

IO - June 2016

Eugene Astronomical Society
Annual Club Dues \$25
President: Diane Martin 541-554-8570
Secretary: Jerry Olton 541-343-4758
Additional Board members:
Jacob Strandlien, John Loper, Mel Bartels.

PO Box 7264
Springfield, OR 97475
www.eugeneastro.org
EAS is a proud member of:

The Astronomical League
The World's Largest Federation of Amateur Astronomers



Next Meeting Thursday, June 16th A History of Water on Mars by Bernie Bopp

Mars has just passed opposition on its closest approach to Earth since 2003. We're getting a great look at it on every clear night, and we're able to see surface details and atmospheric phenomena, including clouds over the polar regions and the largest volcanoes. We have rovers crawling around in ancient lakebeds and sending back photos of water-formed geological features. There was clearly a lot of water on Mars in the past, and enough remains to form clouds and ice caps today. At our June 16th meeting, Bernie Bopp will give us the history of this water. About his talk, Bernie writes:

"For this presentation, the term "history" will refer to both the long-term chronology of water on Mars (stretching over 4.6 billion years) as well as a history of human perceptions regarding water (and life!) on Mars over the past century. The climate and surface conditions on Mars have changed dramatically since the formation of the solar system. Mars is cold, dry, and nearly airless today; a few billion years ago Mars was warmer, wetter, and much more "Earthlike." Our perception of Mars has also see-sawed since the end of the 19th century. A hundred years ago Mars was believed to be an inhabited world. Fifty years later the planet was believed to be completely and forever lifeless. And of course I will talk about our current knowledge of conditions on Mars!"

At our meetings we also encourage people to bring any new gear or projects they would like to show the rest of the club. The meeting is at 7:00 on Thursday, June 16th at the Science Factory. Come a little early to visit and get a seat before the program starts.

Next First Quarter Friday: June 10th

Our May 13 star party was mostly clouded out. There was enough sky to glimpse the Moon and Jupiter a few times through sucker holes, but when the rain started spitting, everyone cleared out for home. Saturday's backup date was totally clouded out. Hopefully we'll be in the summer drought by June.

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 2016. Star parties start at dusk or 6:00, whichever is later.

June 10 (38% lit)
September 9 (56% lit)
December 9 (79% lit)

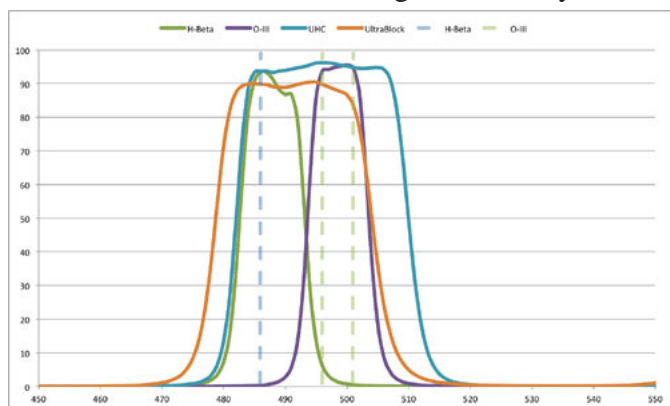
July 8 (23% lit)
October 7 (39% lit)

August 12 (72% lit)
November 4 (24% lit)

