

IO - November 2014

Issue 2014-11
Eugene Astronomical Society

Eugene Astronomical Society
Annual Club Dues \$25
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Next Meeting Thursday, November 20th

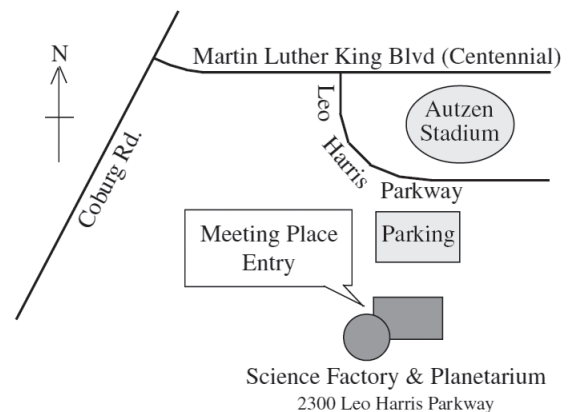
What I Want For Christmas

by Jerry Oltion, Mel Bartels, Jon Schwartz, and YOU

Our November 20th meeting will be an opportunity to talk about equipment in an informal setting. Jerry, Mel, and Jon will lead the discussion, but everyone is encouraged to join in as we talk about what's available for amateur astronomers today, what's essential and what's just a nice luxury. Have a favorite something you can't do without? Bring it and tell us why you like it so much.

If you're thinking of buying new gear for Christmas, either for yourself or for someone else, now's your chance to talk to people who might already have and use it. Learn whether it's as good as advertised and find out if it's what you really want.

The meeting is at 7:00 on Thursday, November 20th at the Science Factory planetarium. Come early to visit before the program starts.



Next First Quarter Friday: November 28th

Our October 31st First Quarter Friday wasn't exactly mobbed with costumed kids seeking the treat of photons older than they were, but on the other hand we did have mostly clear sky for a couple of hours and a dozen or so people to show the sights to. We had six scopes among five club members (Bill B. brought two), so we had plenty of optics to go around. Jerry brought a jack-o-lantern and candy, so we had treats of the more traditional variety as well.

First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up. Here's the schedule through 2015.

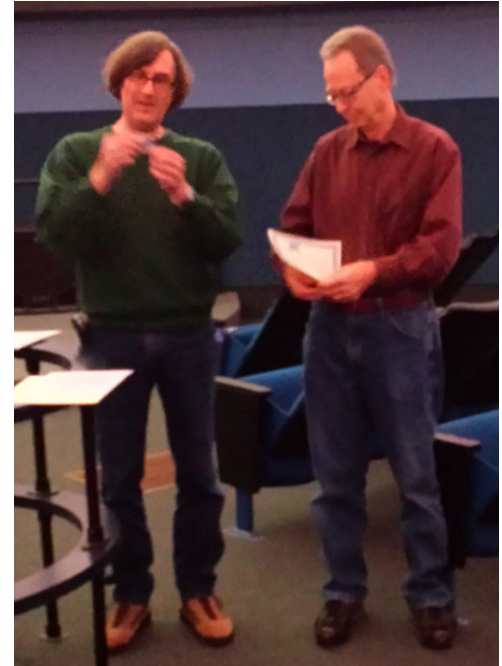
November 28 (46% lit)	December 26 (31% lit)	January 23 (17% lit)
February 27 (74% lit)	March 27 (58% lit)	April 24 (42% lit)
May 22 (26% lit)	June 26 (75% lit)	July 24 (60% lit)
August 21 (43% lit)	September 18 (28% lit)	October 23 (84% lit)
November 20 (70% lit)	December 18 (55% lit)	

October 16th Meeting Report

Our October 16th meeting was a busy one. We distributed calendars and eclipse glasses before the meeting started, talked about the logistics of our upcoming eclipse party, welcomed Dave Kasnick of the NightSky45 club in Salem, who came down to meet us and propose an exchange of speakers for our meetings in the upcoming year, and we held elections for board positions. Jerry Olton was re-elected and Diane Martin and Mel Bartels were elected to new terms. Diane was not able to attend the meeting, but she had previously volunteered to serve as club president and was happily welcomed in that role by the membership. Jerry will continue to serve as club secretary.

