Howard Astronomical League Monthly Meeting

October 19th, 2023

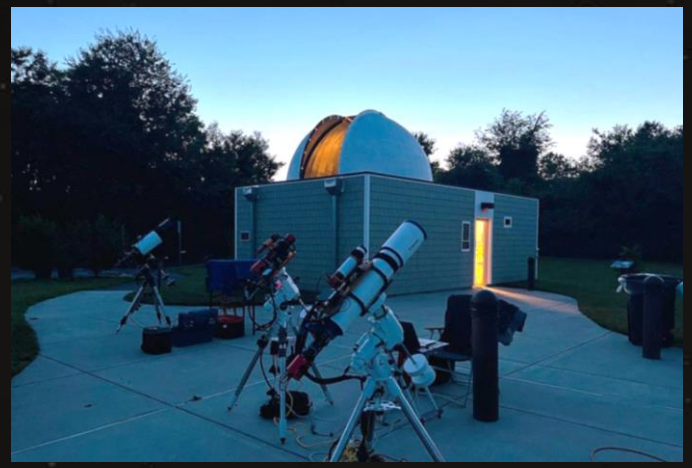
Tonight's Agenda, October 19th, 2023

- Introductions
- Announcements
  - Star Parties & Outreach
  - Book of the month – Krystal Rolon
- Featured speaker – Bryan Holler, Space Telescope Science Institute
- What's Out in the Sky This Month…
  - Solar – Phil Whitebloom
  - Shallow Sky – Jim Tomney
  - Space-Based Astronomy – Wayne Baggett
- Members' Astro-Images and Sketches
- Wrap-up & Discussion

Star Parties…

HAL's 2023 Scheduled Star Parties

Month	Date	Invitees
March	18	Members
March	25	Public
April	15	Members
April	22	Public
May	20	Members
May	27	Public
June	17	Members
June	24	Public
July	15	Members
July	22	Public
August	12	Members
August	26	Public
September	9	Members
September	23	Public
October	14	Members
October	21	Public
November	04	Members
November	11	Public



Regional Star Party info…
https://skyandtelescope.org/astronomy-resources/annual-stargazing-events/

Note about Impromptu Star Parties & "Remote" Impromptu Star Parties

Don't forget to keep an eye out for impromptu events as we are due for some good weather

Note: if you're not already on the impromptu mailing list and would like to join there are instructions on the howardastro.org

Impromptu Mailing List (howardastro.org)

(you can find a link to this page from the website home page under the "Hal Info" dropdown menu)

Solar Eclipse STEM Festival Event at HALO
October 14th

Book of the Month

Title:

- RED PLANET

Author:

