

IO - March 2012

Eugene Astronomical Society
Annual Club Dues \$25
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John Loper.

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EAS is a proud member of:

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

Issue 2012-03
Eugene Astronomical Society



Next Meeting: Thursday, March 22nd

Basic Imaging by Sam Pitts

At our March meeting, Sam Pitts will give a talk on Basic Imaging of the night sky, including tips on how to capture great astrophotos with film or digital cameras, including CCD cameras and webcams. It has never been easier to take astrophotos than now, and the equipment to do it with can be very inexpensive. (See page 4 of this very issue of the *Io* for proof.) Come to our March meeting and learn how to do it yourself, probably with equipment you already own.

In addition to Sam's talk, Jacob Strandlien will present the astronomy news for the last several months. 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 March 22nd at EWEB's Community Room, 500 E. 4th in Eugene.

NOTE THAT THE MEETING IS BACK TO THURSDAY THIS MONTH.

Next First Quarter Friday: March 30

Our February 24 star party was clouded out. Here's hoping for better luck in March.

There has been some discussion on our email list about scheduling a standing backup day for clouded-out First Quarter Fridays. We seem to be approaching consensus on choosing the Saturday immediately following the scheduled FQF. That hasn't been officially decided yet, but it looks likely, so keep your eye on our email list for further information on that. We hope to have up-to-date notices on our website, too, of star parties and cancellations and backup star parties. Stay tuned!

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 2012:

March 30 (54% lit)	April 27 (38% lit)	May 25 (24% lit)
June 29 (82% lit)	July 27 (70% lit)	August 24 (57% lit)
September 21 (43% lit)	October 19 (28% lit)	November 16 (15% lit)
December 21 (69% lit)		

Remember Daylight Savings Time

Remember to set your clocks forward one hour on the morning of March 11th, and subtract 7 hours rather than 8 from Universal Time for your astronomical calculations. March 11th is earlier than usual, so programs that correct automatically may not do so until April 1st (the traditional date).

February Meeting Report

Our February meeting was a well-attended talk by John Hartman on “Sun Position Fun.” John showed us many fascinating aspects of the Sun’s apparent motion in our sky from hour to hour and day to day. He explained simple things like why the Sun appears low in the sky in the winter and high in the summer; and more complex things like the analemma and why it makes a figure-eight in the sky. He showed us how to chart the analemma ourselves using the shadow of a stick or a mirror on a windowsill. He explained the equation of time — why the Sun lags behind a 24-hour day some parts of the year and why it moves ahead in other parts, and why there are four times rather than just two when the solar day is exactly 24 hours long.

Many of us came away with a heightened appreciation for the complexity and beauty of the phenomena that result from the geometry of our planet’s orbit around the Sun. Many thanks to John for putting on such a fascinating program!

Our next meeting will be on Thursday, March 22nd, at 7:00 PM in the EWEB north building’s Community Room. This is the first room in the semicircular building to the north of the fountain at EWEB’s main campus on the east end of 4th Avenue.

Here’s our meeting schedule for 2012. Note that we don’t get regular Thursdays anymore, nor are we in the same room every time. EWEB has had trouble scheduling its meeting space to meet all the demand, so we’ve had to take what we can get.

March 22 (Thursday, Community Room)

April 26 (Thursday, Training Room)

May 24 (Thursday, Community Room)

June 28 (Thursday, Training Room)

July 26 (Thursday, Training Room)

August 23 (Thursday, Community Room)

September 19 (Wednesday, Community Room)

October 17 (Wednesday, Community Room)

November 21 (Wednesday, Community)

December 20 (Thursday, Training Room)

Astronomical League’s Analemma Certificate

The Astronomical League gives out observing certificates for people completing various observing programs. We’re probably all familiar with the Messier certificate for observing all the objects on Charles Messier’s “not a comet” list, or the Lunar certificate for identifying some of the major features of the Moon. Now, in perfect timing with John Hartman’s talk (above), they’ve come up with the Analemma Program. Participants must chart the solar analemma over a year’s time, then use the data they’ve gathered to plot the Sun’s path on the celestial sphere, calculate their observing latitude and the tilt of the Earth’s axis, calculate the equation of time, and calculate the eccentricity of the Earth’s orbit. This would be a great time to use what you learned at John’s talk to earn an observing certificate! For more information, check it out at: http://astroleague.org/Analemma_Introduction

Thank You Castle Storage

For the last four 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.