We then presented Jon Schwartz with a certificate and pin from the Astronomical League for completing their binocular Messier program. Jon told us how much he enjoyed making the observations for the program and he urged everyone to try one of the many Astronomical League observing programs. They provide structure and motivation for observing sessions and give a person a great opportunity to learn new objects in the night sky. There are dozens of different programs for all skill levels. Congratulations, Jon, for earning your first of many!

Mel Bartels then gave a talk on Chinese constellations and star lore. It was a fascinating look at a very different system of organizing the stars. The Chinese sky is arranged into five palaces, four for the cardinal directions and one at the center for the emperor. Each of the four outer palaces is divided into seven mansions or lunar lodges. The mansions are arranged in a rough circle, but that circle isn't centered on Polaris as you might expect. Rather, they're centered on the place where precession of the Earth's axis



Jon Schwartz receives his Binocular Messier pin and certificate



The four outer palaces and the twenty-eight mansions of the Chinese constellation system

would have put the celestial pole about 15,000 years ago. Is it possible that this system for organizing the night sky could be that old? No one knows for sure, but the evidence is compelling.

Mel concentrated on the constellation of the white tiger, which is associated with the West and with the season of Autumn. It covers present-day Andromeda, Pisces, Aries, Taurus and Orion. Mel taught us how to identify the seven mansions within the tiger, and what each mansion signifies. The 28 mansions correspond to the 28 days of a lunar orbit, so it wasn't surprising to learn that the Moon also plays a significant role in Chinese star lore. The legend of Chang'e, the goddess of the Moon, and Yutu, her Jade Rabbit companion, are so deep a part of Chinese culture that they named their lunar orbiter and lander mission Chang'e and Yutu.

Mel's talk gave us an intriguing glimpse into a system of stellar folklore that's as old as civilization itself. Thank you, Mel!

October 8th Lunar Eclipse

We had good weather for the total lunar eclipse in the early morning of October 8th. Several EAS members and a dozen or so people from the general public met at the College Hill Reservoir to watch it, and many others watched it from home or from other sites around the area. The Moon went through the top portion of Earth's shadow, so it was much darker on the bottom than on the top, but it still turned a nice coppery red during totality. The sky darkened and the Pleiades came out straight overhead, as well as Taurus and Orion high in the east.

The solar system provided an added bonus: Uranus was visible just one lunar diameter to the south of the Moon. That's it to the lower left in Jeff Phillips's photo.

The partially eclipsed Moon looks like a crescent moon at first glance, until you realize that the arc of the crescent is all wrong. Not only is the angle wrong, but so are the start and end points and the amount of curvature. The effect was most pronounced near totality when the lit crescent looked nothing like a regular crescent Moon.

Several observers also noted how much bigger the lit portion seemed. To the naked eye it looked like a badly assembled Photoshop job, with the bright part sticking out well past the dim part. It had to be



the effect of lens flare or retinal spillover in our eyes, but it looked very real and decidedly strange.

Clouds drifted in during totality, so the Moon's reemergence was lost, but at 4:30 in the morning most of us were willing to call it a night and go home anyway.

