

# IO - January 2015

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Eugene Astronomical Society

Eugene Astronomical Society  
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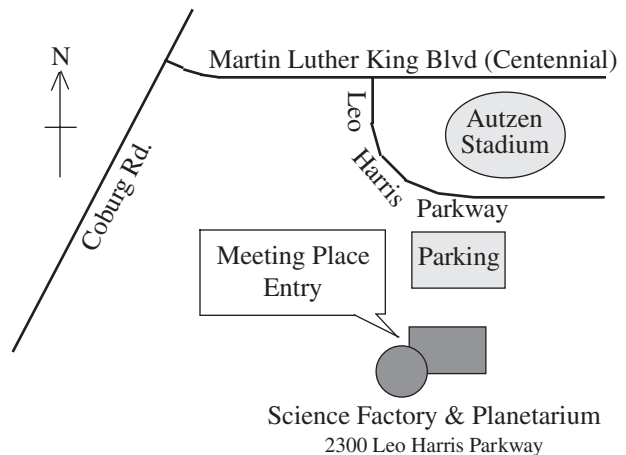


## Next Meeting Thursday, January 15th Telescope Workshop

Our January 15th meeting will be our annual telescope workshop where we help each other figure out how to use all that fancy gadgetry Santa brought us for Christmas. This is a great opportunity to bring that scope you need help with or just want to show off. We'll advertise our services to the public, so if you don't need help on a scope, bring your expertise. You might be able to help someone else.

This is a great opportunity to spread the word about our club and what we do. Tell anyone you know who might be interested in astronomy that this is the meeting to come to if they have questions about gear or about astronomy in general. The structure of this meeting will be very informal, with lots of opportunity to visit with one another and share our various areas of expertise.

The meeting is at 7:00 on Thursday, January 15th at the Science Factory planetarium. Bring your new gear for show and tell even if you don't need help with it!



## Next First Quarter Friday: January 23rd

The only clear day in weeks arrived just in time for our December 26th First Quarter Friday. The Moon was only 31% lit, so we had plenty of (relatively) dark sky to show people fainter objects than usual. The Andromeda Galaxy was particularly nice straight overhead; one of the best views of it we've ever seen from town, and the Orion Nebula rose early enough to let us show people a good view of that.

We had two new telescopes on hand, both of them Vixen VMC110L modified Cassegrains. We all agreed that they were fine scopes, eliciting many oohs and aahs from their happy owners as well as from the general public.

The temperature was in the high 30s, so we chilled out after just a couple of hours, but it was a very nice night out and it was good to be there for the 15-20 people who came around for a Boxing Day treat.

Our next star party is on January 23rd. There will be a double shadow transit on Jupiter from 8:35 onward, and a triple shadow transit from 10:27 – 10:52. Shadow transits are especially cool, since you can

see progress in just a few minutes, and people love coming around again and again for repeat looks. Don't miss 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 2015.

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)

## December 18th Meeting Report

On December 18th we held our annual potluck dinner and swap meet. We were able to use the Science Factory's conference room this year, so we had table space to spread out a veritable feast of food and astronomy equipment for club members to enjoy. We had about 25 people at the height of the meeting, and plenty of wheeling and dealing went on. We brought out several telescopes, mounts, and accessories from the EAS storage unit and asked anywhere from nothing to "make an offer" for them, and they went home with many happy new owners.

A newcomer named John, whose last name I failed to get, donated several items to the swap meet, including a 10" f/6 mirror and several lens blanks and various other optics. David Davis bought the mirror and intends to build a scope to give away.

This was one of our most successful and well-attended swap meets in quite a while. Thanks to everyone who helped make it so!

## Large Collection of Astronomy Books Available Online

Bill Murray pointed out this web site, which offers hundreds of astronomy titles for free download or reading online.