Jeff Phillips Takes a Tour

On the night of February 3rd and the morning of the 4th, Jeff Phillips took a grand tour of the solar system — with his camera. He writes: “These pictures were all made with a 90mm Maksutov. The larger view of the moon was recorded with a Powershot Camera looking through the eyepiece. The lunar closeup used a web-cam, and the planet pics all used a webcam and 2X barlow. The Moon and Jupiter were recorded in the evening, Saturn and Mars between 4 and 5 AM this morning.”

Using the same equipment for all the planet images means that this montage accurately represents their relative sizes as seen from Earth that night. It’s neat to see that Saturn’s rings are indeed just about the same angular diameter as Jupiter, and Mars is nearly the size of Saturn when it nears conjunction.

Also note the great view Jeff got of Schiller Crater on the Lunar closeup. It’s the elongated one to the left, one of very few oval craters on the Moon. Tycho (the prominent crater near top center) and Clavius (the big one below Tycho with the arc of smaller craters in it) are also nicely captured here.

This month is a great one for planet watching. Jupiter and Venus remain high enough at sunset to give us a good view, Mars rises at sunset, and Saturn rises 2-3 hours later. Get out there and look at them when you get the chance! In the meantime, this photo montage has been saved at high resolution so you can zoom in on it for a better look now.



Alan Gillespie and Melissa Davis Capture Two Planets

In early February, Alan Gillespie captured this sunrise from atop Spencer Butte, illustrating quite beautifully why none of us were getting any astronomy done that night. One person's fog bank is another person's cloudscape, provided you get up early enough and hike to the top. We're glad Alan not only did so, but shared his result with us.

On February 23rd, Melissa Davis had a chance to do some observing, and she tried her hand at astrophotography as well. She captured Jupiter and its four major moons in an unusual configuration using her Samsung Alias 2 cell phone through an 8" Orion dob with a 9mm eyepiece. She says, "I just lined up the viewfinder of the camera with the eyepiece of the telescope and tried to hold it still. When I saw dots show up on the screen of the phone, I clicked the picture. I couldn't believe how great it turned out once I got it on the computer. I'd taken a lot of them that night and this is the best one."

A simple camera and telescope is really all you need for photographing the bright planets and the Moon. Thanks for sharing this one with us, Melissa!



Carolyn Porco Lecture on Space Exploration

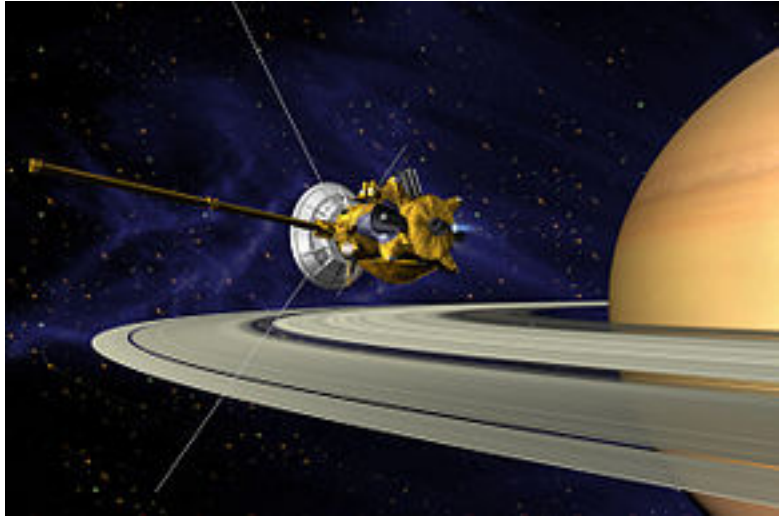
by Rick Kang

Bernie Bopp and Rick Kang from EAS attended the Carolyn Porco Lecture Event (Atkinson Lecture) at Willamette University in early February. Dr. Porco is the Cassini Imaging Team Leader, thus responsible for the acquisition and processing of data from the spacecraft's cameras. The Cassini/Huygens mission launched from Earth in 1997, arrived at Saturn in July of 2004, and continues to orbit the planet. The spacecraft deployed the Huygens lander vehicle that touched down on Saturn's largest moon, Titan, in January, 2005. The Cassini spacecraft is in a "flowerpetal" trajectory that brings the mission near various moons every few months as well as offers opportunities to image the rings and planet from various angles and distances.

