

Eugene Astronomical Society



www.eugeneastro.org

IO - December 2018

Eugene Astronomical Society
 Annual Club Dues \$25
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 Additional Board members:
 Oggie Golub, Jim Murray, Ken Martin.

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EAS is a proud member of
 The Astronomical League



Next Meeting Thursday, December 20th, 7:00 p.m.

The Winter Solstice by Jerry Oltion

Our December meeting will be just one day before the winter solstice. In winter at our latitude, the Sun stays low to the horizon and days are short, but the solstice marks the turning point. From then onward, days begin to lengthen again and the Sun rises higher in the sky each day. Mankind has celebrated this turning point for millennia as a time of rebirth and hope.

Jerry Oltion will talk about the physical as well as the sociological aspects of the winter solstice. Why does the Sun dip so low in the sky in winter? What causes the seasons? Will they always be the same, or will astronomical alignments change enough to alter the seasons as we know them? Do other planets in our solar system have seasons?

Come to our December meeting and find out. Meetings are held on the third Thursday of every month at the Science Center planetarium. We start promptly at 7:00, so come early to visit and get a seat.

Next First Quarter Friday: December 14th

Our November 9th star party was clouded out, but our November 10th backup star party was clear and well attended — by EAS members. Alas, we only had a mother and son for guests. We treated them to all the sights they could stand, but they grew cold fairly quickly so we packed up and went home ourselves. At least we didn't get skunked.

Our next First Quarter Friday will be December 14th. 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 2018 and on into 2019. Star parties start at dusk or 6:00, whichever is later. (6:00 in December.)

December 14 (46% lit)
 March 15 (68% lit)
 June 7 (27% lit)
 September 6 (61% lit)

January 11 (29% lit)
 April 12 (54% lit)
 July 5 (19% lit)
 October 4 (44% lit)

February 8 (15% lit)
 May 15 (68% lit)
 August 9, (75% lit)
 November 1 (28% lit)

November 15th Meeting Report

The James Webb Space Telescope — Too Big to Fail?

by Bernie Bopp

At our November meeting, Bernie Bopp gave a rousing talk on the James Webb Space Telescope. When he proposed the talk a few months ago, he questioned whether the project was too complicated and too far over budget to ever succeed, or be worth the trouble if it did, but after researching the subject he became convinced that it was a worthwhile project and one that's likely to succeed. Many of our club members went into his talk feeling the same way Bernie did a few months ago, and emerged with renewed faith and hope in the giant space telescope.

The JWST is a bold new step in space telescope design, with a segmented mirror that folds for launch and a five-layer heat shield that also must fold and unfold perfectly in order to keep the scope cool enough to operate at the mid-range infrared wavelengths it's optimized for. It will be placed at the Earth-Moon L2 point, 1.5 million kilometers away from Earth, so there's no hope of repair if anything goes wrong. The project has already been delayed several times because of glitches in the development and deployment of its many complex systems, and everyone anticipates more delays. With each delay comes more expense. The mission has already cost 9 billion dollars, and nobody believes that will be the final price tag.

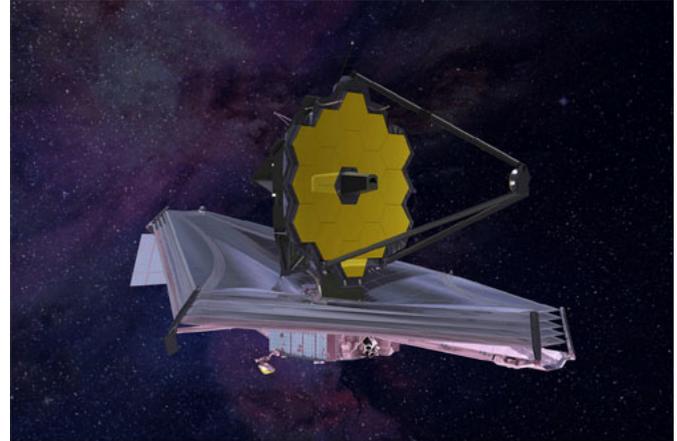
That said, the science we get from this telescope should be worth every penny. The JWST is optimized for infrared imaging, which will let it peer much closer to the Big Bang than the Hubble Space Telescope or any ground-based scope. (Ground based scopes can't see at the wavelengths the JWST can due to absorption of infrared radiation by the atmosphere.) We'll learn much more about the origins of the universe and about the birth and growth of galaxies. And because infrared radiation penetrates dust much better than visible light, we'll also be able to image stars and their solar systems being born within their dust clouds. The JWST will also be able to take spectra of exoplanet atmospheres, looking for signs of life. It's entirely possible that the JWST will answer once and for all the question, "Are we alone in the universe?"

Then there are the serendipitous discoveries no one can anticipate. Since Galileo first spied Jupiter's moons, every advance in astronomy technology has surprised us with unexpected new knowledge, and it seems likely that the JWST will do it again. Whether it's finding an alien civilization or discovering an entirely new class of galaxy or determining the nature of dark matter and dark energy — or something else entirely — our new eyes in space will undoubtedly let us see things we didn't even know existed beforehand.