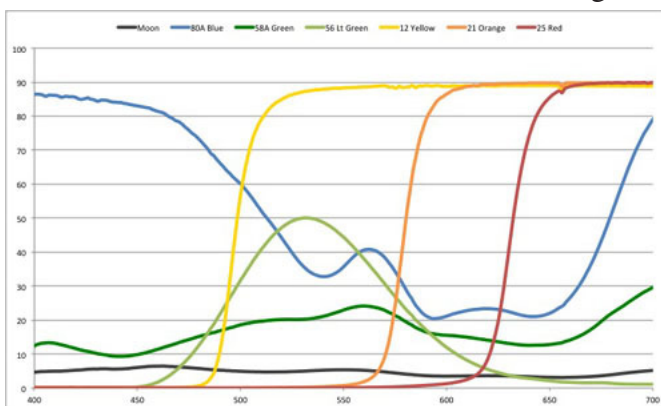
May 19th Meeting Report

At our May 19th meeting, new clubmember Oggie Golub gave a talk on filters. Oggie has access to a spectrophotometer at work, so he took his filter kit to work and borrowed a bunch more from the rest of us and measured their transmission spectra. He learned that they function pretty much as advertised in most cases, passing the wavelengths they're supposed to and blocking the rest. The differences were in the details: how narrow was the band pass, how high was the transmission at their target wavelength, and how consistent were they from batch to batch?

One welcome discovery was that inexpensive filters generally perform just as well as their more expensive brethren. Also, batch-to-batch consistency is very good. Most filters did indeed have peak transmission at the desired wavelengths. The only ones that didn't were old Lumicon filters whose coatings had



Bandpass of narrowband (UHC and Ultrablock) and line (H-Beta and OIII) filters.



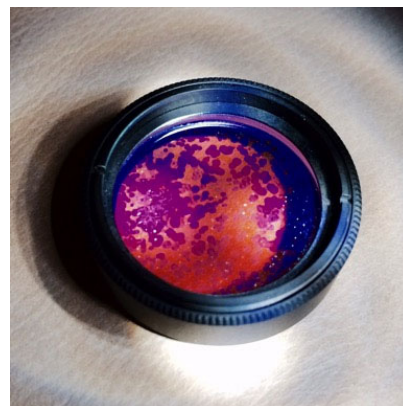
Bandpass of various color filters

deteriorated. If you have any Lumicon filters in the old dark blue cases, check them in bright light and see if the coating is mottled. If so, you might have Oggie check them for you. In some cases the transmission curve had shifted so far that the filters didn't transmit any light at the desired wavelengths anymore.

Oggie also talked about filter selection, helping de-mystify the process of deciding which filters are best for which situations. Broadband filters like the Lumicon Deep Sky filter or the Orion Skyglow filter will pass a wider selection of wavelengths than narrowband filters, and consequently are more useful at masking skyglow while still allowing you to see galaxies and nebulae from town. Narrowband filters like the Lumicon UHC and the Orion Ultrablock pass fewer wavelengths, eliminating more sky glow but cutting into the visibility of galaxies and other non-fluorescing objects. Consequently, narrowband filters are best for glowing nebulae. Line filters have the narrowest band pass, and are good for specific objects. For instance, OIII filters are good for emission nebulae that radiate in oxygen's third ionization state (the Veil, Lagoon, and Swan nebulae, among many others). H-Beta filters are even more specialized: they're good for the Horsehead, California, Cocoon, and similar nebulae that radiate in Hydrogen's second ionization state.

Oggie also talked about using color filters to bring out planetary details, and polarizing filters to dim bright Moonlight. His talk was a treasure trove of great information. Thanks, Oggie!

Also at this meeting, the telescope workshop group showed off the completed 14.7" telescope that they built over the winter and early spring. There were many admiring oohs and aahs, but nobody took it home with them. This scope turned out great, and it's available for loan to club members in good standing. If you're interested, give Jerry Oltion a shout at j.oltion@sff.net and arrange to borrow it.



EAS at the UO Science Fair

The 5th Annual UO Science and Invention Fair was held Saturday, May 7th at the University of Oregon. Jim Kiely represented the EAS there with a booth on astronomy. Attendees were mostly middle schoolers with their teachers. Jim had a bowl of candy, and made the kids each ask a question for a piece of candy. Says Jim: “Many of them were **extremely bright**. I condescendingly asked a boy if he knew anything about our Sun, ‘little fellow?’ He explained the different internal layers and the quantum electrodynamics of H-He fusion in the core with neutrino entrapment, and then some. ‘What grade is he in?’, to the parents. ‘4th grade now’. I asked, ‘Is his name Sheldon?’ to laughing parents. A 3 yr old asked me the exact temperature on the Sun’s surface! A bunch of these encounters, including a 3rd grade calculus student, made me reapproach my place on the intelligence curve. Speaking with those kids is a real kick and a privelege, anticipating their future contributions to science.”