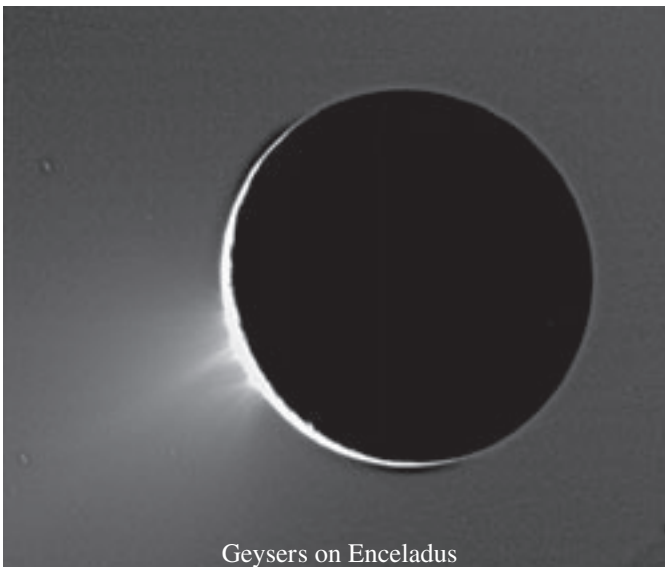
The data is compiled at the Space Science Institute in Boulder, Colorado. The agency is called CICLOPS (Cassini Imaging Central Laboratory for Operations). Their data is available for public access (<http://www.ciclops.org/>), and Dr. Porco is the Director of the CICLOPS project.

Dr. Porco emphasized the significance of being a Scientifically Literate society where decisions about issues at all levels are made based strictly on statistically sound data. A decision process conducted on that basis should lead to rational conclusions.

Dr. Porco then cited the Cassini Mission as a wonderfully engineered tool of data acquisition, not only producing amazing and exciting imagery of a distant world, but amplifying our understanding about a number of common physical properties by providing spectacularly detailed data about them. Studies of the properties of moons and of moons' interactions with rings at Saturn leads us to some initial understandings of dynamic systems such as the formation and evolution of stars and solar systems in general. On a larger scale, ring motion and turbulence (the rings are comprised of large boulders of ice swirling amidst large



Cassini arrives at Saturn



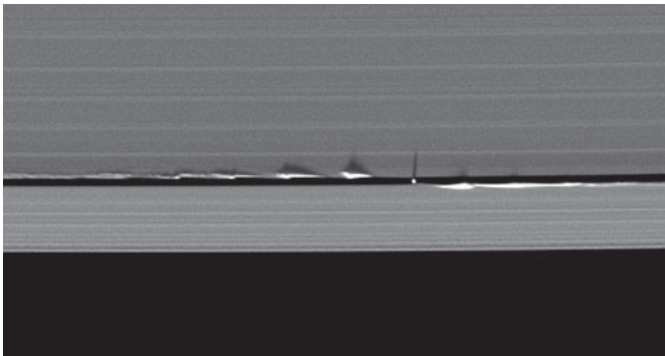
Geysers on Enceladus



Enceladus fills its orbit with ice

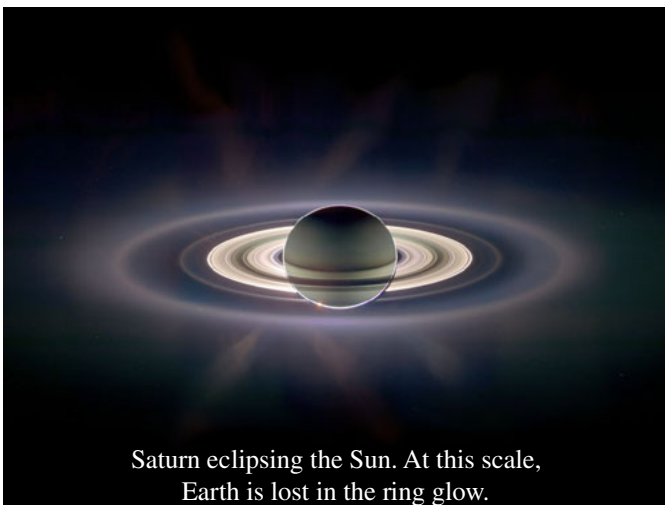
amounts of fine dust) can be applied to explain the formation and behavior of spiral arms within entire galaxies. Exploring the Earth-like geological and atmospheric features of Saturn's largest moon, Titan, should lead to more understanding about Earth's systems. The presence of energy, water, and organic chemistry at the moons Titan and Enceladus tempt us to explore these locations in the search for life and life's origins within the Solar System.

