

Eugene Astronomical Society



# Io

December, 2021



PO Box 591 Lowell, OR 97452

[www.eugeneastro.org](http://www.eugeneastro.org)



[1] SH2-170 the Little Rosette Nebula in Cassiopeia

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## ***December Meeting***

**Thursday, December 16th at 7pm.**

The December meeting will be LIVE at the Planetarium. Masks and vaccination will be required to attend. The plan is a meet-and-greet night, with a chance to all get reacquainted and catch up on what everyone has been doing. This is still in early planning, so please keep an eye out for more information!

## ***November Meeting***

Rob Brown talked about silvering mirrors. This is how it used to be done before vacuum-deposited aluminum, and how it's beginning to be done again today due to the increase in mirror size and the cost associated with building and maintaining large vacuum chambers to accommodate them. It's a fascinating topic, full of history and cool chemistry and neat testing methods.

<https://youtu.be/4qoYOJlsCo0>

## ***Return of the Observing Page!***

I want to put out a very special thank you to Jerry Oltion for the return of the observing page! I've been struggling to build up this missing feature, but Jerry stepped in and has provided us with a terrific layout of all this great information again.

Thanks again Jerry!

### ***Do you have something for the newsletter?***

If you have an article, photo, meeting notes, stories, etc. that you would like to share with the members, please contact me, I'd be happy to add them to the newsletter. If you have photos you would like to submit, I'm trying to include more information about the process and equipment used.

Astrophotographers: I want to offer these pages as a way to not only show off your terrific photos, but to provide us with information on how they are taken and processed. Seeing the amount of work that goes into these amazing images is always fascinating, and makes us appreciate them even more!

Bruce Sackett - [bruce@busymind.net](mailto:bruce@busymind.net)

## ***Return of First Quarter Fridays?***

*By Jerry Oltion*

If we're going to start meeting in person again, we should probably think about starting up our First Quarter Friday star parties again, too. I've gone through the calendar and found the most likely dates. We have three tough choices this year, where the actual first quarter falls right between two Fridays.

In October and November, the choice leaves us with one month or the other with no star party, unless we schedule for the first date and use the second one as a backup in case of clouds. That might be the smart thing to do in each case.

We get two in September and two in December no matter what. People can come out with their Christmas presents for the latter one.

Thoughts?

Jerry

### **First Quarter Friday schedule for 2022 (ROUGH DRAFT):**

January 7 (33% illuminated)

February 4 (18% illuminated)  
or 11 (81% illuminated) (1st Q falls on Tuesday morning)

March 11 (66% illuminated)

April 8 (49% illuminated)

May 6 (32% illuminated)

June 3 (18% illuminated)  
or 10 (85% illuminated) (1st Q falls on Tuesday morning again)

July 8 (72% illuminated)

August 5 (58% illuminated)

September 2 (43% illuminated)

September 30 (29% illuminated)

October 28 (16% illuminated)  
or November 4 (88% illuminated) (1st Q is on Monday evening)

December 2 (76% illuminated)

December 30 (61% illuminated)

## Member astrophotography in this issue

### [1] SH2-170 the Little Rosette Nebula in Cassiopeia

Gold Canyon, AZ

October 29 - November 4, 2021

SH2-170, the Little Rosette nebula, is a rather faint hydrogen emission region located in the constellation Cassiopeia. It contains a small cluster of young stars in the center. It is found in the Perseus arm of the galaxy, and it is about 7500 light years from Earth (Ron Brecher).

