IO - April 2014

Issue 2014-04

Eugene Astronomical Society

Eugene Astronomical Society
Annual Club Dues $25
President: Sam Pitts - 688-7330
Secretary: Jerry Oltion - 343-4758
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Jacob Strandlien, Tony Dandurand,
John Loper.

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EAS is a proud member of:

The Astronomical League
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www.eugeneastro.org

Next Meeting Thursday, April 17th
"What Can You See for $50"

by Jeff Phillips

In the December, 1993 issue of Sky and Telescope magazine, author Terence Dickinson reviewed low cost telescopes and concluded: "There are no good cheap telescopes. Department-store scopes are mostly junk. Get a 6-inch reflector."

In the last few years Celestron has offered some basic telescopes for only fifty dollars. In fact Walmart and Amazon have both put on Black Friday specials offering telescopes for as little as thirty-five dollars. Jeff will demo two of these telescopes as well as some low cost binoculars and talk about how to turn a Craigslist bargain into a useable reflector.

"Good, cheap telescope" is not necessarily an oxymoron. After all, one of these 70mm scopes will show more detail on the Moon than the HST can show on the planets! Come see what Jeff — and a cheap telescope — can show you.

Photo shot through 70mm Powerseeker refractor.

At our meetings we also encourage people to bring any new gear or projects they would like to show the rest of the club. Remember we no longer meet at EWEB. The meeting is at 7:00 on Thursday, April 17th at the Science Factory planetarium. Come early to visit before the program starts.

Scopes Available for Loan

With the arrival of Spring and the advent of clear weather ahead, it's time to tune up the gear and get ready for a summer of observing. Don't have any gear to tune up? Borrow a scope from the club's lending library! Even if you already have a scope, maybe you'd like to try out a different one. The EAS has many scopes in many different sizes, from a 3.5" refractor to a couple of 12" Dobs. We even have a 10" computerized go-to Schmidt-Cassegrain, and our flagship 18" Dob is available under certain conditions. Check out our lending page at www.eugeneastro.org/lending.html and contact Tony Dandurand or Jerry Oltion to check out a scope. (Tony: tdandurand (at) comcast.net, Jerry: j.oltion (at) sff.net)

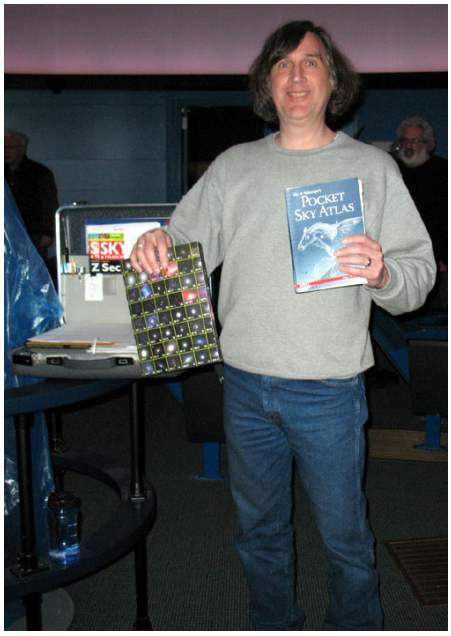
Borrowers must be club members in good standing, have attended at least two meetings, and in the case of the 10" SCT and 18" Dob, must be members for at least a year and satisfy the telescope lending coordinator that they can handle the scope.

Spring has sprung! Check out a scope and go enjoy it!

March Meeting Report:

Planning and Executing an Observing Session

At our March 20th meeting, Mel Bartels, Jon Schwartz, and Jerry Oltion gave a talk on how they prepare and execute an observing session. The three of them have considerably different methods, so it was interesting to see how they each went about it.