Dr. Porco took us on a narrative tour of the Saturn System, showing a series of illustrative images including closeups of moons, gaps and associated deformations in the rings, the huge storm observed last year, the geysers at the "tiger stripes" of Enceladus, plus information about the spacecraft and flight plan.

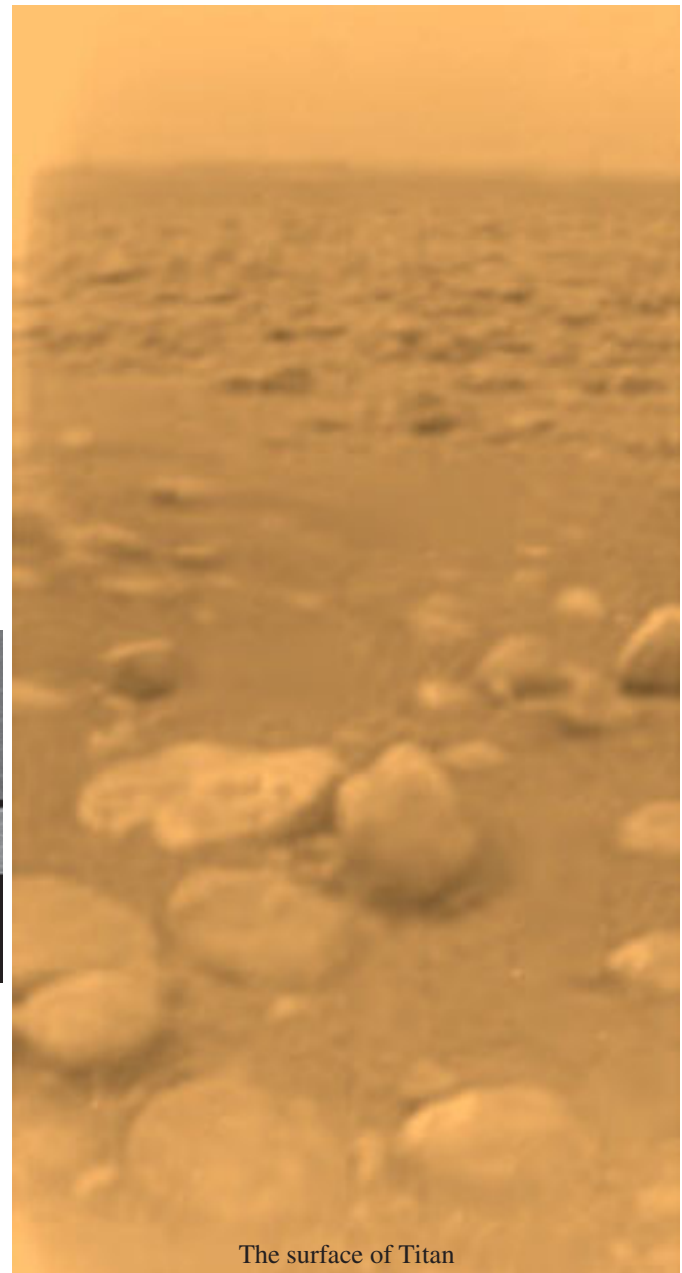


The moon Daphnis influences the rings

She proposed that the day that the Huygens probe touched down on Titan and we received images from Titan's surface, should be celebrated as a significant date in human history, a benchmark for significant successful exploration over a vast distance. The dramatic backlit image of Saturn and its rings, showing the tiny Pale Blue Dot of Earth in the



Saturn eclipsing the Sun. At this scale, Earth is lost in the ring glow.