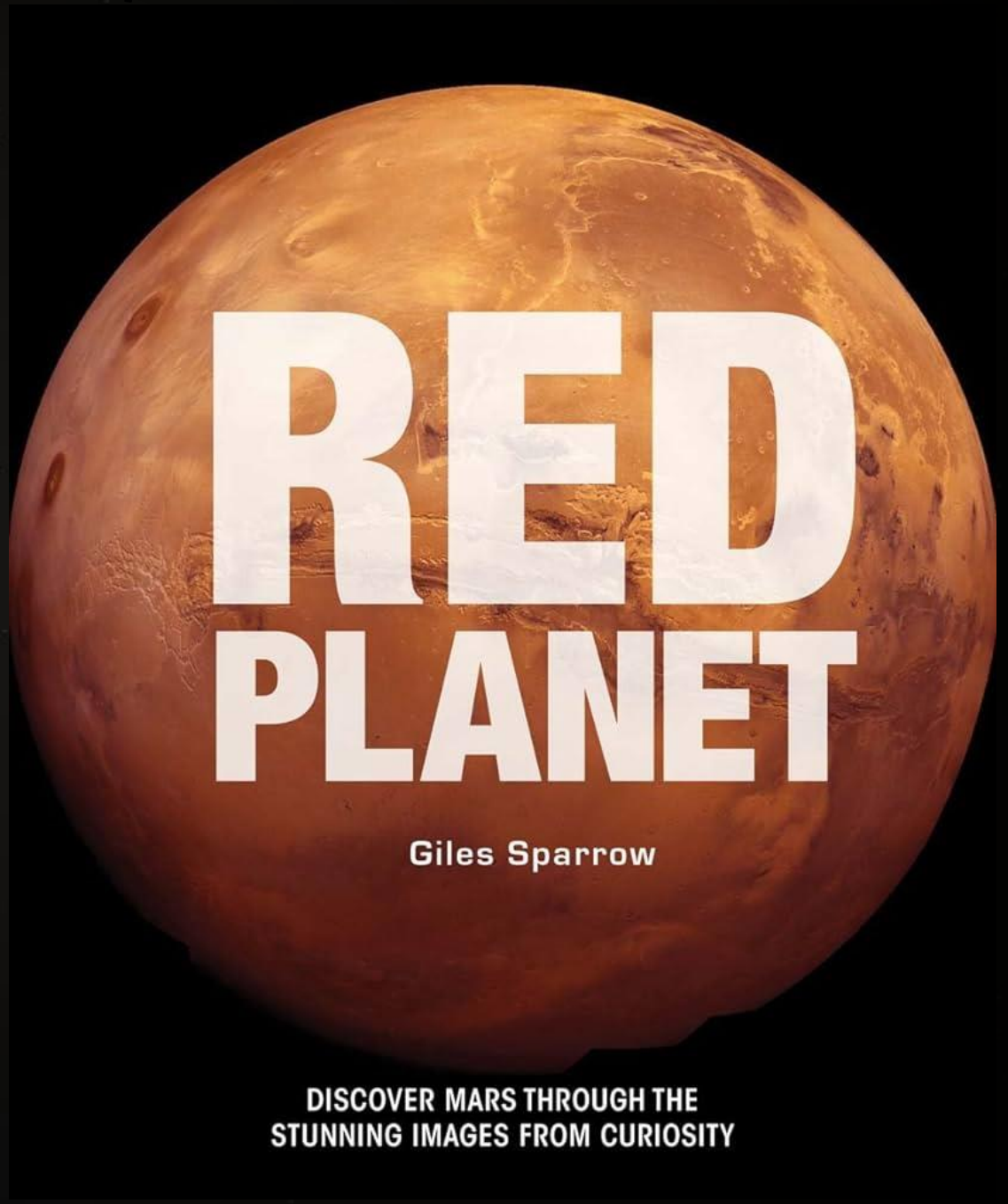
- Giles Sparrow

Length:

- 144 pages

Audience Level:

- Beginner Friendly
- Intermediate
- Advance/Experienced



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Bryan Holler, Scientist I - Space Telescope Science Institute:

Stellar Occultations by Small Solar System Bodies: Tiny Shadows, Big Science

Bryan Holler

- Dr. Holler first knew that he wanted to be an astronomer in August 2003, during heightened interest in the close approach of Mars to the Earth. He entered college a few years later at the University of Maryland as an Astronomy major and earned his PhD at the University of Colorado, Boulder in 2016. For the past 7 years he has worked at the Space Telescope Science Institute in Baltimore, providing support for solar system observations with the James Webb Space Telescope. His research focuses on studies of Pluto and other trans-Neptunian objects, with specific investigations into surface compositions, rotation periods, satellite orbits, and constraining physical properties through stellar occultations.

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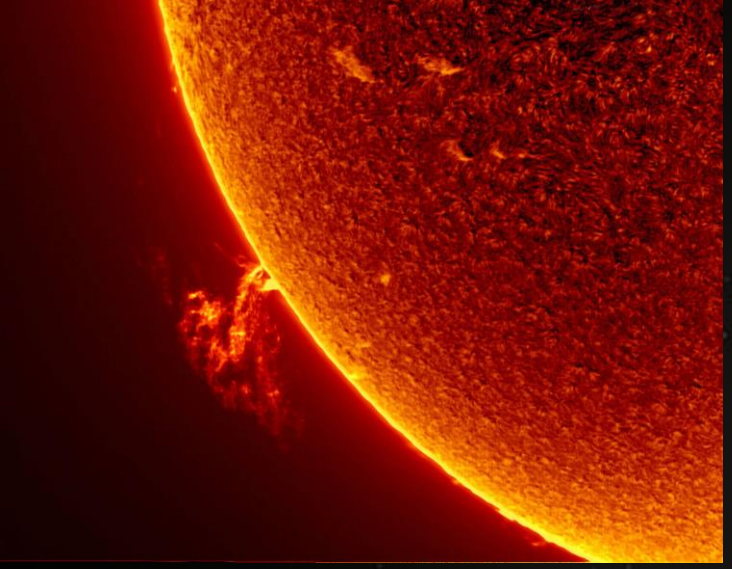