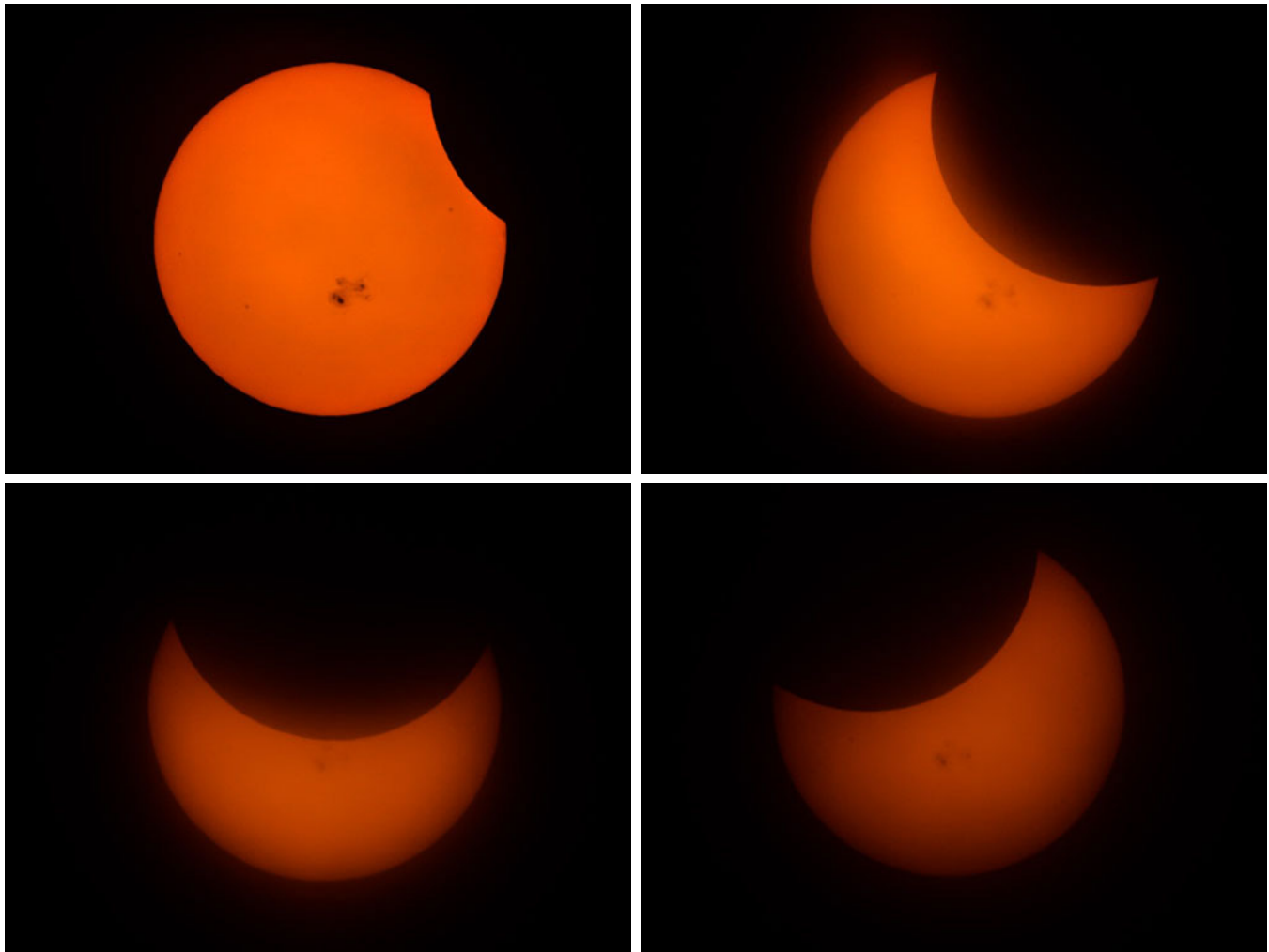
Bill Basham made a beautiful time lapse video of it from out near Brothers. Here's the URL to it: <https://www.youtube.com/watch?v=tIjfgxDB9Pc>



October 23rd Solar Eclipse

The weather elementals weren't as generous on the 23rd as they were on the 8th. The day of the partial solar eclipse dawned wet and gray, and stayed that way all day long. Some of us set up at the Science Factory and at the College Hill Reservoir anyway, just in case, and we were rewarded with about 10 seconds of thinner clouds that let us just make out a dim image of the Sun with a bite taken out of it.

Others were more fortunate. Mel Bartels and Barb Bajec had a little better view at their home south of Cottage Grove, and Bill Basham drove out to a site near Sisters and managed to get a decent sequence of photos showing the eclipse as it progressed. Note the monster sunspot group visible near the center. That was big enough to see by naked eye on previous days.



Photos copyright © 2014 by Bill Basham

Thank You Castle Storage

For the last several years, Castle Storage has generously provided EAS a place to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. They are great people and offer secure and quality storage units.

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Music of the Spheres

A Cosmic Concert with visuals of deep space
performed by members of the Eugene Chapter of the American Guild of Organists

Friday, November 21
First United Methodist Church
1376 Olive Street, Eugene, Oregon

7:00 PM
Prof. Bernie Bopp, narrator

Part of the 2014-2015 *Concerts at First*
in collaboration with Eugene Chapter AGO and the Eugene Astronomical Society

Suggested donation \$10
Bring canned goods for Food for Lane County



Dues are Past Due!