<http://www.e-booksdirectory.com/astronomy.php>

The parent site contains dozens of categories of downloadable books of all types. The site claims that all books are offered legally by their authors or publishers, and many links sent me to the authors' web pages, which lends some confidence that it's legit. Poking around this site and wherever it leads might be a good way to while away a few rainy nights.

### 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.



# Orion is Back

Winter is officially here now, both calendrically and by the appearance of the sky. On Friday December 26th the clouds parted and revealed a whole new set of constellations rising in the east, starting with Orion and Gemini, the stalwarts of winter.

Alan Gillespie took this photo of Orion later in the evening as it was standing high in the south. He captured the colors of Betelgeuse and the Orion Nebula much as the eye sees them.

Lest you think it's easy to take such a shot, here's how Alan describes the process he went through:

"I shot a total of 163 frames on 12/26/14 from 10:20 till 11:47. The first 10 frames were just getting things set up, so I used frames 10 thru 163.

"The exposure settings were 13 sec, f/4.1, ISO604, 65mm effective focal length.

"I used Deep Sky Stacker to stack the frames. There were some high thin clouds rolling through many of the frames, so I set it to use only 90% of the frames. This means that the total exposure was about 30 minutes.

"From there I used PhotoShop to process the image. The first thing I do is Save As so that I do not over-

write the original. Then I crop it down a bit. Then I make an AV Mask. I set the eyedropper into each of the 4 corners so that I can read the values in the Info tab. The conventional wisdom is to set the Gaussian Blur to 80 or 100, but for my wider field images I usually get better results at 250 or more. Recently I have been playing with using Levels to adjust the AV Mask. I adjust the AV Mask Levels, apply the Image, read the eyedropper values, undo Apply Image, re-adjust the AV Mask, and re-apply the image. I keep repeating until I get all four corners as close as I can because subsequent steps will amplify any differences.

"When I finish this step then I Save!

"After that then I adjust Levels, curves, Levels again, etc. For this image I increased Saturation to +70.

"Finally I used Windows Live Photo Gallery to re-size the image smaller in order to be able to Email it."

Not just a point-and-shoot experience! But the results speak to the value of the effort. Well done, Alan.



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# Observing Highlight: The M30-Somethings

The winter sky is full of open clusters. One of the richest parts of the sky for open clusters is in Auriga, high overhead this time of year. That's where we find the M30-somethings. Nobody can remember which one is which, but there are three prominent ones in a row — four if you count the one at the feet of Gemini.

The actual numbers are M35, M37, M36, and M38, in that order as you rise from the feet of Gemini up into the body of Auriga. Ranging from magnitude 5.1 (M35) to 6.4 (M38), they're just barely visible by naked eye under very dark skies. They're much easier to pick out in binoculars, and in fact they're easier in binoculars than in a telescope because they stand out so beautifully from the background with the low magnification and wide field you get in binoculars. If you start at M35 and sweep your way upward, you'll pick them out one after another with very little difficulty.

In a telescope you can spend some time hunting for them, since they're all in the plane of the Milky Way and the starfields are rich all around them. When you do sweep across one, though, you know it: each one is a bright knot of stars amid the richness of the Milky Way.

They each have their own distinctive appearance. M35 is bright and sparkly, with a chain of bright blue stars to the north of the main body. And under dark sky you get a bonus cluster: NGC 2158 is a much fainter (because much more distant) cluster just half a degree to its southwest. Both fit comfortably in a low-power eyepiece, and it's really neat to see two clusters so different yet so close together.

M36 is much coarser than the others, with fewer stars spaced farther apart. It still stands out well from the background. M37 is the most delicate of the bunch, with up to 150 stars visible at high magnification and a single bright star at its center.

M38 looks a little like M35. It's not as showy, but it's just as rich with stars and it also has a companion cluster nearby: NGC 1907. 1907 isn't as rich as NGC 2158 near M35, but it's a noticeable concentration of stars in almost the same orientation from the parent cluster.

All six clusters are beautiful, and worth extended study. Check them out when you get the chance.