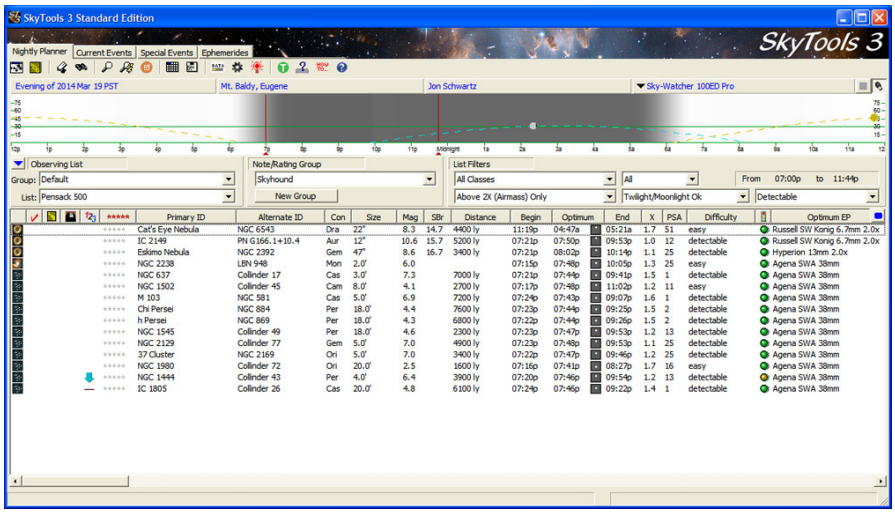
Jerry with his paper charts

Jerry spoke first. He's mostly an old-school observer, still happy to use paper star charts and magazines, so he described how he prepares during cloudy weather by reading up on what he wants to look at when the sky clears, flagging magazine articles with post-it notes and making lists. He'll use a computer to generate finder charts and to check for things like Jupiter moon shadow transits, Iridium flares, and space station passes, but he mostly relies on paper and a red flashlight when he gets out in the field. One exception is the *Sky Safari* program, which he uses on an iPad for star hopping to objects he can't find with a regular sky atlas. *Sky Safari* allows him to simulate the starfield he sees by naked eye, in his finder, or telescope eyepiece so he can quickly zero in on his selected target.

Jon controlling his scope with *Sky Safari*

Jon Schwartz also uses *Sky Safari*, but in a much more sophisticated way: he controls his go-to telescope with it, letting the telescope do the finding. He can simply select an object on his iPad and tell the scope to go to it — wirelessly. He has found this capability to be very useful in exploring an area of the sky by zooming in on various objects and sending the scope there to see what they look like. He can cover quite a bit of ground that way in an evening and learn a lot of new objects.

Jon also uses another computer program for advance preparation. *SkyTools* is a planning aid that helps select the best objects to view on any given night. Jon tells it what telescope he plans to use, what the seeing and transparency conditions are, even what eyepieces he plans to use, and the program determines what objects he's likely to see and what time of night would be optimum for viewing them. *SkyTools* will let him print out his observing list and any finder charts he might need, or it can output its observing lists directly to *Sky Safari.*

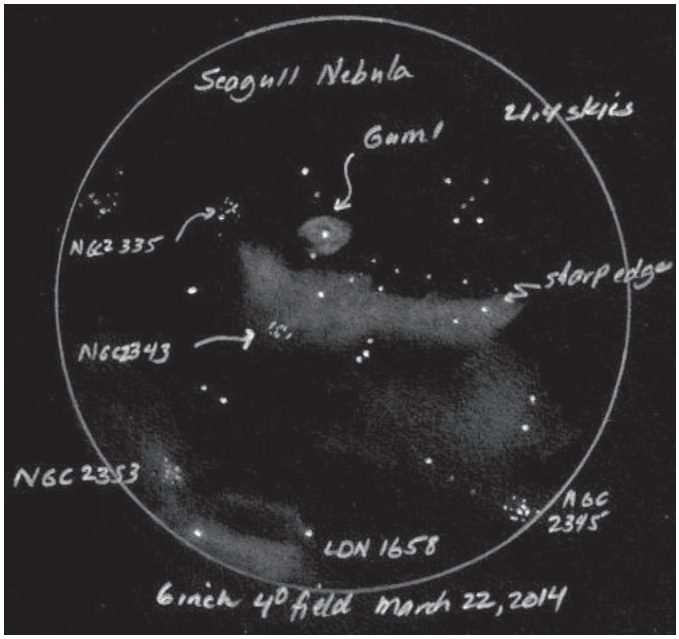


SkyTools screenshot (zoom in for a close look)