EAS membership runs from October thru September. If you haven't paid already, please mail your dues to the Eugene Astronomical Society, PO Box 7264, Springfield, OR 97475. Dues are still the same low \$25 they've been for years. Make your checks payable to Eugene Astronomical Society, or just EAS if your pen is low on ink.

Discounted Magazine Subscriptions

One of the benefits of EAS membership is a club discount on subscriptions to *Sky & Telescope* and *Astronomy* magazines. The clubmember rate for *Sky & Telescope* Magazine is \$32.95 for one year or \$65.90 for two years. The clubmember rate for *Astronomy* magazine is \$34 for one year or \$60 for two years. This is the rate for new subscriptions or renewals. New subscriptions have to go through the club secretary (Jerry Oltion) to qualify for the discounted rate, so contact Jerry if you want to start a new subscription. *Sky & Telescope* allows you to renew at the club rate on your own, but *Astronomy* requires renewals to go through the club secretary as well. For more information, contact Jerry at j.oltion@sff.net or 541-343-4758.

Observing Hightlight: NGC 6826, the Blinking Planetary

Most planetary nebulae are interesting for what they are. This one is interesting for what it *does*. The Blinking Planetary actually does blink...if all the right conditions are met.

First off, you need a small to medium scope. (3" to 8" is about right.) It won't blink in a big scope, although observing from town might give you an extra couple inches of aperture tolerance due to the general dimming of the nebula from light pollution.

Then you need to find the object. It's easy to mistake for a star at first glance, so you can go right past it several times before you realize it was in the field of view all along. Look for it with averted vision. If you star-hop to it or use a go-to scope, try a medium- to high-power eyepiece once you know you're in the right area. It's a relatively small nebula, so more magnification will help it stand out a little.

Once you've found it, you have to provide the switch to make it blink. That's as easy as using your averted vision: look away and the nebula blinks on, look back and it goes out. If it doesn't work at the magnification you're using, crank up the power.

What's happening? The Blinking Planetary is one of the few planetary nebulae with a bright central star. When you look straight at that star, you're using the least sensitive part of your eye, so the brightness of the star knocks out the nebula glow around it. When you look away, you're using a more sensitive patch of retina and the nebula glow stands out again.

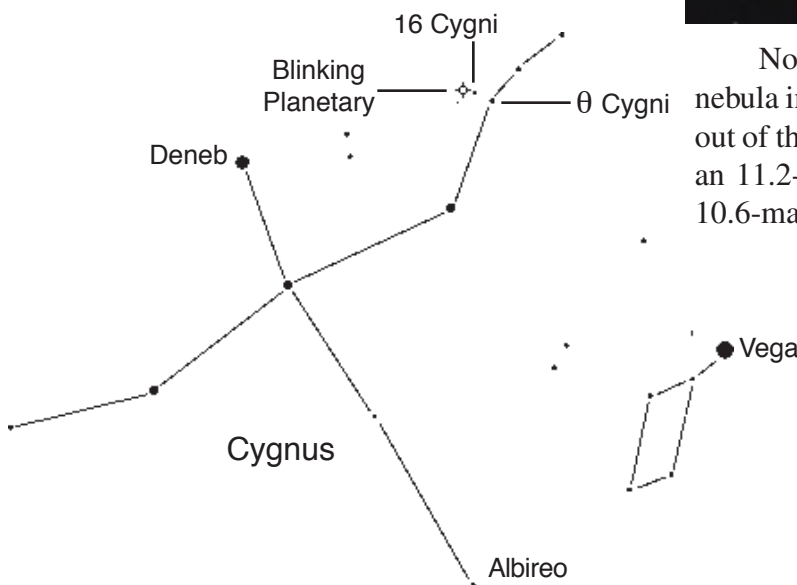
The Blinking Planetary is relatively easy to find. It lives in the northwest wing of Cygnus the swan, very near 6th-magnitude 16 Cygni. It's half a degree straight east of 16 Cygni, which is in turn about one degree east of 4.5-mag Theta Cygni, so you should be able to find it in a medium-power eyepiece. Its R.A. is 19h 44m 48s and its Dec. is +50° 31' 33".