I imaged this object as the second target of two or three each night in Gold Canyon Arizona. This was the first test of my Losmandy G11 mount using a Periodic Error Correction curve generated with the PEMPro application. Guiding was improved with an average RMS (standard deviation) error in PHD2 between 0.4 and 0.6 arc-seconds. RMS error was highly dependent on environmental conditions, especially seeing. I collected a large number of Hydrogen narrowband filter subframes and about 2 ½ hours for each Red, Green and Blue filter. The best 60% to 70% of the subframes were selected using PixInsight's SubframeSelector process tool. I also used the new GradientScaleNormalization script, which worked very well as the scope tracked from reasonably dark skies in the east to light polluted skies in the west toward Mesa. I tried an evaluation copy of Russ Croman's StarXTerminator tool in PixInsight to remove the stars from the Ha integrated image to create luminance images for the emission nebula and the stars. StarXTerminator worked exceedingly well on the Ha image in the linear state. Starless and stars luminance images were processed separately, and then were recombined to create a stretched, denoised and sharpened master luminance image. The Ha starless image was combined with the Red integrated image, which was then combined with the Green and Blue integrated images to create a RGB color image. The RGB color image was color corrected with PixInsight's PhotometricColorCalibration process tool. The master luminance image was then combined with the RGB image and processed further to produce the final image with the nebulosity glowing red.

Imaging details:

Celestron 9.25" Edge HD SCT

Celestron 0.7x Focal Reducer (FL = 1645mm, f/7)

Celestron off-axis guider with a ZWO ASI 174MM mini guide camera

Losmandy G11 mount with Gemini 2

ZWO ASI 2600MM Pro cooled monochrome camera (-10°C)

ZWO 36mm Hydrogen-a, Red, Green and Blue filters

RA: 0.35244°, DEC: 64.64673°, Equatorial camera rotation: 340°

Software: Sequence Generator Pro, ASTAP plate solving, PHD2 guiding,  
Losmandy Gemini ASCOM mount control and web client interface,  
SharpCap Pro for polar alignment with the Polemaster camera,  
PixInsight 1.8.8-10 with StarXTerminator,  
Photoshop CC 2022

Hydrogen-a 10 min x 40 subframes (400 min), Gain 100, Offset 68, 1x1 binning

Red 2 min x 68 subframes (136 min), Gain 100, Offset 68, 1x1 binning

Green 2 min x 60 subframes (120 min), Gain 100, Offset 68, 1x1 binning

Blue 2 min x 73 subframes (146 min), Gain 100, Offset 68, 1x1 binning

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Annual Club Dues \$25

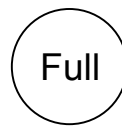
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# Observing in December 2021



New

1st Q



Full



Last Q

**Dec 3, 11:43 PM**

Mercury lost in sun  
 Venus Set: 7:18 PM  
 Mars Rise: 5:57 AM  
 Jupiter Set: 10:21 PM  
 Saturn Set: 8:54 PM  
 Uranus Set: 5:03 AM  
 Neptune Set: 00:34 AM  
 Pluto Set: 7:37 PM

**Dec 10, 5:35 PM**

Mercury Set: 4:50 PM  
 Venus Set: 7:10 PM  
 Mars Rise: 5:55 AM  
 Jupiter Set: 9:59 PM  
 Saturn Set: 8:30 PM  
 Uranus Set: 4:34 AM  
 Neptune Set: 00:06 AM  
 Pluto Set: 7:11 PM

**Dec 18, 8:35 PM**

Mercury Set: 5:13 PM  
 Venus Set: 6:51 PM  
 Mars Rise: 5:52 AM  
 Jupiter Set: 9:35 PM  
 Saturn Set: 8:02 PM  
 Uranus Set: 4:01 AM  
 Neptune Set: 11:31 PM  
 Pluto Set: 6:40 PM

**Dec 26, 6:23 PM**

Mercury Set: 5:43 PM  
 Venus Set: 6:20 PM  
 Mars Rise: 5:49 AM  
 Jupiter Set: 9:11 PM  
 Saturn Set: 7:35 PM  
 Uranus Set: 3:29 AM  
 Neptune Set: 11:00 PM  
 Pluto Set: 6:10 PM