UO Science Fair in the atrium of Willamette Hall
(R) Jim Kielly at the EAS booth



Equatorial Platform Workshop

The telescope builders who gathered in Jerry Olition’s garage to build the 14.7" telescope for the club had so much fun that nobody wanted to stop after the scope was done. One of the neat aspects of the club’s scope is the equatorial platform it rests on, allowing it to track the stars while maintaining the ease of use of a standard Dobsonian telescope, so the group decided to have an equatorial platform building workshop.

They met twice in May. The first meeting was spent mostly studying models that explained the motion of EQ platforms and learning how and why the platforms work the way they do. At the second meeting the group started making sawdust, cutting out the top for Oggie’s platform and building a jig to hold it horizontal while rotating around a polar-aligned pipe. The jig will allow the group to make the complex-shaped north bearings that define the platforms’ motion.

The group is just getting started, and there’s room for more. If you’re interested in joining the fun, contact Jerry at j.oltion@sff.net



Thank You Storage Junction

Storage Junction has donated the use of a storage unit for us to hold our loaner telescopes when they’re not in use. EAS would like to thank Storage Junction for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. Storage Junction is located at 93257 Prairie Road (at the intersection of Hwy 99 and Hwy 36, 3 miles south of Junction City) Phone: 541-998-5177

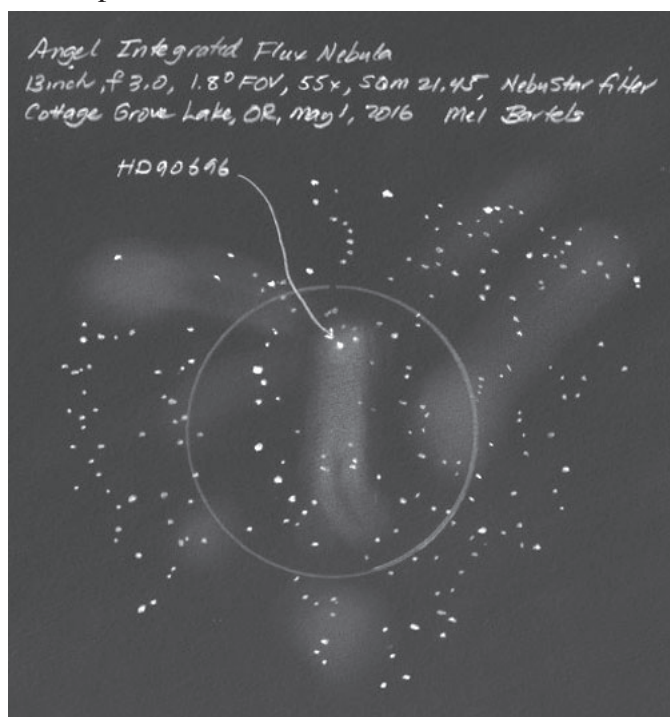
May Observing Report

May offered us several great nights. Sunday the 1st gave us one of the best nights so far of the year, with steady skies, good transparency, warm temperatures, and no dew. Several of us went to Eureka Ridge in the Coast Range, where we stayed until 4:00 a.m. Jupiter looked great early on, and Saturn and Mars looked equally good as they culminated in the south in the wee hours. On the next night, Jeff Phillips got this excellent shot of Jupiter, showing its now-prominent Great Red Spot and the moon Ganymede.