Note that the star visible to the right of the nebula in the photo is not 16 Cygni. 16 Cygni is way out of the frame at this scale. The star in the photo is an 11.2-magnitude star, dimmer than the nebula's 10.6-magnitude central star.

The nebula itself has a visual magnitude of 8.9. It appears 2.1 arc-minutes across. At its estimated 4,200 light-year distance, it has a true diameter of 2.6 light-years.

Give it a try next time you're out. Cygnus will be flying westward as the season progresses, so this will probably be your last good month for it this year.



Mutual Occultations of the Satellites of Jupiter

Every few years the orbital plane of Jupiter's moons lines up with Earth, so we see occultations and eclipses of the moons as they move in front of one another. The British Astronomical Association's Computing Section has calculated the times for these events, which we have culled for events that are visible during nighttime from Oregon.

Occultations are not eclipses. Occultations mean one brightly lit moon will cross in front of another brightly lit moon, so we'll see them merge and move apart, but we won't see one blink out. There will be a few eclipses visible next month, and we'll have a chart for those then.

Times are given in Pacific Daylight Time until November 2 and Pacific Standard Time thereafter.

1o2 means that satellite 1 occults satellite 2, etc. 1=Io 2=Europa 3=Ganymede 4=Callisto

Column "Magn." gives the magnitude of the occultation in %, that is, the fraction of the diameter of the second satellite that is occulted by the first satellite at maximum phase. "T" means that the satellite is totally occulted, while "A" means an annular occultation. In the latter case, the first satellite transits directly over the second, larger satellite.

Column "Dur." gives the duration of the total or annular phase, in seconds.

	Date	Satel.	Start	End	Magn.%	Dur. s	
	2014		h m s	h m s			
	Pacific time						
Nov	1	3o1	01 11 41	01 15 09	27	See note 1	Jupiter rises at 00:58
	1	4o1	04 49 07	04 54 22	31		
Begin Standard Time	2	4o1	05 36 06	05 51 45	T	123	Jupiter rises at 23:51
	3	4o3	04 51 43	05 06 17	36	See note 2	
	4	2o3	01 04 19	01 14 31	A 59	128	Jupiter rises at 23:44
	5	1o3	02 19 04	02 24 21	34		
	8	3o1	02 57 45	03 02 48	62		
	9	3o4	01 27 44	01 33 40	19		Jupiter rises at 23:27
	10	2o4	06 40 26	06 46 01	44		Sunrise 07:01
	11	2o3	04 37 13	04 48 11	A 59	125	
	12	1o3	05 09 02	05 14 48	56		
	15	3o1	05 44 18	05 50 16	94		
28	3o4	06 50 59	07 08 50	74		Sunrise 07:24	
29	3o2	22 29 06	22 33 28	48	See note 3	Jupiter rises at 22:14	
Dec	5	4o2	23 00 36	23 50 10	37		Jupiter rises at 21:51
	16	2o1	02 36 34	03 05 30	33		
	16	2o1	07 47 34	08 16 19	A 86	42	Sunrise 07:41
	27	2o1	00 21 10	00 35 00	63		Jupiter rises at 20:17
	27	3o1	23 38 36	23 56 38	86		Jupiter rises at 20:21
	27	3o1	07 12 19	07 38 14	T	286	Sunrise 07:47

Note 1: Ganymede's shadow is in transit across Jupiter during occultation.

Note 2: Europa's shadow is just beginning transit during occultation.

Note 3: Satellite 2 itself is eclipsed in Jupiter's shadow (so we won't see anything special).