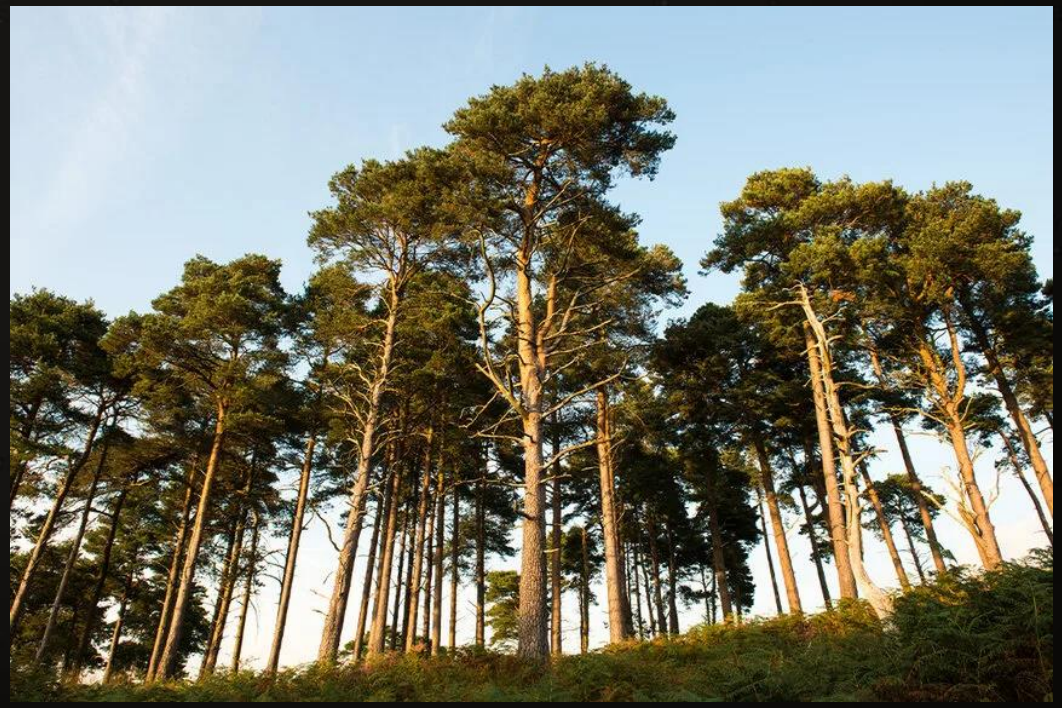
Ancient Solar Storm 10 Times More Powerful Than Any in Recorded History

SYFY

Ancient Solar Storm Captured in 14,000 Year Old Tree Rings

Cassidy Ward

Traveling along magnetic field lines, charged particles interact with molecules in the atmosphere, causing them to light up in brilliant aurora. They also cause chemical reactions, triggering a rapid burst of carbon isotopes. Scientists hypothesized those carbon isotopes would get gobbled up by trees and written in their rings, and they were right.