Mel with his 6" f/2.8 scope

Mel began his portion of the program by showing us his latest telescope, a 6" dob with an f/2.8 mirror that he ground to near perfection. (See last month's *Io* for an in-depth look at this scope.) Building the perfect telescope is only part of the optimum observing experience, though; for the past two years Mel has embarked on an experiment to see if he can streamline the process by eliminating paper charts completely. He does his advance research with *SkyTools*, magazines, Astronomical League lists, and various other sources, then loads his lists and finder charts onto an Android tablet. He'll take screen shots from the World Wide Telescope, the Photopic Sky Survey, or even photograph paper charts and store the photos on his tablet. Out in the field, he only has one small item to handle, freeing him up to do more observing and sketching at the eyepiece. Mel has really gotten into sketching lately, after discovering what he can see with his wide-field, short-f/ratio telescopes. As you can see below, the results are stunning both for what these scopes will let you see and for Mel's skill in depicting it.

After their talk, the audience responded with a lively discussion of observing methods, favorite resources, and plans for an upcoming Messier Marathon. It was a fun evening, and helped set the stage for many more fun evenings out under the stars this summer.



Sketches based on the observing preparations that Mel did for the presentation, using his new 6" scope.

Some programs and websites that Jerry, Jon, and Mel find useful:

Sky Safari for Mac or Android: http://www.southernstars.com/
(Buy the Pro version. It's well worth the extra expense.)
SkyTools v3: http://www.skyhound.com/skytools.html
Jupiter's Moons App: https://itunes.apple.com/us/app/jupitermoons/id577009038?mt=8
Saturn's Moons App: https://itunes.apple.com/us/app/saturnmoons/id606938707?mt=8
Moon Globe HD: https://itunes.apple.com/us/app/moon-globe-hd/id376000038?mt=8
WWT World Wide Telescope: http://www.worldwidetelescope.org/
Photopic Sky Survey http://media.skysurvey.org/interactive360/index.html:

Piggyback Orion

Earlier this winter Bill Murray took a great shot of Orion with his Canon EOS Rebel T4i mounted piggyback on his Meade LX90 scope. He was using the camera's own 50mm lens and took a 1-minute exposure at f/2.8, 1600 iso. The results are amazing: you can not only see the Orion Nebula in full color, but the Running Man Nebula above that and the Flame Nebula to the left of Alnitak, the lower left belt star.

But examine the image a little more closely and you'll find a surprising bonus: the Horsehead Nebula directly below Alnitak. Bill captured it without a telescope and without an H-beta filter. Zoom in a little and see.

This is a lot like what the Horsehead Nebula looks like in a big telescope: just a little bite taken out of a faint wall of reddish nebula. This image is excellent practice for finding it in a telescope. Thanks, Bill!

Next First Quarter Friday: April 4th

Our March 7th First Quarter Friday was a great success. The sky was clear most of the day, so we had quite a few people come to observe with us. We had six telescopes, including Wade's new 17" Discovery Dob. Scott Fisher brought a bunch of his astronomy students and they were great fun, full of interest and asking intelligent questions. Jupiter put on a beautiful shadow transit for us, with the Great Red Spot transiting just behind Io's dark eclipse. Io itself popped out from its transit about halfway through. It was neat to see so much dynamic action going on out there in the solar system. The students (and everyone else for that matter) got a great lesson in celestial mechanics that night.

Our next FQF will be on April 4th. Here's hoping for another clear night like this one.