Thanks, Bernie, for renewing our faith in this amazing telescope!

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



EAS's New Outreach Tool: A Revolution Imager

The EAS has purchased a new outreach tool: a Revolution 2 imaging system. The Revolution 2 consists of a video camera and a 7-inch color screen that displays in real time what the camera sees. The camera goes in place of an eyepiece on any telescope, and functions without need of a computer.

The camera is far more sensitive than the human eye, and its built-in software will stack up to six frames to increase the signal-to-noise ratio. This results in easily visible images of galaxies and nebulae that we can't otherwise see at all anymore due to our increasing light pollution.

The idea came to us during our December 10th star party when we realized that the Pleiades were so lost in the skyglow that we could barely see them by naked eye. Those of us at the star party realized that we were going to need electronic assistance of some sort if we were going to show people anything even remotely faint from College Hill. A few days later, Dan Beacham started the ball rolling with the suggestion that the club buy an EVscope, the all-in-one electronically assisted telescope that has been in development for the last year and is just about ready to start shipping.

After an initial burst of excitement at the prospect, the board grew a bit nervous about the price tag (\$1,700) and the possibility that the scope would not live up to its marketing promises. They decided to hold off until the scope had proven itself, but that still left us with the question of how to provide a better view of faint objects at our star parties in the meantime.

Jim Murray suggested the Revolution 2 imager, which was on sale for the holidays for \$224. It uses the same camera as the EVscope, and comes with a monitor that more than one person can view at a time. (The EVscope has an eyepiece-like screen that the viewer looks into.) The price certainly couldn't be beat, so the board took the plunge and ordered the Rev2. It arrived just a couple days ago, and Jerry Oltion has been testing it with his Astroscan.

So far the results have been promising! The sky hasn't cooperated enough to take the scope outdoors, but it works well indoors. Setup is easy and the image on the screen is sharp and clear. Jerry will have it at our next star party on December 14th, unless he has already passed it along to someone else who is interested in learning to use it.

The idea for this imager is to have it at every star party, augmenting the view through one of our telescopes so the public can see what we otherwise wouldn't be able to show them from town. We hope that there won't be just one or two key operators, but that many club members will take a turn with the imager and not only learn how to use it at star parties but also use it for their own enjoyment inbetween official events.

So come to our next star party and check it out. And if you want to learn to use it yourself, literally check it out. That's what we got it for.



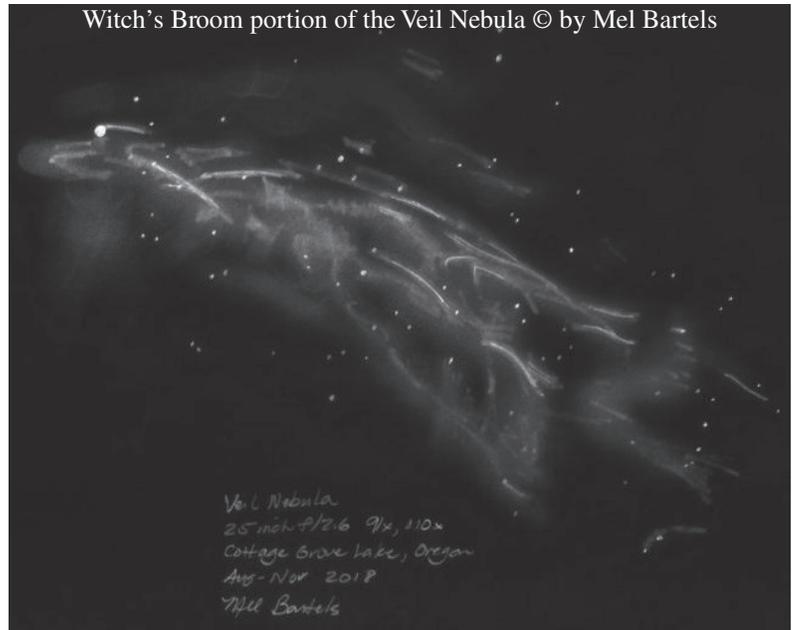
The Revolution 2 imager on an Astroscan, showing an image of a calendar photo of M31 on the other side of the house.

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.

Photo and Sketch Gallery

Mel Bartels and Alan Gillespie were busy again in November. Mel made some amazing sketches of the Veil Nebula as seen through his recently completed 25" scope and Alan took photos of the Leonid meteor shower, the old Moon in the new Moon's arms, the nearly full Moon on Thanksgiving day, and a deep shot of Orion that reveals not only the Orion Nebula, but Barnard's Loop, the Flame Nebula, the Horsehead Nebula, and M78. Zoom in and enjoy these fabulous images.