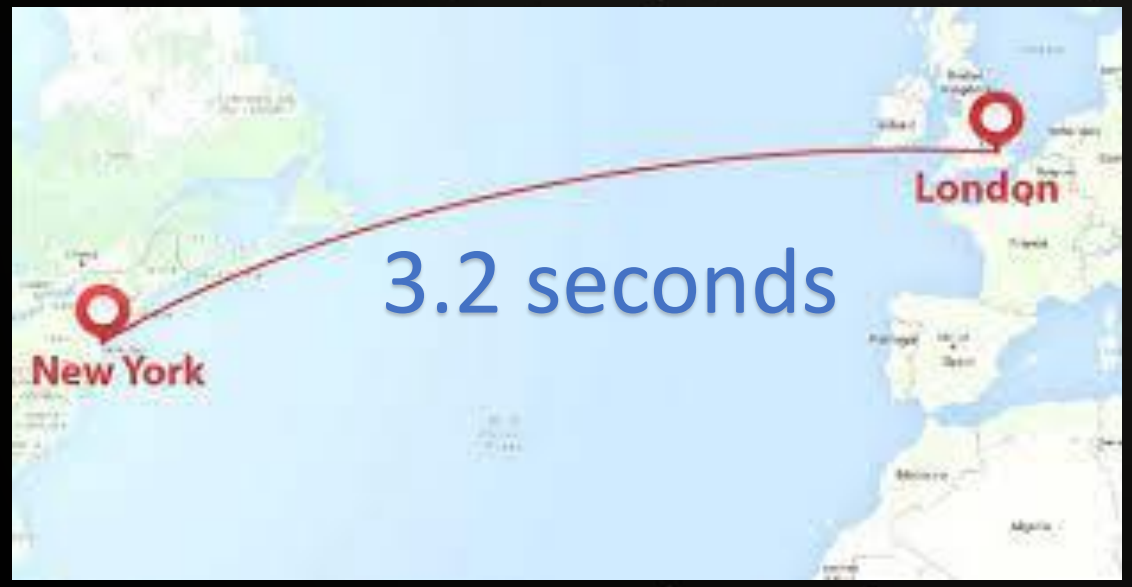


Stand of Scots pine trees (Pinus sylvestris) in Ashdown Forest, Sussex, England. Photo: James Warwick/Getty Images

There are 172 subfossil trees (trees in the process of fossilization which still retain biological material) in the area, dating to between 14,400 and 13,700 years ago. Those trees lived at the tail end of the last ice age and were later buried in loamy deposits where they were partially preserved. Their fractured trunks are all that remain, exposing the inner rings and giving researchers a glimpse into the deep past.

The Parker Solar Probe Sets New Record for Fastest Spacecraft

On August 21, the probe completed a close pass by Venus which pushed the probe closer to the Sun and increased its speed from 586,834 kilometers per hour (364,660 miles per hour) to a blistering 635,266 kilometers per hour (394,736 miles per hour)



On September 27, Parker completed its 17th close pass of the Sun at a distance of only 4.51 million kilometers (7.26 million miles) above the surface, its closest distance to date. As it proceeds, Parker will continue to circle the cosmic drain, falling ever closer to the Sun's surface on each pass. On its last three orbits, scheduled for late 2024 and 2025, Parker will fly within 6.16 million kilometers (3.83 million miles) of the Sun's chaotic surface. It will also set another solar system speed record when the probe hits its maximum speed of 692,000 kilometers per hour (430,000 miles per hour).

Shallow Sky Highlights for Oct-Nov 2023

- *Mercury is a poor target as it swings behind the Sun (Superior Conjunction)*
- *Venus is excellent pre-dawn object, having reached its greatest altitude for this apparition earlier this morning. From here on out it gradually shrinks in size and grows in phase until superior conjunction next June.*
- *Jupiter will reach opposition amid Aries on Nov 3rd , reaching 49.5" in size (about as large as it can appear). Also, see S&T for opportunity to do some citizen science by measuring the bending of star light caused by Jupiter's massive gravity on October 29th. (Article)*
- *Saturn continues to be well placed for observation. Can you see the shadow of the globe on rings? How about Cassini's Division? Consider doing some sidewalk astronomy featuring Saturn on Hallowe'en evening*
- *Uranus reaches opposition on Nov 13th and is well placed for viewing. For a challenge, try visually spotting the moon Titania (14th magnitude) . https://skyandtelescope.org/observing/interactive-sky-watching-tools/the-elusive-moons-ofuranus/*