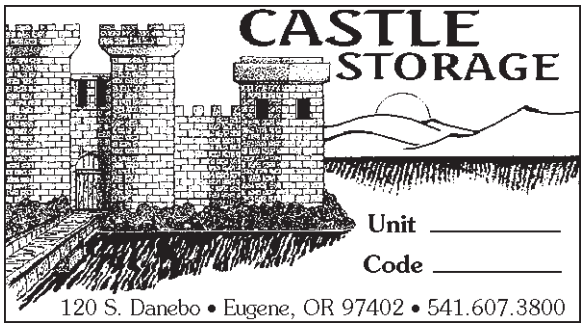
First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up. Here's the schedule for the rest of 2014. Note that we've scheduled some of the star parties a week earlier than the calendar would normally dictate in order to have less moon in the sky.

April 4 (29% lit)	May 2 (15% lit)*	June 6 (63% lit)
July 4 (47% lit)	August 1 (32% lit)	August 29 (18% lit)*
September 26 (8% lit)*	October 31 (61% lit)	November 28 (46% lit)
December 26 (31% lit)		

*These star parties are a week earlier than normal to provide less moon glare.

Thank You Castle Storage

For the last six 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.



An Impromptu Star Party, and a Lesson Learned

by Jerry Oltion

On the evening of March 6th, the Moon took a cruise through western Taurus. Kathy and I hauled a scope out into our driveway to have a look and realized that there was a relatively bright (6th magnitude) star that looked like it was headed for occultation within just a few minutes. It's always fun to watch a star disappear behind the Earthlit side of the Moon, and this one looked like it might graze its way through the north polar mountains, so we ran down to our neighbors' house and banged on their door. Colin, June, and Casey have been getting into astronomy themselves, and Casey got a new scope for Christmas, so they grabbed that scope and we set up several of our own so everyone would have a scope to watch the occultation through.

Of course I had to sample the view through each scope, and I was disappointed to realize that the contrast in my original trackball left something to be desired. Compared to Casey's Orion Skyquest Dob, mine frankly sucked. I could barely see the Earthlit portion of the Moon, whereas in the other scopes it was readily visible. I began obsessing about that, trying various eyepieces and shielding the open trusses with my jacket. I was still at it when everyone started calling out "It's getting close!" I was convinced that more magnification would help me see the dark limb approaching the star, so I went for one final boost...and yes, you guessed it: I was swapping out eyepieces when the star made its dive behind the Moon, winking out instantaneously as 80 quintillion tons of rock slipped between us and it. I missed it!

We all had a good laugh at the hapless goof who spends more time fussing with his gear than looking through it. And I had a moment of epiphany: Don't be that hapless goof. Good enough is good enough, and it doesn't take the perfect setup to watch a 6th magnitude star slip behind the Moon.

