Smoky Mountain Astronomical Society

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S. C. R. A. P. S.

Society's **C**h**R**onological **A**stronomical **P**aper**S**

In this issue:

Message from the President

In last month's SCRAPS, I mentioned the importance and benefits of having Club Star Parties. In late September and early October, we are planning a "rush" of public star observing events. We start off with our all important Cades Cove event in conjunction with the Great Smoky National Park Service. This event will be on Saturday, September 24, 2011. As always, we expect a large number of visitors (but not as many as last year) so we need good participation by club members so as to have plenty of scopes. This event always generates good publicity for our club and usually results with some new members for SMAS.

The following weekend (Saturday, October 1, 2011), we have a regular scheduled star party at Look Rock. This event is also for the club's outreach efforts because it is a quick follow-on the the Cades Cove event. In the past, at the Cades Cove event, we get a lot of comments and questions such as: "This is a wonderful experience, when is your next star party?" Now we will be able to say, "Well, it happens to be next Saturday and is nearby at Look Rock". Hopefully, by scheduling this double header, we can "set the hook" and bring in some new interested people to attend some SMAS meetings.

We have not yet set a date, but we are wanting to have our yearly Star Party for PSTCC something in early October. This is our way of giving something back to PSTCC for the benefits we receive for being associated with PSTCC. This star party is held on a weeknight (when there are students on campus) and usually ends by 11:00 PM. We hope to "spread the word" via contacts with science classes, school newspaper, and bullentin boards in an effort to generate interest in our parking lot demonstration. Because of the high light levels at PSTCC, we choose bright and easy targets to display such as the Moon, Planets, Double Stars, and Bright Clusters. For first time viewers, seeing the craters on the moon often offers an inspiring experience.

I realize that the above schedule sounds like "too much". However, all of these events will serve to benefit the public as well as our club. I hope that you, as a SMAS member, will support our club in this effort and attend as many of these autumn events as possible.

Jim Sanders

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Profile of SMAS Member

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This section can only be viewed by SMAS members

Upcoming Club Events

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Aug 3, 2011 – ORION Amateur Science and Astronomy Club, Grove Theater, Oak Ridge, Tn

Tentative program: Guest speaker on Climate Change plus member report on Grand Canyon Star Party

Aug 12, 2011 – Regular SMAS meeting at PSTCC

Tentative program:

1. Business Session
2. Brent Holt – Treasurer's report
3. Michael Littleton – Initial planning for Cades Cove Event (Sept 24)
4. Quick update on "Constellation of the Month Project"
5. Possible presentation on the use of T-Point software

Aug 27, 2011 – SMAS Star Party at Unicoi Crest (weather permitting).

Sept 3, 2011 –SMAS Star Party at Look Rock (weather permitting).

Constellation of the Month

Constellation of the Month - August 2011 - Sagittarius

Our constellation for August is Sagittarius which lies near the heart of the Milky Way. As a matter of fact, the galactic center is located in Sagittarius at the far southwestern boundary with Ophiuchus. The area is rich with many wonderful objects to view, but we have included only some of the more spectacular ones in our suggested targets for the month. Sagittarius is densely populated with open and globular clusters, reflection, emission, and dark nebula. There are also many planetary nebula but most are very faint; thus, only one planetary is included in our suggested list. We hope that SMAS members will report on their observation so that we can compile a guide on expected views from different sized scopes. This guide would be especially useful for persons new to astronomy but the more experienced members may also benefit.