That same weekend, Mel Bartels found a beautiful stretch of the Intergalactic Flux Nebula near M81 and M82. The IFN is dust and gas in our galaxy that's not lit by any particular star, but by the light of the galaxy as a whole. It's extremely difficult to photograph and even harder to see visually, but Mel has been finding it all over the sky with his fast rich-field telescopes.



Jupiter with Great Red Spot and Ganymede on 5/2/16
© 2016 by Jeff Phillips

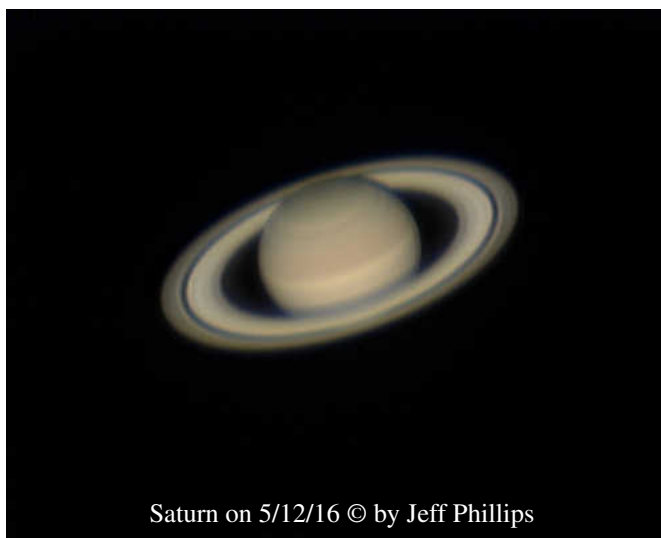


The Angel Integrated Flux Nebula on 5/1/16 © by Mel Bartels

Alan Gillespie got a great Milky Way shot on the 11th (next page). Jeff Phillips got some great shots of Mars and Saturn on the night of the 12th (right). We got a glimpse of the Moon and Jupiter on our Friday-the-13th First Quarter Friday (next page), and Alan got a good shot of the just-past-first-quarter Moon that same night. He got another shot of the



Mars on 5/12/16 © by Jeff Phillips



Saturn on 5/12/16 © by Jeff Phillips

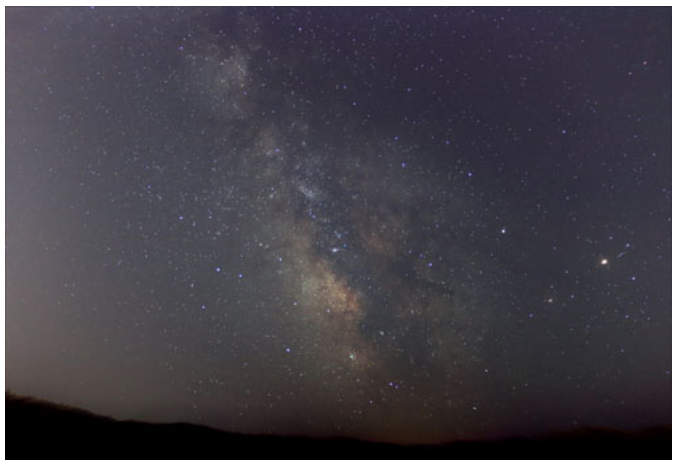


First Quarter Friday Star Party. L-R: Jerry Oltion, Bruce Hindrichs, Bill Murray, Nikki Frank, Bob Andersen, Joe Earp

full Moon a week later, showing off its extreme northern libration on that night.

We had several more good nights out at Eureka Ridge and Eagle's Ridge, putting the club's new 14.7" scope to good use and getting good views of the planets night after night.