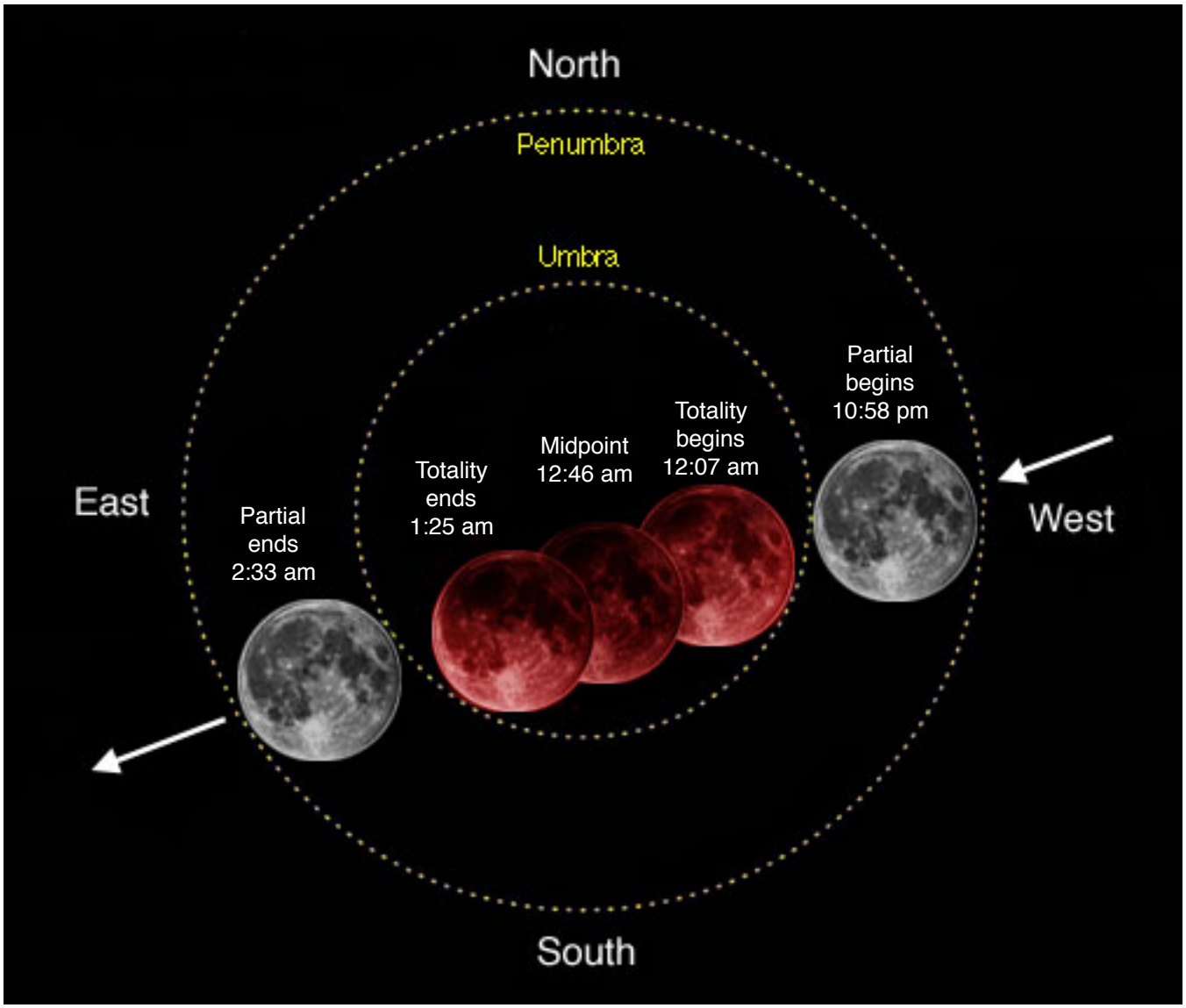
Fortunately the Moon will make another pass through the Hyades this month, on April 3rd. I plan to be out there with my trackball and a 15mm plossl when it does. With my eye glued to the eyepiece. Not blinking. You should be out there too, with whatever scope you happen to have on hand, eyes open, enjoying the view.

From left: Jerry & Kathy Oltion, Colin, June, and Casey Miller

Total Lunar Eclipse April 14th

On the night of April 14th, starting at 10:58 PM, the Moon will be totally eclipsed by Earth's shadow. We in Oregon will be almost perfectly positioned to watch this eclipse, which will reach totality with the Moon as high in the sky as it will get that night.

The Moon will take a descending path through the lower portion of Earth's shadow, reducing the length of totality from the theoretical maximum of 108 minutes to 78 minutes. That's still well over an hour of totality, and an additional 69 minutes of partial phase before and 68 minutes after totality.



The Moon will turn a deep coppery color during totality, its only source of illumination being the ring of sunsets around the perimeter of the Earth. The lower portion will likely be a little brighter than the upper portion, although that depends a lot on Earth's atmospheric conditions at the time. Some eclipses are so dark the brightness difference isn't very noticeable except at the times nearest the beginning and end of the eclipse.

The EAS will host a star party for this event at the College Hill Reservoir, beginning at 10:30 pm. Bring your scopes, or just your lawn chairs and binoculars, and enjoy the eclipse with the rest of us.