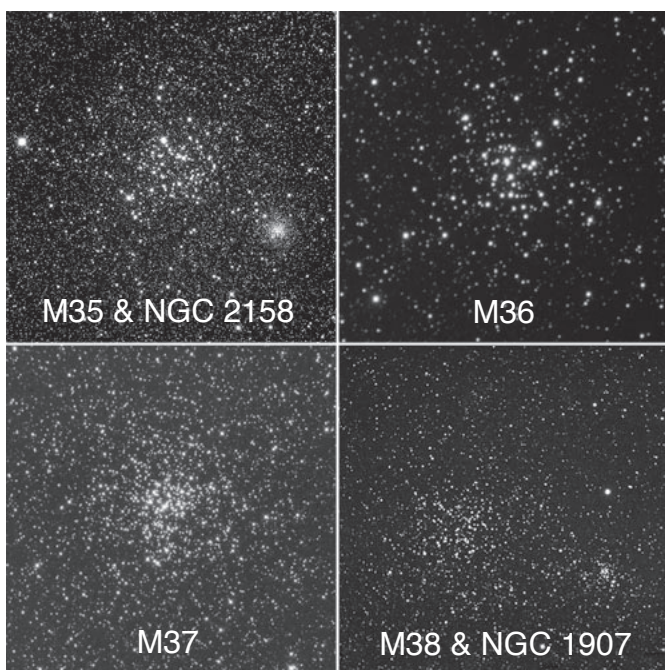
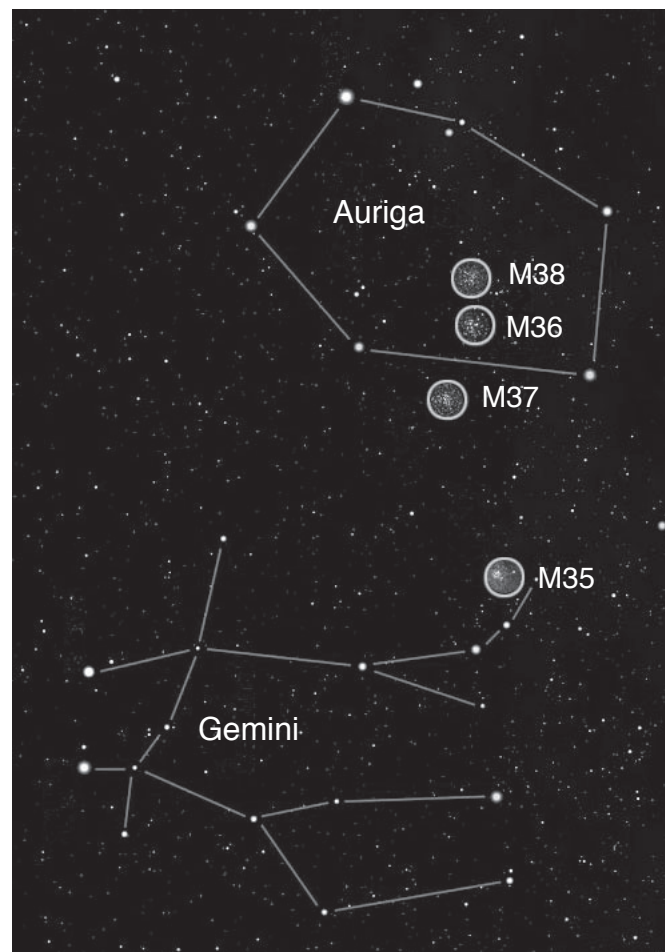


Image credit: NASA, NOAO



# Mutual Occultations and Eclipses 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.

Eclipses are when one moon casts a shadow upon the other. Few eclipses are total; most are just partial. Some are annular when the eclipsing satellite's shadow is smaller than the eclipsed moon.

Times are given in Pacific Standard Time.

1o2 means that satellite 1 occults satellite 2. 1e2 means that satellite 1 eclipses satellite 2.