Observing in November



Nov. 6, 2:23 PM	Nov. 14, 7:15 AM	Nov. 22, 4:32 AM	Nov. 29, 2:06 AM
Mercury Rise: 5:20 AM	Mercury Rise: 5:53 AM	Mercury Rise: 6:30 AM	Mercury Rise: 7:02 AM
Venus Set: 5:06 PM	Venus Set: 5:03 PM	Venus Set: 5:02 PM	Venus Set: 5:05 PM
Mars Set: 8:04 PM	Mars Set: 8:02 PM	Mars Set: 8:01 PM	Mars Set: 8:01 PM
Jupiter Rise: 11:37 PM	Jupiter Rise: 11:10 PM	Jupiter Rise: 10:41 PM	Jupiter Rise: 10:14 PM
Saturn Set: 5:33 PM	Saturn Lost in Sun	Saturn Lost in Sun	Saturn Rise: 6:29 AM
Uranus Set: 4:21 AM	Uranus Set: 3:49 AM	Uranus Set: 3:16 AM	Uranus Set: 2:48 AM
Neptune Set: 1:00 AM	Neptune Set: 12:29 AM	Neptune Set: 11:54 PM	Neptune Set: 11:26 PM
Pluto Set: 8:34 PM	Pluto Set: 8:04 PM	Pluto Set: 7:33 PM	Pluto Set: 7:07 PM

All times Pacific Daylight Time (March 9 – November 1, 2014 = UT -7 hours) or Pacific Standard Time (November 2, 2014 – March 7, 2015 = UT -8 hours)

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight	
					Begin	End
11/1/2014	15:11	01:38	07:49	18:02	06:11	19:40
11/2/2014	14:45	01:49	06:50	17:01	05:12	18:39
11/3/2014	15:19	03:01	06:52	17:00	05:14	18:38
11/4/2014	15:53	04:12	06:53	16:58	05:15	18:37
11/5/2014	16:29	05:23	06:54	16:57	05:16	18:35
11/6/2014	17:08	06:33	06:56	16:56	05:17	18:34
11/7/2014	17:51	07:39	06:57	16:55	05:18	18:33
11/8/2014	18:38	08:42	06:58	16:53	05:19	18:32
11/9/2014	19:29	09:38	07:00	16:52	05:21	18:31
11/10/2014	20:23	10:29	07:01	16:51	05:22	18:30
11/11/2014	21:19	11:13	07:02	16:50	05:23	18:30
11/12/2014	22:16	11:51	07:04	16:49	05:24	18:29
11/13/2014	23:13	12:25	07:05	16:48	05:25	18:28
11/14/2014		12:56	07:06	16:47	05:26	18:27
11/15/2014	00:10	13:24	07:08	16:46	05:27	18:26
11/16/2014	01:08	13:52	07:09	16:45	05:28	18:25
11/17/2014	02:07	14:19	07:10	16:44	05:30	18:25
11/18/2014	03:07	14:48	07:12	16:43	05:31	18:24
11/19/2014	04:08	15:19	07:13	16:42	05:32	18:23
11/20/2014	05:10	15:53	07:14	16:42	05:33	18:23
11/21/2014	06:14	16:32	07:15	16:41	05:34	18:22
11/22/2014	07:17	17:17	07:17	16:40	05:35	18:22
11/23/2014	08:19	18:08	07:18	16:39	05:36	18:21
11/24/2014	09:17	19:07	07:19	16:39	05:37	18:21
11/25/2014	10:09	20:11	07:20	16:38	05:38	18:20
11/26/2014	10:55	21:19	07:22	16:38	05:39	18:20
11/27/2014	11:36	22:29	07:23	16:37	05:40	18:20
11/28/2014	12:13	23:40	07:24	16:37	05:41	18:19
11/29/2014	12:48		07:25	16:36	05:42	18:19
11/30/2014	13:21	00:50	07:26	16:36	05:43	18:19

Items of Interest This Month

- Many Jupiter satellite occultations this month. See p.7 for details.
- Taurid meteors visible all month. High proportion of fireballs with this shower.
- 11/6 Io shadow transit 11:50 pm – 2:07 am.
- 11/17 Callisto shadow transit from Jupiter rise (11:00) to midnight.
- 11/17 – 11/18 Leonid meteor shower near peak in early morning both days.
- 11/20 Europa shadow transit 11:01 pm – 1:55 am.
- 11/22 Io shadow transit from Jupiter rise (10:41) to 12:22 am.
- 11/25 Europa and Callisto near miss (may be cooler than an occultation) just before midnight.
- 11/28 First Quarter Friday Star Party.**
- 11/29 Io shadow transit 11:57 pm. – 2:15 a.m

For ongoing discussion of astronomical topics and impromptu planning of telescope outings, join the EAS mail list at http://eugeneastro.org/mailman/listinfo/general_eugeneastro.org

All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date