Suggested Targets for Sagittarius

Messier Number	Other ID	Type	Description	Viewing Instrument
M 008	NGC 6523	Emission Nebula	Named the Lagoon Nebula because of dark Lanes	Can be viewed with Binoculars or Small Telescope
M 017	NGC 6618	Emission Nebula	Swan or Omega Nebula	Can be viewed with small telescope
M 018	NGC 6613	Open Cluster	Irregular cluster	Use 8" or higher for detail
M 020	NGC 6514	Emission & Reflection Nebula	Trifid Nebula - several dark lanes	Can be viewed with small telescope but best view is with larger appature and O-III filter
M 021	NGC 6531	Open Cluster	Compact round cluster - bright young stars	Best viewed with larger appatures
M 022	NGC 6656	Globular Cluster	Bright cluster - almost as spectacular at Omega Centauri	Can be viewed with small telescope but best view is with larger appature
M 023	NGC 6494	Open Cluster	Large number of star over 1/2 degree area	Use larger appatures to bring out details
M 024		Large Open cluster	Sagittarius Star Cloud - 4 times the size of a full moon	Binoculars or small scope
M 025	IC 4725	Open Cluster	Bright, irregular cluster	Binoculars or small scope
M 028	NGC 6626	Globular Cluster	Cluster with bright core	Can be viewed with small telescope but best view is with larger appature
M 054	NGC 6715	Globular Cluster	Very concentrated cluster	Best viewed with larger appatures but don't expect to resolve stars
M 055	NGC 6809	Globular Cluster	Bright, well resolved cluster	Can be viewed with small telescope but best view is with larger appature
M 069	NGC 6637	Globular Cluster	Very concentrated cluster	Best viewed with larger appatures
M 070	NGC 6681	Globular Cluster	Small, faint cluster	Best viewed with larger appatures
M 075	NGC 6864	Globular Cluster	Moderately faint cluster	Best viewed with larger appatures
	NGC 6520	Open Cluster	Cluster of faint stars just east of Barnard 86 (the Ink Spot dark nebula)	Best viewed with larger appatures
	NGC 6818	Planetary Nebula	Bright, bluish object - Called the "Little Gem"	Best viewed with larger appatures
β_1–β_2	Arkab	Double Star	White and Yellow pair	fine target for small telescopes
Pz 6	HIP 88060 GSC 7378:3132	Double Star	different shades of yellow - nice effect from uneven brightness	Use a 6" or higher appature to get good separation
β 245*	HIP 89020 SAO 209803	Double Star	Bright orange star with close,fainter companion - good contrast	Use a 6" or higher appature to get good separation

