to uncover the mysteries of the universe: <http://science.nasa.gov/astrophysics/>. Kids can make their own clusters of galaxies by checking out The Space Place's fun galactic mobile activity: <http://spaceplace.nasa.gov/galactic-mobile/>



Digital mosaic of infrared light (courtesy of Spitzer) and visible light (SDSS) of the Coma Cluster, the largest member of the Coma Supercluster. Image credit: NASA / JPL-Caltech / Goddard Space Flight Center / Sloan Digital Sky Survey.



And For The Young Stargazers:  
Check out these fun websites from  
NASA!

<http://climate.nasa.gov/kids>

<http://scijinks.gov>

<http://spaceplace.nasa.gov>



*EDITOR'S NOTE: THERE IS NO JULY/AUGUST ISSUE OF "THE SPACE PLACE" NEWALETTER, PER THE WEBSITE.*





## Where We Meet:

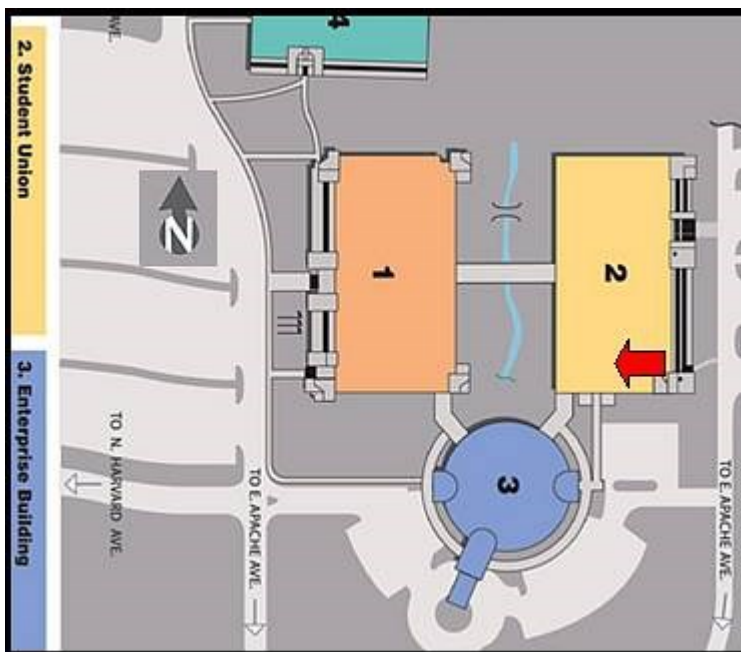
**TCC Northeast Campus, 3727 E. Apache St., Student Union Bldg. 2, Room 1603**

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!**



Our next General Meeting will be on Friday, September 20 at 7:00 PM.

## CLUB OFFICERS

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FUNDRAISING CHAIR	OPEN

## 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](http://www.astronomy.com)

Sky & Telescope is \$33 per year.

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

Sky & Telescope offers a 10% discount on their products.

*If you are an existing S&T subscriber, you can renew directly with S&T at the same Club rate. Both S&T and Astronomy now have digital issues for computers, iPads and smart phones.*

## ONLINE REGISTRATION

We now have an automated online registration form on the website for new memberships, membership renewals and magazine subscriptions. Just simply type in your information and hit "send" to submit the information. You can then print a copy of the form and mail it in with your check. 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*

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](http://www.astrotulsa.com).



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