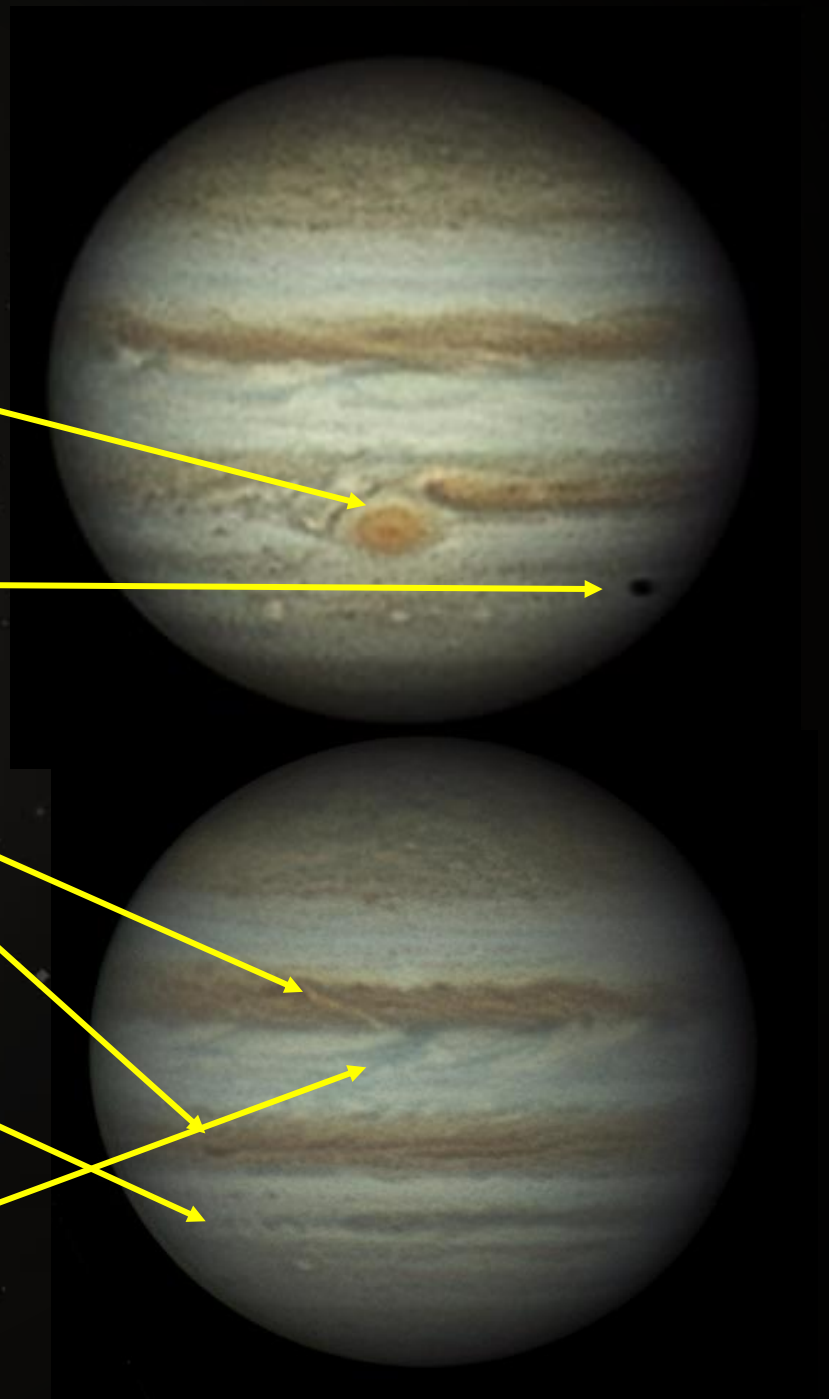
Orionids Meteor Shower

- Comet Halley may not be back for a while, but it still lights up our sky each October as its dusty exhaust tail intersects Earth as the Orionid Meteor Shower!
- A fairly reliable shower, producing ~20 meteors an hour (your mileage will vary based on your light pollution and sky transparency)
- Favorable circumstances this year.
  - Peak is evening of October 21-22 – early Sunday morning the 22nd is likely optimal viewing time.
  - Weekend so you can nap Sunday afternoon
  - Moon sets a little before midnight