* β stands for catalog by Sherbrne W. Bunham

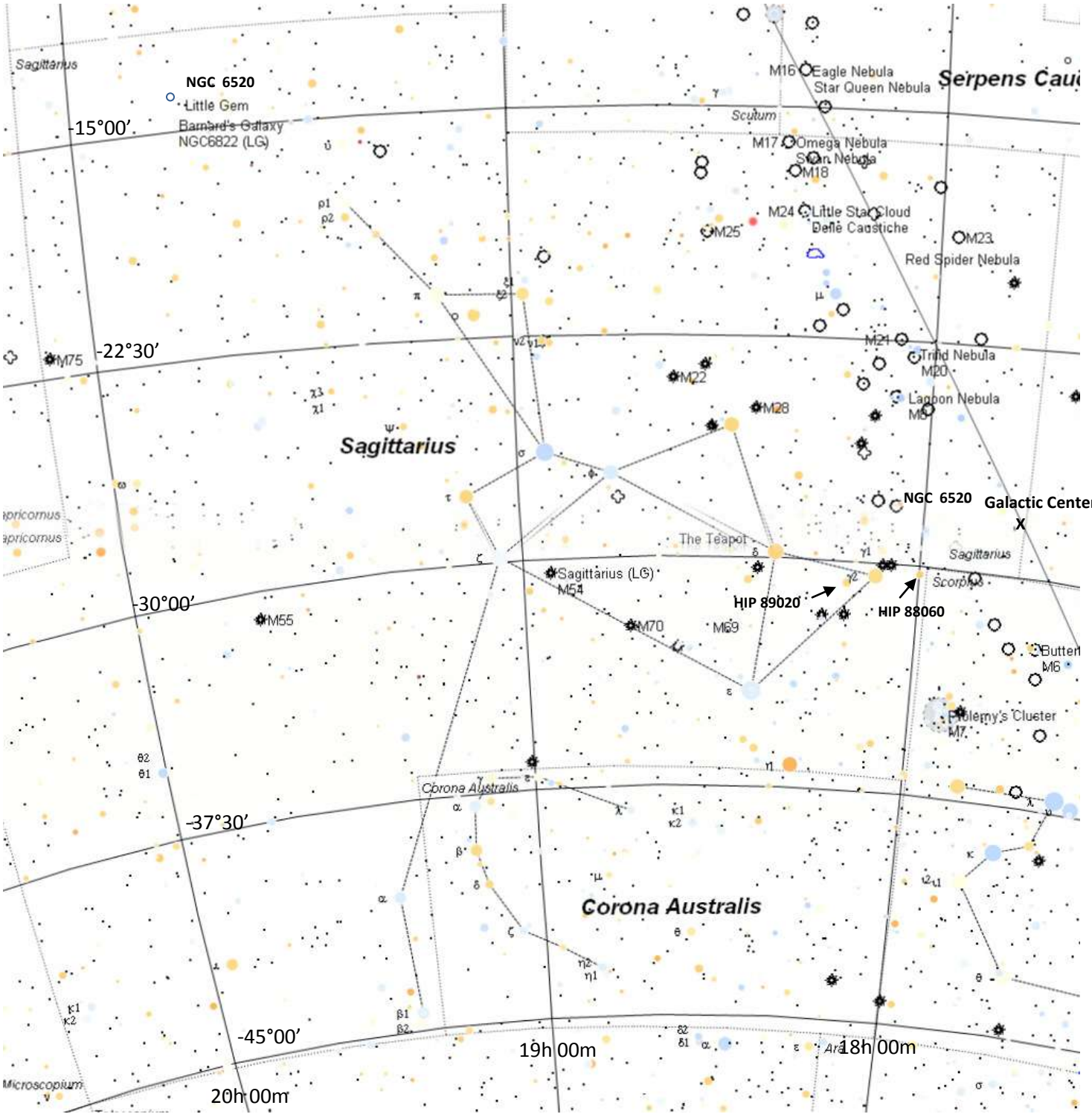

Chart made using TheSky6

Constellation of the Month - August 2011 - Sagittarius

Using our suggest target list for Sagittarius, is also a good way to gain credit toward several of the awards sponsored by the Astronomical League's Observing Club program.

Cross reference between objects in Sagittarius and the Astronomical League's Observing Clubs

		Astronomical League Observation Club						
Messier Number	Other ID	Bino Messier	Deep Sky Bino	Globular Cluster	Herschel 400	Messier	Plant. Nebulas	Urban Club
M 008	NGC 6523	1 - Easy				M 008		UC 064
M 017	NGC 6618	1 - Easy				M 017		UC 065
M 018	NGC 6613	1 - Easy				M 018		
M 020	NGC 6514	4 - BigB			H 336	M 020		
M 021	NGC 6531					M 021		
M 022	NGC 6656	1 - Easy		162		M 022		UC 067
M 023	NGC 6494	1 - Easy				M 023		
M 024	NGC 6603	1 - Easy				M 024		
M 025	IC 4725	1 - Easy				M 025		
M 028	NGC 6626	2 - Med		157		M 028		
M 054	NGC 6715	3 - Hard		166		M 054		
M 055	NGC 6809	1 - Easy		177		M 055		
M 069	NGC 6637	4 - BigB		158		M 069		
M 070	NGC 6681	4 - BigB		164		M 070		
M 075	NGC 6864	3 - Hard		181		M 075		
	NGC 6520		DSB 44		H 338			UC 063
	NGC 6818				H 360		PN083	UC 073

Upcoming Celestial Events

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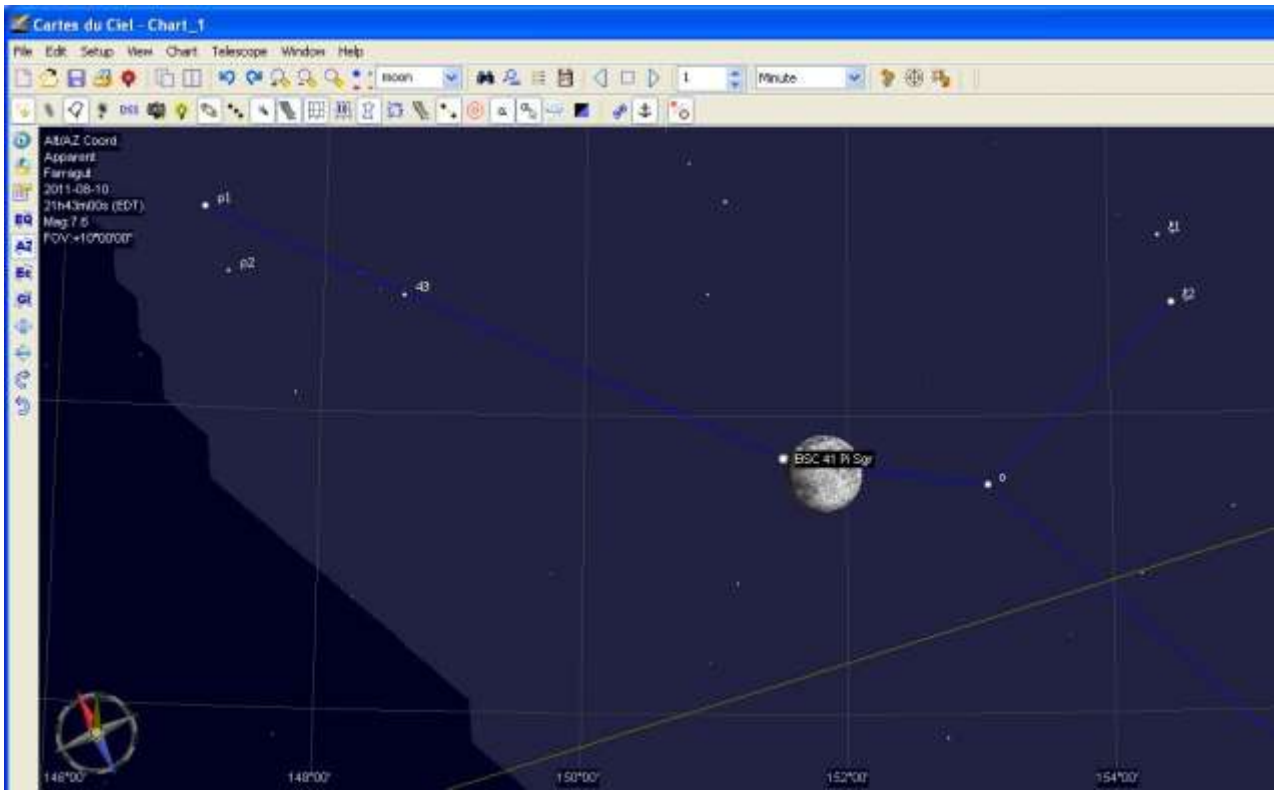
Calendar of Upcoming Celestial Events