Western Veil Nebula and Pickering's Triangle
© by Mel Bartels



Leonid meteors 11/18/18 © by Alan Gillespie



Old Moon in new Moon's arms 11/11/18 © by Alan Gillespie



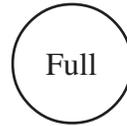
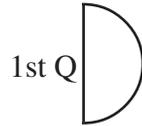
Thanksgiving Moon 11/22/18 © by Alan Gillespie

Orion in all its glory © by Alan Gillespie





Observing in December



Dec 6, 11:20 PM	Dec 15, 3:49 AM	Dec 22, 9:49 AM	Dec 29, 1:34 AM
Mercury Rise: 5:59 AM	Mercury Rise: 5:51 AM	Mercury Rise: 6:07 AM	Mercury Rise: 6:30 AM
Venus Rise: 3:52 AM	Venus Rise: 3:48 AM	Venus Rise: 3:50 AM	Venus Rise: 3:55 AM
Mars Set: 11:44 PM	Mars Set: 11:40 PM	Mars Set: 11:37 PM	Mars Set: 11:34 PM
Jupiter Rise: 6:51 AM	Jupiter Rise: 6:26 AM	Jupiter Rise: 6:06 AM	Jupiter Rise: 5:46 AM
Saturn Set: 6:14 PM	Saturn Set: 5:44 PM	Saturn Set: 5:20 PM	Saturn lost in Sun
Uranus Set: 3:45 AM	Uranus Set: 3:09 AM	Uranus Set: 2:41 AM	Uranus Set: 2:13 AM
Neptune Set: 11:45 PM	Neptune Set: 11:10 PM	Neptune Set: 10:43 PM	Neptune Set: 10:16 PM
Pluto Set: 7:06 PM	Pluto Set: 6:32 PM	Pluto Set: 6:06 PM	Pluto Set: 5:39 PM

All times Pacific Standard Time (November 4, 2018 - March 9, 2019 =UT -8 hours) or Pacific Daylight Time (March 10 - Nov. 2, 2019 = UT -7 hours)

Date	Moon Rise	Moon Set	Twilight Begin	Sun Rise	Sun Set	Twilight End
12/1/2018	01:07	14:02	05:44	07:27	16:35	18:19
12/2/2018	02:16	14:30	05:45	07:28	16:35	18:18
12/3/2018	03:25	14:58	05:46	07:30	16:35	18:18
12/4/2018	04:32	15:27	05:47	07:31	16:35	18:18
12/5/2018	05:39	16:00	05:48	07:32	16:34	18:18
12/6/2018	06:43	16:36	05:49	07:33	16:34	18:18
12/7/2018	07:45	17:16	05:50	07:34	16:34	18:18
12/8/2018	08:42	18:02	05:50	07:35	16:34	18:18
12/9/2018	09:34	18:53	05:51	07:36	16:34	18:18
12/10/2018	10:19	19:47	05:52	07:36	16:34	18:18
12/11/2018	10:58	20:44	05:53	07:37	16:34	18:19
12/12/2018	11:32	21:43	05:54	07:38	16:34	18:19
12/13/2018	12:02	22:42	05:54	07:39	16:34	18:19
12/14/2018	12:29	23:43	05:55	07:40	16:35	18:19
12/15/2018	12:55		05:56	07:40	16:35	18:20
12/16/2018	13:20	00:44	05:56	07:41	16:35	18:20
12/17/2018	13:45	01:47	05:57	07:42	16:35	18:20
12/18/2018	14:13	02:52	05:58	07:42	16:36	18:21
12/19/2018	14:45	04:00	05:58	07:43	16:36	18:21
12/20/2018	15:22	05:10	05:59	07:44	16:37	18:22
12/21/2018	16:07	06:22	05:59	07:44	16:37	18:22
12/22/2018	17:01	07:32	06:00	07:45	16:38	18:23
12/23/2018	18:04	08:37	06:00	07:45	16:38	18:23
12/24/2018	19:15	09:33	06:01	07:46	16:39	18:24
12/25/2018	20:29	10:21	06:01	07:46	16:39	18:24
12/26/2018	21:44	11:02	06:01	07:46	16:40	18:25
12/27/2018	22:57	11:36	06:02	07:47	16:41	18:26
12/28/2018		12:06	06:02	07:47	16:42	18:26
12/29/2018	00:08	12:35	06:02	07:47	16:42	18:27
12/30/2018	01:17	13:03	06:03	07:47	16:43	18:28
12/31/2018	02:24	13:31	06:03	07:47	16:44	18:28

Items of Interest This Month

- Good month to see asteroid 3 Juno and 6 Hebe (the latter of which passes by the Rosette Nebula on nights of 17th thru 22nd)
- Good month to see comet 46P/Wirtanen
- 12/1 Venus at its brightest
- 12/6 Mars approaches to within 1/2° of Neptune. Other side of Earth gets to see them 0.04° apart a few hours after they set here.
- 12/7 Mars and Neptune still relatively close. Observing both nights give you a good chance to detect both planets' motion against the background stars.
- 12/13 Geminid meteor shower peaks early a.m. on the 14th (Shower is usually good several days before or after.)
- 12/14 First Quarter Friday star party.**
- 12/15 Mercury at greatest western elongation (visible before sunrise).
- 12/20 Moon cruises through Hyades. Several occultations visible.
- 12/21 Mercury and Jupiter within 1° at dawn. Winter solstice 2:23 p.m.
- 12/24 Moon approaches Beehive Cluster as it sets.



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