Science Night at Yujin Gakuen

by Rick Kang

The March 7th Science Night at the Yujin Gakuen Japanese Immersion School in Eugene went very well for the EAS representatives (Rick Kang, Bob Moser, Shade Rose, Frank Szczepanski, and Frank and Bob's granddaughters, Ariana and Destiny.)

Shade and Rick set up the Scale Model Solar System display/Scavenger Data Hunt down the corridor from the main doorway. Shade mounted the series of stock Solar System color lithographs supplied by NASA to colored poster boards which were then hung at the scale location of each planet. We first paced off the correct scale distance (1" = 1 million miles scale) to each planet from the Sun which was adjacent to our information table. We initially marked the planet locations by taping small signs to the corridor wall and positioning easels (kindly supplied by the hosts) adjacent to each sign. Then we hung the posters, which looked great. For each planet we also produced and hung a card containing the correct-scale-sized dot for the planet, plus a piece of paper with the planet's name and summary information printed, including travel time from Earth which was the data the students needed to record on their scavenger hunt tally pages. We also had lithographs with information about Asteroids, Comets, and the Kuiper Belt. (After the event we carefully took down the posters and signs to preserve them for future use at EAS or other Astronomy events. Contact Rick if you can put the graphics to use.)

We set up Jerry's small Dob on our table, thinking to provide views down the corridor to Neptune and Pluto signs at far end. The lighting down there was fairly dim, so this didn't work, but fortunately there was an illuminated EXIT sign suspended from the ceiling above the doors at that end of the building, so we aimed at that, which probably worked out better in that the hallway was typically crowded and we had to view above the heads of the visitors. Many youngsters and quite a few adults peeked through the little Dob, often the first time looking through a telescope. Most viewers didn't want to believe that they were looking at a sign almost 150 feet away; they thought the view was of the EXIT sign just above our table!

Meanwhile, Frank and Bob along with Ariana and Destiny set up telescopes outdoors on the sidewalk near the main entrance. The night sky had cleared, offering opportunities to view the Moon and Jupiter (including a Jovian moon transit event). This was the most popular astronomical activity.

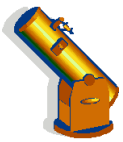
Frank Szczepanski and his scope

The turnout of neighborhood families was excellent. We probably had over 150 people view through the telescopes and take the Solar System walk. At least half of the attendees were youngsters, many of whom expressed enthusiastic comments after completing their tours. Many of the adults talked with us about telescopes and about current astrophysical discoveries.

There were other exhibitors and activities in quite a few of the adjacent classrooms along the corridor perpendicular to where we were, a mix of cultural and STEM topics, including demonstrations of bonsai plants, oriental painting, recycling, and robotics,

Our hosts, Rita Gillihan and her able assistant, Elizabeth, provided us with excellent Japanese dinners after the crowd had thinned out a bit.

This was a good opportunity to promote EAS, Telescopes, STEM (Science, Technology, Engineering, Math), and Astronomy/Astrophysics and may lead to more invitations from teachers and schools. Thanks to our hosts, the community, and to the EAS participants.



Observing in April

1st Q Full Last Q New

April 7	April 15	April 22	April 28
Mercury Rise: 6:18 AM	Mercury Rise: 6:15 AM	Mercury lost in Sun	Mercury lost in Sun
Venus Rise: 5:02 AM	Venus Rise: 4:54 AM	Venus Rise: 4:46 AM	Venus Rise: 4:39 AM
Mars Rise: 7:39 PM	Mars Set: 6:28 AM	Mars Set: 5:54 AM	Mars Set: 5:25 AM
Jupiter Set: 2:44 AM	Jupiter Set: 2:16 AM	Jupiter Set: 1:52 AM	Jupiter Set: 1:31 AM
Saturn Rise 10:30 PM	Saturn Rise: 9:56 PM	Saturn Rise: 9:26 PM	Saturn Rise: 9:00 PM
Uranus Rise: 6:37 AM	Uranus Rise: 6:06 AM	Uranus Rise: 5:40 AM	Uranus Rise: 5:17 AM
Neptune Rise: 5:19 AM	Neptune Rise: 4:48 AM	Neptune Rise: 4:21 AM	Neptune Rise: 3:58 AM
Pluto Rise: 2:27 AM	Pluto Rise: 1:56 AM	Pluto Rise: 1:28 AM	Pluto Rise: 1:04 AM