August 6 – Vesta at Opposition: August will be a good time to observe Vestra, its brightest close approach until 2018. Vesta will be in the constellation Capricornus all during August and well into November where its magnitude will drop to 7.5 (on Nov 1st).

August 12 - Occult of Pi Sagittarii: On the evening of Wednesday, August 10th, the dark edge of the waxing gibbous Moon will cover the 2.9-magnitude star Pi Sagittarii for the eastern half of North America. Because the Moon will be 92% illuminated, binoculars or a telescope will be needed to see the star through the Moon's dazzling glare. Time = 9:47:51 EDT (1:47:51 UTC), Moon: 28° Al, 153° Atz
See details at http://www.lunar-occultations.com/iota/bstar/0811zc2797.htm



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August 12, 13 - Perseids Meteor Shower – debris from the comet Swift/Tuttle. The Perseids is one of the best meteor showers to observe, producing up to 60 meteors per hour at their peak. The shower's peak usually occurs on August 13 & 14, but you may be able to see some meteors any time from July 23 - August 22. The radiant point for this shower will be in the constellation Perseus. The full moon will definitely be a problem this year, hiding the fainter meteors with its glare. But with up to 60 meteors per hour possible, it could still be a great show. Find a location far from city lights and look to the northeast after midnight.

- **August 13** - Full Moon. This full moon was known by early Native American tribes as the Full Sturgeon Moon because the large sturgeon fish of the Great Lakes and other major lakes were more easily caught at this time of year. This moon has also been known as the Green Corn Moon and the Grain Moon.
- **August 11** - Neptune at Opposition. The blue planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. This is the best time to view Neptune. Due to its distance, it will only appear as a tiny blue dot in all but the most powerful telescopes.
- **August 28** - New Moon.
- **September 12** - Full Moon. This full moon was known by early Native American tribes as the Full Corn Moon because the corn is harvested around this time of year. This moon is also known as the Harvest Moon. The Harvest Moon is the full moon that occurs closest to the September equinox each year.
- **September 23** - September Equinox. The September equinox occurs at 09:05 UTC. The Sun will shine directly on the equator and there will be nearly equal amounts of day and night throughout the world. This is also the first day of fall (autumnal equinox) in the northern hemisphere and the first day of spring (vernal equinox) in the southern hemisphere.
- **September 25** - Uranus at Opposition. The blue-green planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. This is the best time to view Uranus. Due to its distance, it will only appear as a tiny blue-green dot in all but the most powerful telescopes.
- **September 27** - New Moon.

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Meeting Minutes

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July 8, 2011 Meeting Minutes
Reported by Noah Frere, Secretary

Any corrections to these minutes should be sent to Noah Frere at noahhaverkamp@yahoo.com
The regular SMAS business meeting was held at PSTCC on Friday July 8, 2011
The meeting was called to order by President Jim Sanders at 7:28 EST. Those in attendance were: Noah Frere, Brent Holt, , Nick Schepis, Duane Dunlap, Lee Erickson, , Jerry Kornegay, Yuko Komatu, Gary Kliethermes, Mark Ziolkowski, Ellie Ziolkowski, Jim Sanders, Michael McCulloch, Ray Weedon, Duane Dunlap and Michael Reuter.
Jim Sanders welcomed the group and we immediately jumped into the first presentation:

Program #1: *Optical Design Using Ray Tracing Techniques* by Brent Holt - 40 minutes

The purpose of this technique was to determine how to design a secondary mirror.
What kind of telescope do you want? If you're interested in planetary observing, it's better to have a slow scope, like F20, which does not use a secondary mirror. Therefore, planetary observers don't need to consider this presentation.