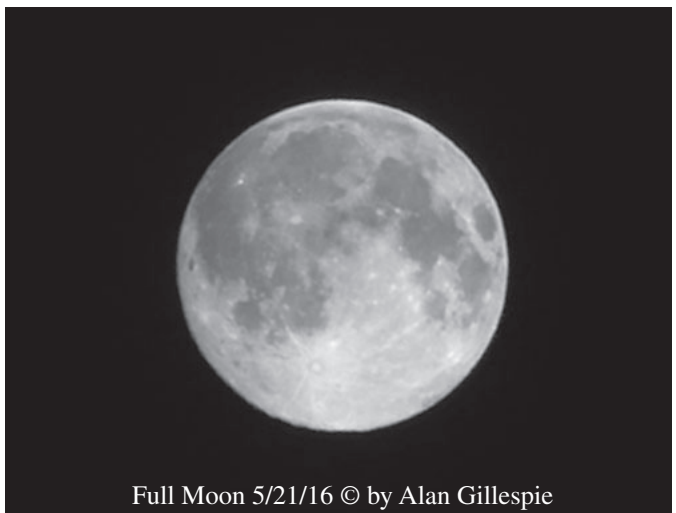
Then a supernova blew in M66. It hasn't risen to naked-eye visibility yet, not even in a 20" scope, but Bill Basham captured it in this exposure taken on May 30th. That same night Wade Richardson



Milky Way 5/11/16 © by Alan Gillespie



First Quarter Moon 5/13/16 © by Alan Gillespie



Full Moon 5/21/16 © by Alan Gillespie

proved that you don't need all the trusses in your scope to have a decent night of observing. Two of his truss mounts broke while he was setting up, so he assembled the scope with the remaining trusses and observed all night anyway. That's dedication.

Here's hoping for more great nights in June!

EAS Observes Mercury Transit

EAS members watched the May 9th transit of Mercury across the Sun from many different locations. Several of us gathered at the College Hill Reservoir and offered views through our telescopes to the public there. Others went to schools around the area and offered the view to the kids. One went to our Eureka Ridge observing site and filmed the whole event. Another went to Prineville to make sure we weren't all skunked if clouds covered the valley. All of us got a good view, and many of us got photographic evidence of it. Here are just a few of the many photos we took.

It was truly amazing to watch the perfectly round, perfectly black dot cross the Sun. Well worth getting up for! If you missed this transit, don't worry; you'll have another chance in November of 2019.



The view from Prineville. © by Joe Earp



A double transit from Eureka Ridge! © by Bill Basham



Observing the transit at the College Hill Reservoir, EAS President Diane Martin in foreground. Photo © by Ken Martin