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

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
4/1/2014	07:57	22:13	06:54	19:40	05:14	21:20
4/2/2014	08:35	23:16	06:52	19:41	05:12	21:21
4/3/2014	09:17		06:50	19:42	05:10	21:23
4/4/2014	10:03	00:14	06:48	19:43	05:07	21:24
4/5/2014	10:52	01:06	06:46	19:44	05:05	21:26
4/6/2014	11:44	01:53	06:45	19:46	05:03	21:28
4/7/2014	12:39	02:34	06:43	19:47	05:01	21:29
4/8/2014	13:35	03:10	06:41	19:48	04:59	21:31
4/9/2014	14:33	03:43	06:39	19:49	04:57	21:32
4/10/2014	15:31	04:13	06:38	19:51	04:55	21:34
4/11/2014	16:31	04:42	06:36	19:52	04:52	21:36
4/12/2014	17:32	05:09	06:34	19:53	04:50	21:37
4/13/2014	18:35	05:38	06:32	19:54	04:48	21:39
4/14/2014	19:39	06:08	06:31	19:55	04:46	21:41
4/15/2014	20:45	06:40	06:29	19:57	04:44	21:42
4/16/2014	21:50	07:17	06:27	19:58	04:42	21:44
4/17/2014	22:55	07:58	06:26	19:59	04:40	21:46
4/18/2014	23:56	08:47	06:24	20:00	04:37	21:47
4/19/2014		09:42	06:22	20:01	04:35	21:49
4/20/2014	00:52	10:43	06:21	20:03	04:33	21:51
4/21/2014	01:42	11:49	06:19	20:04	04:31	21:53
4/22/2014	02:25	12:58	06:17	20:05	04:29	21:54
4/23/2014	03:04	14:09	06:16	20:06	04:27	21:56
4/24/2014	03:40	15:20	06:14	20:07	04:24	21:58
4/25/2014	04:13	16:30	06:13	20:09	04:22	22:00
4/26/2014	04:45	17:40	06:11	20:10	04:20	22:02
4/27/2014	05:18	18:48	06:10	20:11	04:18	22:03
4/28/2014	05:52	19:56	06:08	20:12	04:16	22:05
4/29/2014	06:29	21:00	06:07	20:13	04:14	22:07
4/30/2014	07:09	22:00	06:05	20:15	04:12	22:09

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

Items of Interest This Month

Best month for viewing Mars, Ceres, Vesta.

4/3 Moon occults several stars in Hyades in early evening.

4/4 First Quarter Friday Star Party.

4/6 Io shadow transit 9:07 – 11:25 PM. Ganymede transit 9:57 PM – 1:10 AM.

4/8 Mars at opposition, appears 15 seconds wide (1/120th as big as the full Moon!)

4/13 Io shadow transit 11:03 PM – 1:20 AM.

4/14 Total Lunar Eclipse starting 10:58 PM Star party at College Hill Reservoir starting 10:30 or thereabouts.

4/17 Saturn near Moon at dawn.

4/17 Ganymede enters eclipse 9:07 PM, exits eclipse 12:27 AM

4/21 3 of Jupter's moons line up vertically at 8:15 PM. Start watching by 8:00 to see them move into and out of position.

4/21–4/22 Peak of Lyrid meteor shower in early morning of 22nd.

4/22 Io shadow transit 7:27 – 9:45 PM.

4/28 Europa shadow transit near Red Spot 9:13 – 11:58 PM.

4/29 Io shadow transit 9:23 – 11:40 PM.

4/30 Callisto shadow transit 8:16 PM – 12:28 AM.