Jupiter at Opposition

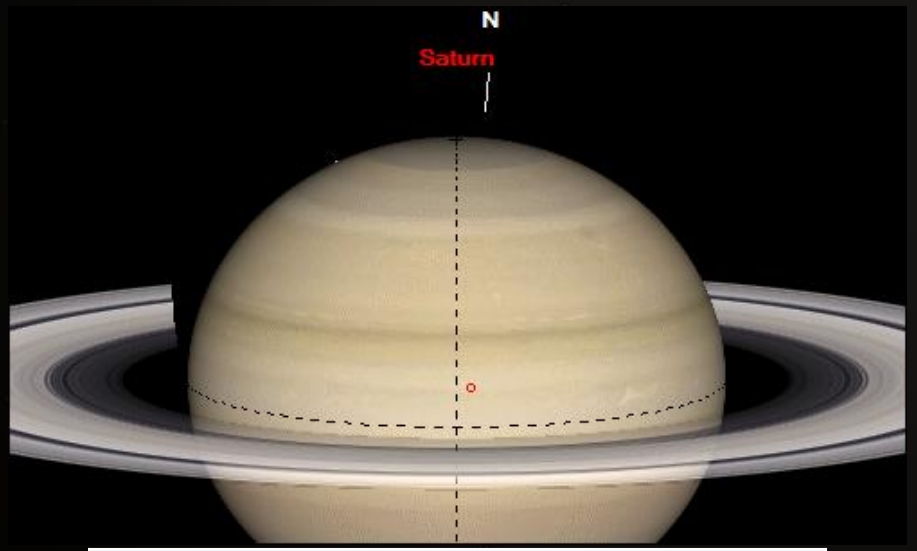
- What can I see in my scope?
- Great Red Spot
  - Fairly prominent this apparition, could be seen in scopes as small as 80mm with good seeing. Also, the preceding part of South Equatorial Belt should appear quite dark
- Moon Events (Transits, Eclipses, Occultations)
- North & South Equatorial Belts (NEB, SEB)
  - Most obvious feature, visible in even small scopes. In larger instruments can look for variations in intensity as well as features cropping up within them such as loops, rifts, or knots.
- South Temperate Belt (STB)
  - Visible over about half the planet, may catch the point where it starts
- Blue Festoons
  - Slate-gray “hot spots” can crop up along the edge of the NEB, can be quite intense at times

https://www.youtube.com/watch?v=GoZhIvm4-8A&t=840s



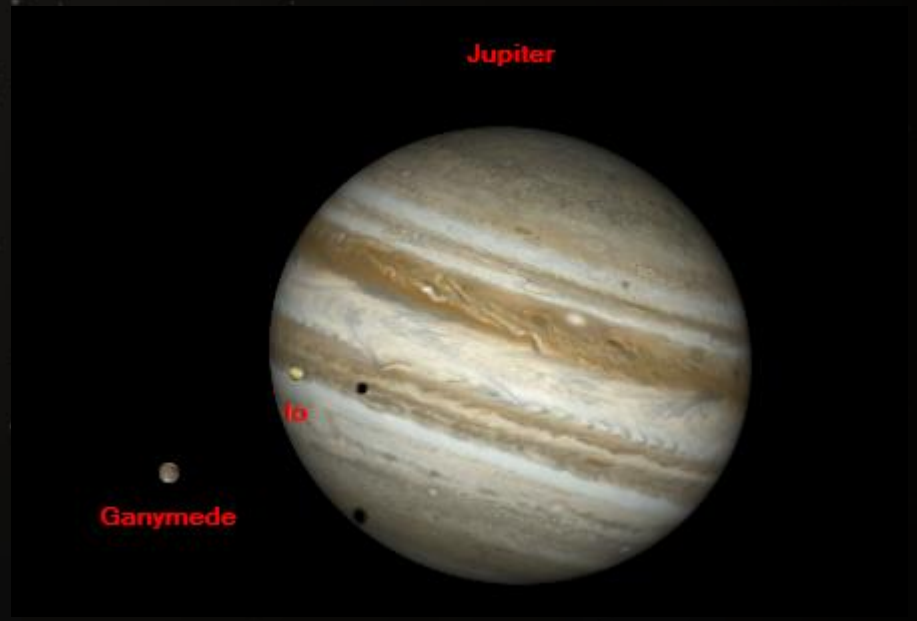
Eclipses & Transits

- *10th magnitude Tethys is undergoing transits (crossing in front of the globe) and eclipses (emerging from the globe's shadow – see animation to right).*
  - ***Use high power to increase separation between globe's glare and where Tethys reappears***



10/20/2023 08:30 PM
11/06/2023 07:22 PM

- *If it is clear later this evening stay up to catch a semi-rare double shadow transit on Jupiter as Ganymede and Io cross the giant planet.*
  - ***Best viewing time is 2:15 a.m. to 3:30 a.m.***



What's Up in Space: OSIRIS-REx Sample Return

- OSIRIS-REX returned the first US sample of asteroid material
  - Launched September 8, 2016
  - Arrived at Bennu December 3, 2018
  - Collected Bennu sample October 20, 2020
  - Departed Bennu May 10, 2021
  - Sample returned September 24, 2023, seven years after launch
  - Spacecraft continuing to Apophis (April 2029)
- Approximately ½ pound (225g) of rock and dust was returned
  - Requirement was 2oz (1/8 pound, 57g)