The surface of Titan

background amidst the rings was her selection for summarizing why we explore and should continue to explore deep space. She hopes that budget permitting, the Cassini Mission will continue to acquire data for several more years. Dr. Porco is a big fan of *Star Trek* and *Star Wars* and incorporated several humorous scenarios involving those programs into her enthusiastic and very informative talk. The crowd of about 300 people gave her a standing ovation and many people stayed afterwards to meet her and talk with her at the stage. We hope she'll return to Oregon with an encore performance.



Collaboration Yields Images of Stars Being Born

Courtesy NASA

Astronomers have spotted young stars in the Orion nebula changing right before their eyes, thanks to the European Space Agency's Herschel Space Observatory and NASA's Spitzer Space Telescope. The colorful specks — developing stars strung across the image — are rapidly heating up and cooling down, speaking to the turbulent, rough-and-tumble process of reaching full stellar adulthood.

The rainbow of colors represents different wavelengths of infrared light captured by both Spitzer and Herschel. Spitzer is designed to see shorter infrared wavelengths than Herschel. By combining their observations, astronomers get a more complete picture of star formation.

In the portion of the Orion nebula pictured, the telescopes' infrared vision reveals a host of embryonic stars hidden in gas and dust clouds. These stars are at the very earliest stages of evolution.

A star forms as a clump of this gas and dust collapses, creating a warm glob of material fed by an encircling disk. In several hundred thousand years, some of the forming stars will accrete enough material to trigger nuclear fusion at their cores, and then blaze into stardom.

Herschel mapped this region of the sky once a week for six weeks in the late winter and spring of 2011. To monitor for activity in protostars, Herschel's Photodetector Array Camera and Spectrometer probed long infrared wavelengths of light that trace cold dust particles, while Spitzer gauged the warmer dust emitting shorter infrared wavelengths. In this data, astronomers noticed that several of the young stars varied in their brightness by more than 20 percent over just a few weeks. As this twinkling comes from cool material emitting infrared light, the material must be far from the hot center of the young star, likely in the outer disk or surrounding gas envelope. At that distance, it should take years or centuries for material to spiral closer in to the growing starlet, rather than mere weeks.

A couple of scenarios under investigation could account for this short span. One possibility is that lumpy filaments of gas funnel from the outer to the central regions of the star, temporarily warming the object as the clumps hit its inner disk. Or, it could be that material occasionally piles up at the inner edge of the disk and casts a shadow on the outer disk.

"Herschel's exquisite sensitivity opens up new possibilities for astronomers to study star formation, and we are very excited to have witnessed short-term variability in Orion protostars," said Nicolas Billot, an astronomer at the Institut de Radioastronomie Millimétrique (IRAM) in Grenada, Spain who is preparing a paper on the findings along with his colleagues. "Follow-up observations with Herschel will help us identify the physical processes responsible for the variability."

Herschel is a European Space Agency cornerstone mission, with science instruments provided by consortia of European institutes and with important participation by NASA. NASA's Herschel Project Office is based at JPL. JPL contributed mission-enabling technology for two of Herschel's three science instruments. The NASA Herschel Science Center, part of the Infrared Processing and Analysis Center at the California Institute of Technology in Pasadena, supports the United States astronomical community. Caltech manages JPL for NASA.

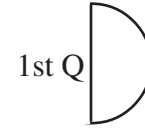


This view of the Orion Nebula highlights fledgling stars hidden in the gas and clouds. Image credit: NASA/ESA/JPL-Caltech/IRAM





Observing in March



March 8	March 14	March 22	March 30
Mercury Set: 7:44 PM	Mercury Set: 8:23 PM	Mercury Behind sun	Mercury Rise: 6:18 AM
Venus Set: 10:10 PM	Venus Set: 11:22 PM	Venus Set: 11:37 PM	Venus Set: 11:51 PM
Mars Set: 6:51 AM	Mars Set: 7:22 AM	Mars Set: 6:43 AM	Mars Set: 6:06 AM
Jupiter Set: 10:26 PM	Jupiter Set: 11:09 PM	Jupiter Set: 10:46 PM	Jupiter Set: 10:24 PM
Saturn Rise: 9:24 PM	Saturn Rise: 9:58 PM	Saturn Rise: 9:24 PM	Saturn Rise: 8:50 PM
Uranus Set: 7:24 PM	Uranus Set: 8:02 PM	Uranus Behind Sun	Uranus Rise 6:50 AM
Neptune Rise: 6:02 AM	Neptune Rise: 6:39 AM	Neptune Rise: 6:08 AM	Neptune Rise: 5:37 AM
Pluto Rise: 3:01 AM	Pluto Rise: 3:38 AM	Pluto Rise: 3:06 AM	Pluto Rise: 2:35 AM