1=Io 2=Europa 3=Ganymede 4=Callisto

Column "Mag drop" gives the decrease in total magnitude at the maximum point of the occultation or eclipse.

Date 2015	Satel.	Start		End		Mag drop
		h	m	h	m	
Jan 15	1e4	04:30		04:39		0.5
19	3o2	18:31		18:37		0.5
23	4e3	01:06		1:20		1.4
25	3o2	21:13		21:19		0.5
27	2e1	22:18		22:27		0.5
29	1o2	06:31		06:35		0.6

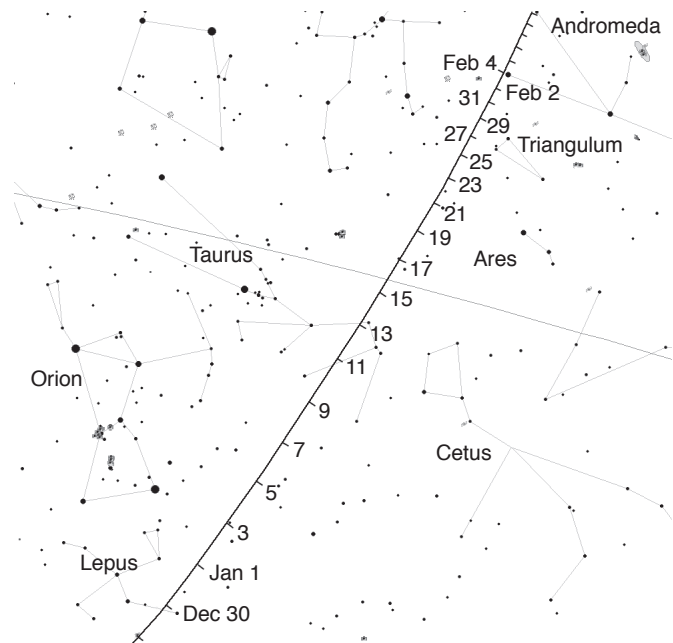


Comet 2014 Q2 Lovejoy, Copyright  
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## Comet Lovejoy in January

This month we're treated to a nice, bright comet that's rising up out of the south and headed right into our best winter sky. Comet 2014 Q2 Lovejoy starts the month in Lepus and crosses through Eridanus, Taurus, Aries, Triangulum, and into Andromeda by month's end. It was 5th magnitude at the end of December, and is expected to reach at least 4th magnitude at closest approach (44 million miles on January 7th). It doesn't reach perihelion until January 30th, so it should stay bright for a while.

Here's an excellent photo by Gerald Rhemann to entice you to look for it, and a finder chart to show you where. The tic marks are for 9:00 pm Pacific time on the dates indicated.





# Observing in January



Jan. 4, 8:53 PM	Jan. 13, 1:46 AM	Jan. 20, 5:14 AM	Jan. 26, 8:48 PM
Mercury Set: 5:57 PM	Mercury Set: 6:31 PM	Mercury Set: 6:33 PM	Mercury Set: 6:00 PM
Venus Set: 6:08 PM	Venus Set: 6:32 PM	Venus Set: 6:51 PM	Venus Set: 7:07 PM
Mars Set: 8:08 PM	Mars Set: 8:10 PM	Mars Set: 8:12 PM	Mars Set: 8:13 PM
Jupiter Rise: 7:47 PM	Jupiter Rise: 7:07 PM	Jupiter Rise: 6:35 PM	Jupiter Rise: 6:07 PM
Saturn Rise: 4:27 AM	Saturn Rise: 3:56 AM	Saturn Rise: 3:31 AM	Saturn Rise: 3:10 AM
Uranus Set: 12:26 AM	Uranus Set: 11:47 PM	Uranus Set: 11:20 PM	Uranus Set: 10:58 PM
Neptune Set: 9:08 PM	Neptune Set: 8:34 PM	Neptune Set: 8:08 PM	Neptune Set: 7:45 PM
Pluto lost in Sun	Pluto lost in Sun	Pluto Rise: 6:35 AM	Pluto Rise: 6:12 AM