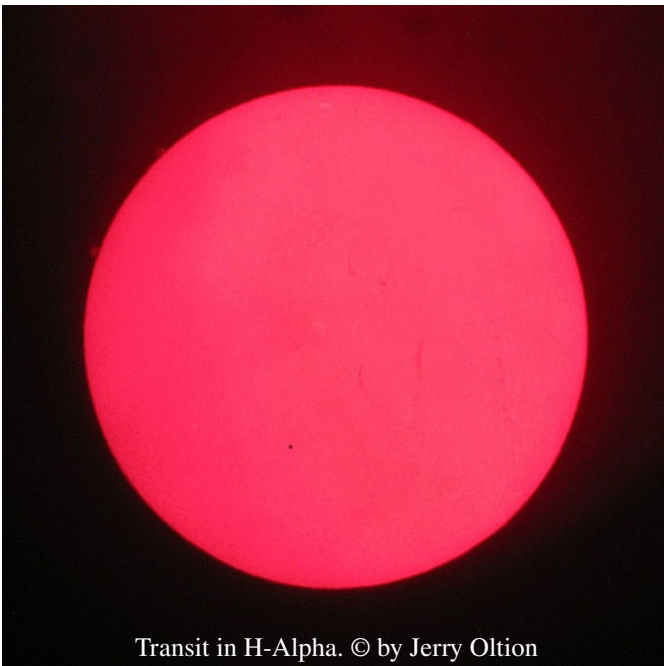
Transit party at UO. © by Dean Walton



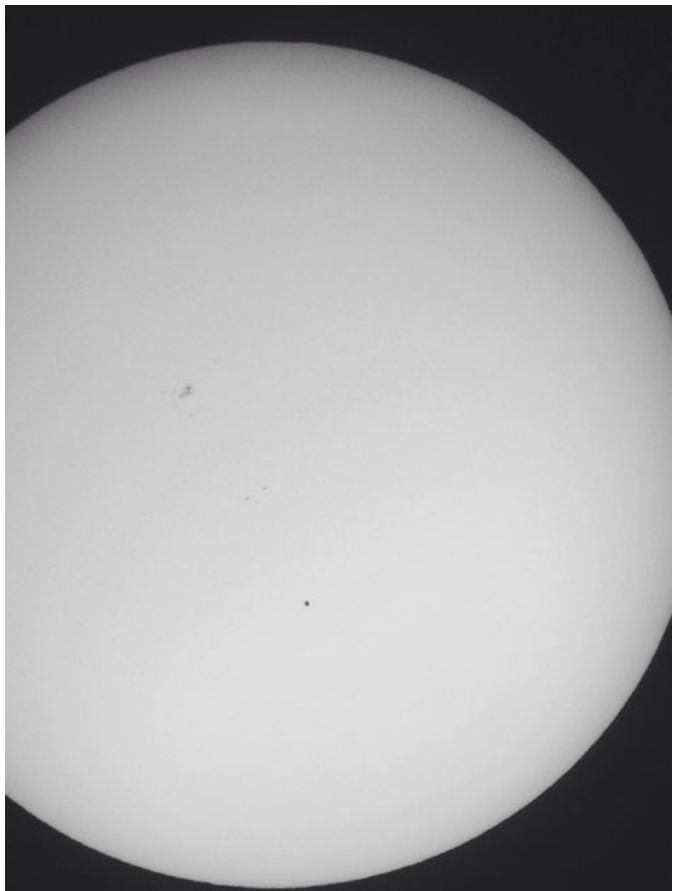
EAS presence at Hamlin Elementary © by Dean Walton



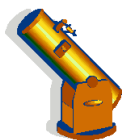
Transit in white light from College Hill.. © by Jerry Oltion



Transit in H-Alpha. © by Jerry Oltion



Transit in white light from College Hill. © by Cory Walker



Observing in June

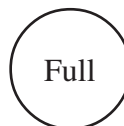


New

1st Q



Full



Last Q



June 4, 8:00 PM	June 12, 1:10 AM	June 20, 4:02 AM	June 27, 11:19 AM
Mercury Rise: 4:34 AM	Mercury Rise: 4:25 AM	Mercury Rise: 4:28 AM	Mercury Rise: 4:44 AM
Venus lost in Sun	Venus lost in Sun	Venus Set: 9:17 PM	Venus Set: 9:25 PM
Mars Set: 4:33 AM	Mars Set: 3:53 AM	Mars Set: 3:15 AM	Mars Set: 2:45 AM
Jupiter Set: 1:55 AM	Jupiter Set: 1:25 AM	Jupiter Set: 00:56 AM	Jupiter Set: 00:30 AM
Saturn Set: 5:45 AM	Saturn Set: 5:11 AM	Saturn Set: 4:37 AM	Saturn Set: 4:08 AM
Uranus Rise: 3:10 AM	Uranus Rise: 2:39 AM	Uranus Rise: 2:08 AM	Uranus Rise: 1:41 AM
Neptune Rise: 1:42 AM	Neptune Rise: 1:10 AM	Neptune Rise: 00:39 AM	Neptune Rise: 00:11 AM
Pluto Rise: 10:52 PM	Pluto Rise: 10:20 PM	Pluto Rise: 9:49 PM	Pluto Rise: 9:20 PM