Date	Moon Rise	Moon Set	Twilight Begin	Sun Rise	Sun Set	Twilight End
12/1/2021	04:02	15:02	05:44	07:28	16:35	18:19
12/2/2021	05:22	15:32	05:45	07:29	16:35	18:18
12/3/2021	06:46	16:09	05:46	07:30	16:35	18:18
12/4/2021	08:09	16:57	05:47	07:31	16:34	18:18
12/5/2021	09:25	17:57	05:48	07:32	16:34	18:18
12/6/2021	10:29	19:08	05:49	07:33	16:34	18:18
12/7/2021	11:19	20:24	05:50	07:34	16:34	18:18
12/8/2021	11:58	21:40	05:51	07:35	16:34	18:18
12/9/2021	12:27	22:53	05:51	07:36	16:34	18:18
12/10/2021	12:52		05:52	07:37	16:34	18:18
12/11/2021	13:13	00:03	05:53	07:37	16:34	18:19
12/12/2021	13:33	01:09	05:54	07:38	16:34	18:19
12/13/2021	13:52	02:14	05:54	07:39	16:34	18:19
12/14/2021	14:13	03:17	05:55	07:40	16:35	18:19
12/15/2021	14:36	04:21	05:56	07:41	16:35	18:20
12/16/2021	15:02	05:24	05:56	07:41	16:35	18:20
12/17/2021	15:33	06:28	05:57	07:42	16:35	18:20
12/18/2021	16:11	07:29	05:58	07:43	16:36	18:21
12/19/2021	16:57	08:26	05:58	07:43	16:36	18:21
12/20/2021	17:51	09:17	05:59	07:44	16:37	18:22
12/21/2021	18:51	10:00	05:59	07:44	16:37	18:22
12/22/2021	19:55	10:37	06:00	07:45	16:38	18:23
12/23/2021	21:02	11:07	06:00	07:45	16:38	18:23
12/24/2021	22:09	11:33	06:01	07:46	16:39	18:24
12/25/2021	23:18	11:56	06:01	07:46	16:40	18:24
12/26/2021		12:17	06:01	07:46	16:40	18:25
12/27/2021	00:27	12:39	06:02	07:47	16:41	18:26
12/28/2021	01:39	13:02	06:02	07:47	16:42	18:26
12/29/2021	02:55	13:28	06:02	07:47	16:42	18:27
12/30/2021	04:14	14:00	06:03	07:47	16:43	18:28
12/31/2021	05:36	14:41	06:03	07:47	16:44	18:29

All times are for Eugene, Oregon Latitude 44° 3' Longitude 123° 06'.  
 All times Pacific Standard Time (November 7, 2021 - March 12, 2022 = UT -8 hours) or Pacific Daylight Time (March 13 - Nov 5, 2022 = UT -7 hours).

## Items of Interest This Month

12/1-12/12 Comet C/2021 A1 Leonard visible in morning sky. After 12th, visible in evening.  
 12/1 Ganymede shadow transit 7:09 – 10:41 PM  
 12/2 Red spot transits 7:23 PM  
 12/3 Europa and Ganymede cross paths 7:00 PM  
 12/4 Algol at minimum 11:49 PM  
 12/5 Io shadow transit 5:13 – 7:31 PM  
 12/6 Crescent Moon 2.5° below Venus at dusk  
 Io and Europa cross paths 6:30 PM  
 12/7 Algol at minimum 8:38 PM. Ganymede transit begins 6:01 PM (not shadow transit).  
 12/10 Callisto and Ganymede cross paths 7:11 PM  
 12/12 Io shadow transit 7:09 – 9:26 PM Red spot transits 5:43 PM  
 12/12+ Comet Leonard now visible in evening.  
 12/13-14 Geminid meteors early 14th.  
 12/16 Callisto and Ganymede close til Jupiter sets.  
 12/17 Europa shadow transit 4:51 – 7:39 PM  
 12/19 Callisto and Ganymede close until Jupiter sets.  
 12/21 Winter Solstice 7:59 AM. Io shadow transit from sunset until 5:50 PM  
 12/26 Callisto transit 5:50 – Jupiter set. Not a shadow transit, but Callisto is dark. Io and Europs cross paths 6:50 PM  
 12/27 Algol at minimum 10:22 PM  
 12/27 – 12/31 Mercury and Venus near one another, visible in twilight just after sunset  
 12/28 Io shadow transit 5:29 – 7:46  
 12/29 Europa and Ganymede cross paths 7:00 PM  
 12/30 Algol at minimum 7:11 PM