The larger the secondary, the faster the scope; however, you lose contrast and sharpness. Brent repeatedly pointed out that always in astronomy, there is no perfect telescope – it's always a give and take. To make the secondary larger, you move it closer to the primary.

Need to ray trace really accurately. Brent passed out a diagram showing the elements of ray tracing, and explained them one by one, stressing the importance of back focus. One equation we learned was "m * f=focal length", where "m" is "secondary magnification: (q/p)" and "f" is "F ration for primary."

Newtonians have a horrible problem getting backfocus because of the flat mirror.

Best not to cross over 35% threshold. That is, the secondary should not be more than 35% as large as the primary.

Advantage of Cassegrain: you can change magnification of secondary (by changing shape) without changing the size. (Cannot do this with the Newtonian since the secondary is inherently flat.) This can allow you to change backfocus for easier astroimaging.

8:06 Business Meeting

Membership approved additional Starparty at Look Rock on 7/23. Moon's not up until 2 am.
Jim stressed the need for a good attendance at Cades Cove so we can have enough telescopes for the potentially hundreds of visitors.
Jim stressed the importance of giving back to PSTCC in return for the free room.
Discussed buying cases for SMAS telescope parts. Membership approved permission for Michael McCulloch to buy 2 cases for a total of around $50 for the Dobsonian.

8:19 Break

8:35 Program #2: *Understanding the Sky: Celestial Sphere; Coordinate System* by Lee Erickson – 20 minutes

This was a beginner-level presentation.

Discussion of maps: only approximate. Many centuries ago, East used to be up, rather than North.

We usually face south when facing the sky – which interchanges east and west; stars move from left to right.
Coordinates means "2 coordinates."
1˚ = 70 miles. This relationship does not change from north/south, but it does change for east/west depending on what latitude you are at.
Celestial Sphere is a continuation of the earth coordinates into space. Rotates 15˚/hour, or 1/4˚ per minute. In the sky, angle becomes time.
Declination is measured in degrees, minutes and seconds and corresponds to latitude.
Right Ascension (RA) is measured in hours, minutes and seconds and corresponds to longitude.
Lee showed and described a Planisphere.
2711 is the Age of Aquarius.
O hours is where the sun crosses the equator, during the spring equinox.

Lee had set up star charts in order on a back table to demonstrate the ecliptic. He also passed out some star charts showing 7th mag stars.

9:09 *Constellation of the Month Update* by Jim Sanders

One of the purposes of this program is to help beginners.
There is a folder on the SMAS Yahoo Group webpage with and excel sheet to print out for our observations, as well as finished forms that members have completed.
The good news is that there were 21 observations within the past month. The bad news is they all came from 2 people.

Constellation of the month is Scorpius. It contains M4, M6 (butterfly cluster) and M7 which is large and easy to see: M80 globular cluster, NGC 6124 Calwell Object, which is fairly bright but small; and the "false comet" at the low end of Scorpius, where NGC 6231 is the head of the comet.

9:26 Meeting Adjourned

Submitted by Noah Frere July 21st, 2011

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August 2011

	1	2	3 **ORION club meeting Grove Theater, Oak Ridge, Tn**	4	5 **UT K**	6 **TAO**
7	8	9	10	11 **Neptune at Opposition**	12 7:00 PM **SMAS Meeting PSTCC** **Perseids Meteor Shower**	13  **Full Moon** **Perseids Meteor Shower**
14	15	16	17	18	19 **UT K**	20 **TAO**
21	22	23	24	25	26	27 **SMAS Star Party, Unicoi Crest**
28  **New Moon**	29	30	31			**SMAS Star Party, Look Rock**

UTK – roof of Neilson Physics Building on the Hill At UT on 1st and 3rd Fridays
http://www.phys.utk.edu/trdc/telescope.html

TAO – Tamke-Allen Observatory
Public Stargaze
Watts Bar Lake, Roane County
1st and 3rd Saturdays
http://www.roanestate.edu/obs/

SCRAPS is edited by J.C. Sanders

Please send any comments or corrections to: sandersj@chartertn.net