All times Pacific Daylight Time (March 8 – October 31, 2015 = UT -7 hours) or Pacific Standard Time (November 2, 2014 – March 7, 2015 = UT -8 hours)

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
1/1/2015	14:25	04:17	07:47	16:45	06:03	18:29
1/2/2015	15:11	05:17	07:47	16:46	06:03	18:30
1/3/2015	16:01	06:12	07:47	16:47	06:03	18:31
1/4/2015	16:55	07:01	07:47	16:48	06:03	18:32
1/5/2015	17:52	07:45	07:47	16:49	06:03	18:33
1/6/2015	18:49	08:23	07:47	16:50	06:03	18:34
1/7/2015	19:47	08:57	07:47	16:51	06:03	18:34
1/8/2015	20:45	09:28	07:47	16:52	06:03	18:35
1/9/2015	21:43	09:57	07:46	16:53	06:03	18:36
1/10/2015	22:40	10:24	07:46	16:54	06:03	18:37
1/11/2015	23:39	10:51	07:46	16:55	06:03	18:38
1/12/2015		11:18	07:45	16:56	06:03	18:39
1/13/2015	00:38	11:48	07:45	16:57	06:02	18:40
1/14/2015	01:38	12:21	07:45	16:59	06:02	18:41
1/15/2015	02:40	12:59	07:44	17:00	06:02	18:42
1/16/2015	03:42	13:43	07:44	17:01	06:01	18:43
1/17/2015	04:44	14:34	07:43	17:02	06:01	18:44
1/18/2015	05:43	15:34	07:42	17:04	06:01	18:46
1/19/2015	06:37	16:41	07:42	17:05	06:00	18:47
1/20/2015	07:26	17:53	07:41	17:06	06:00	18:48
1/21/2015	08:10	19:08	07:40	17:08	05:59	18:49
1/22/2015	08:49	20:23	07:40	17:09	05:58	18:50
1/23/2015	09:25	21:37	07:39	17:10	05:58	18:51
1/24/2015	10:00	22:49	07:38	17:12	05:57	18:52
1/25/2015	10:34	23:59	07:37	17:13	05:57	18:53
1/26/2015	11:09		07:36	17:14	05:56	18:55
1/27/2015	11:46	01:06	07:35	17:16	05:55	18:56
1/28/2015	12:26	02:11	07:34	17:17	05:54	18:57
1/29/2015	13:10	03:11	07:33	17:18	05:54	18:58
1/30/2015	13:58	04:07	07:32	17:20	05:53	18:59
1/31/2015	14:50	04:58	07:31	17:21	05:52	19:00

## Items of Interest This Month

- Good month for Mercury just after sunset
- Venus makes return to evening sky
- Jupiter high enough to view at a civilized hour
- 1/1 Moon occults Delta<sup>2</sup> Tauri at 11:00 PM
- 1/4 Earth at perihelion, 91.4 million miles from Sun
- 1/5 Algol at minimum 9:07 PM
- 1/7 Comet Lovejoy closest to Earth
- 1/8 – 1/12 Mercury and Venus within 1°
- 1/14 Mercury at greatest eastern elongation (19° from Sun)
- 1/19 Mars and Neptune within 1/4°
- 1/21 Thin crescent Moon to the right of Venus
- 1/23 First Quarter Friday Star Party**
- Triple shadow transit on Jupiter 10:27 – 10:52 Pacific time
- 1/25 Moon 0.6° N of Uranus 4:00 AM
- 1/26 Asteroid 2004 BL<sub>86</sub> passes within 750,000 miles of Earth through Cancer. 9th mag, movement easily visible in real time.
- 1/27 Algol at minimum 7:42 PM
- 1/31 and 2/1 Neptune is 1° from Venus



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