All times: Pacific Standard Time (Nov 6, 2011-March 10, 2012) = UT -8 hours or U.S. Pacific Daylight Time (March 11-November 3, 2012) = UT -7 hours.

Daylight savings time begins March 11

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight	
					Begin	End
3/1/2012	11:17	02:02	06:48	18:02	05:13	19:38
3/2/2012	12:11	02:51	06:47	18:03	05:11	19:39
3/3/2012	13:12	03:35	06:45	18:04	05:09	19:40
3/4/2012	14:17	04:14	06:43	18:05	05:07	19:41
3/5/2012	15:27	04:49	06:41	18:07	05:06	19:43
3/6/2012	16:39	05:21	06:40	18:08	05:04	19:44
3/7/2012	17:53	05:51	06:38	18:09	05:02	19:45
3/8/2012	19:08	06:21	06:36	18:11	05:00	19:47
3/9/2012	20:25	06:51	06:34	18:12	04:58	19:48
3/10/2012	21:42	07:24	06:33	18:13	04:57	19:49
3/11/2012	23:57	09:00	07:31	19:14	05:55	20:51
3/12/2012		09:43	07:29	19:16	05:53	20:52
3/13/2012	01:09	10:32	07:27	19:17	05:51	20:53
3/14/2012	02:13	11:29	07:25	19:18	05:49	20:55
3/15/2012	03:09	12:31	07:24	19:19	05:47	20:56
3/16/2012	03:56	13:37	07:22	19:21	05:45	20:57
3/17/2012	04:35	14:43	07:20	19:22	05:43	20:59
3/18/2012	05:08	15:50	07:18	19:23	05:41	21:00
3/19/2012	05:37	16:54	07:16	19:24	05:39	21:02
3/20/2012	06:03	17:58	07:14	19:26	05:37	21:03
3/21/2012	06:27	19:00	07:13	19:27	05:35	21:04
3/22/2012	06:52	20:02	07:11	19:28	05:33	21:06
3/23/2012	07:17	21:03	07:09	19:29	05:31	21:07
3/24/2012	07:44	22:03	07:07	19:30	05:29	21:09
3/25/2012	08:14	23:02	07:05	19:32	05:27	21:10
3/26/2012	08:47	23:59	07:04	19:33	05:25	21:12
3/27/2012	09:26		07:02	19:34	05:23	21:13
3/28/2012	10:11	00:53	07:00	19:35	05:21	21:15
3/29/2012	11:02	01:43	06:58	19:37	05:19	21:16
3/30/2012	11:59	02:28	06:56	19:38	05:17	21:18
3/31/2012	13:00	03:08	06:54	19:39	05:15	21:20

Items of Interest This Month

- First week: Mercury visible after sunset
 All month: Comet Garradd visible in north
 3/3 Callisto crosses under Jupiter's pole
 3/5 Mars as close as it gets for this pass
 3/6 Io shadow transit 7:02 - 9:14 pm
 3/7 Europa begins transit 7:46 pm
 3/12 & 3/13 Venus and Jupiter within 3°
 3/13 Star Party, location to be announced
 3/16 Star Party at Cottage Grove Library
 3/19 Spring Equinox 10:14 pm
 3/20 Callisto crosses under Jupiter's pole
 3/22 Double shadow transit from sunset (7:28) to 8:34, then single shadow until 9:18
 3/23 Very thin crescent Moon visible at sunset
 3/25 Moon near Jupiter
 3/26 Moon near Venus
3/30 First Quarter Friday Star Party

For Current Occultation Information

Visit Derek C. Breit's web site
<http://www.poyntsource.com/New/Regions/EAS.htm>

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.

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