All times Pacific Daylight Time (March 13 – Nov. 5, 2016 = UT -7 hours) or Pacific Standard Time (November 6, 2016 – March 12, 2017 = UT -8 hours)

Date	Moonrise	Moonset	Twilight Begin	Sunrise	Sunset	Twilight End
6/1/2016	03:29	16:48	03:14	05:32	20:49	23:08
6/2/2016	04:06	18:02	03:13	05:32	20:50	23:09
6/3/2016	04:47	19:15	03:12	05:31	20:51	23:11
6/4/2016	05:33	20:25	03:11	05:31	20:51	23:12
6/5/2016	06:25	21:29	03:10	05:30	20:52	23:13
6/6/2016	07:23	22:26	03:09	05:30	20:53	23:14
6/7/2016	08:25	23:15	03:08	05:30	20:53	23:16
6/8/2016	09:28	23:56	03:07	05:30	20:54	23:17
6/9/2016	10:32		03:06	05:29	20:55	23:18
6/10/2016	11:34	00:32	03:06	05:29	20:55	23:19
6/11/2016	12:35	01:04	03:05	05:29	20:56	23:20
6/12/2016	13:34	01:33	03:05	05:29	20:56	23:21
6/13/2016	14:33	02:00	03:04	05:29	20:57	23:21
6/14/2016	15:30	02:27	03:04	05:29	20:57	23:22
6/15/2016	16:28	02:55	03:04	05:29	20:57	23:23
6/16/2016	17:26	03:25	03:04	05:29	20:58	23:23
6/17/2016	18:23	03:57	03:03	05:29	20:58	23:24
6/18/2016	19:20	04:34	03:03	05:29	20:58	23:24
6/19/2016	20:14	05:15	03:03	05:29	20:59	23:24
6/20/2016	21:05	06:02	03:04	05:29	20:59	23:25
6/21/2016	21:53	06:54	03:04	05:30	20:59	23:25
6/22/2016	22:36	07:52	03:04	05:30	20:59	23:25
6/23/2016	23:15	08:53	03:04	05:30	20:59	23:25
6/24/2016	23:51	09:58	03:05	05:30	20:59	23:25
6/25/2016		11:05	03:05	05:31	21:00	23:25
6/26/2016	00:25	12:13	03:06	05:31	21:00	23:24
6/27/2016	00:58	13:22	03:07	05:32	20:59	23:24
6/28/2016	01:31	14:33	03:07	05:32	20:59	23:24
6/29/2016	02:05	15:44	03:08	05:33	20:59	23:23
6/30/2016	02:43	16:56	03:09	05:33	20:59	23:23

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

Items of Interest This Month

Best month for Saturn this year.

Last good month for Mars.

6/1 Callisto & Ganymede pass 10:30 PM. Red Spot centered 10:12.

6/2 Europa & Ganymede pass 10:10 PM.

6/3 Saturn at opposition. Look for Seeliger effect (brightening of rings for a day or two near opposition).

6/5 Io transit 10:30 PM - 00:46 AM. Shadow transit 11:47 PM - 02:01 AM.

6/8 Callisto transit 8:00 - 11:14 PM. Red Spot centered 11:00 PM.

6/10 First Quarter Friday Star Party.

6/11 Jupiter 1.5° north of Moon 8:00 - Noon. Good chance to see Jupiter by day. Io & Europa pass 9:50 PM.

6/13 Red Spot centered 10:09 PM

6/14 Io shadow transit 8:10 - 10:25 PM.

6/20 Summer solstice 3:34 PM. Red Spot centered 10:58 PM.

6/21 Io shadow transit 10:05 PM - 00:20 AM.

6/24 Ganymede shadow transit 8:35 - 11:42 PM.

6/25 Europa shadow transit 8:41 - 11:24 PM. Red spot centered 10:08

6/28 Io transit 10:48 PM - 01:04 AM. Shadow transit 00:00 - 2:15 AM

6/30 Europa & Io pass 10:20 PM.