NASA/Goddard/ University of Arizona

NASA/Keegan Barber

What's Up in Space: OSIRIS-REx Sample Return

- Sample will help us understand
  - How the solar system, and Earth, formed
  - How life started in the early solar system
  - How Bennu is constructed and its material properties
- Bennu is estimated to have a 1-in-1700 chance of impacting Earth in 2182
  - Diameter is about 1600 feet (490m)
  - Would wipe out a city on impact
  - Sample could help us strategize how to deflect it from impacting

NASA/Goddard/University of Arizona

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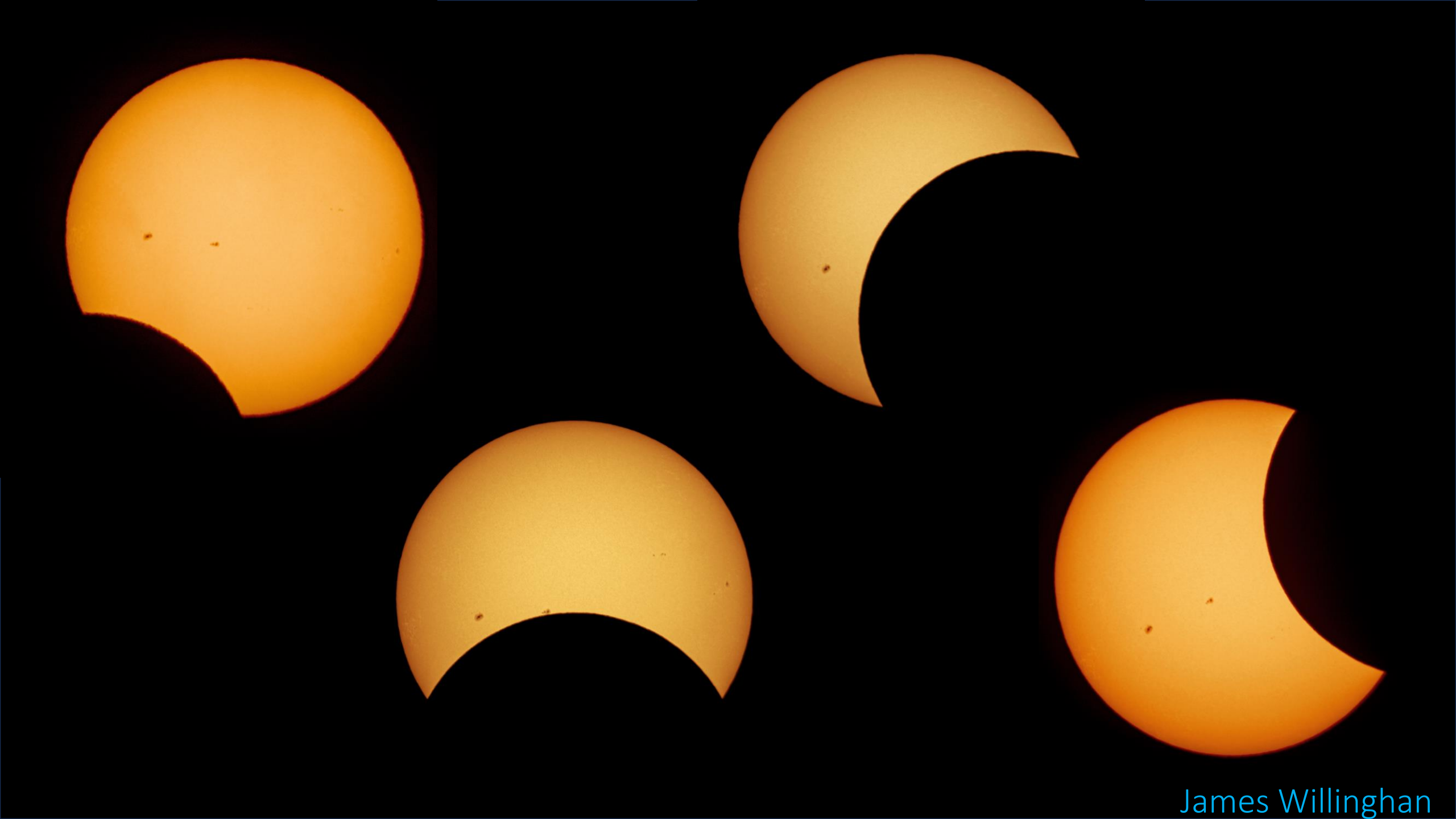
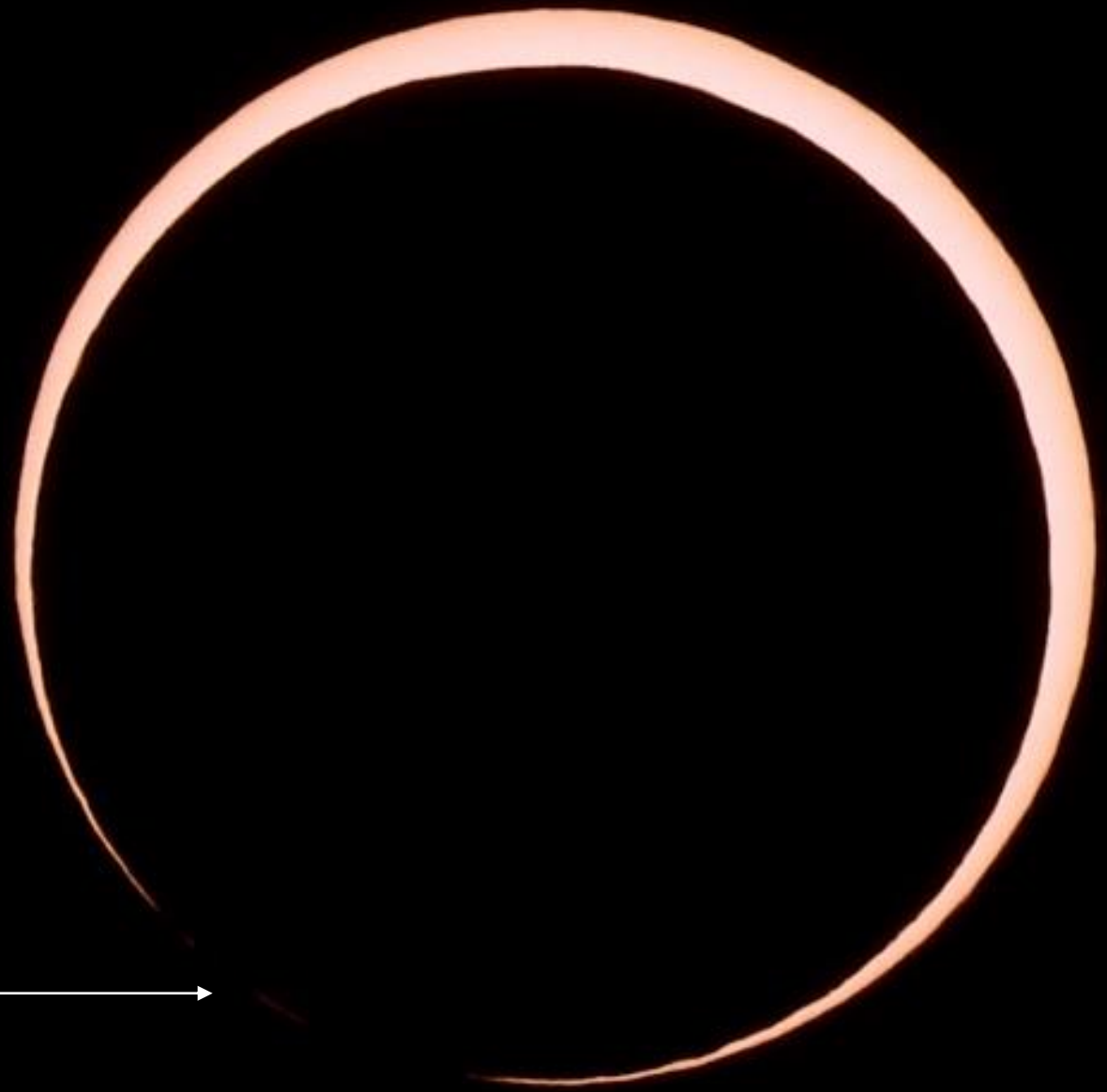


James Willinghan

Annular Eclipse – October 14, 2023

Traveled out to Albuquerque to catch the Annular Eclipse. As it headed towards 3rd contact I started firing off shots and managed to catch “Baily’s Beads” where the Sun is shining through craters and mountains along the lunar edge.

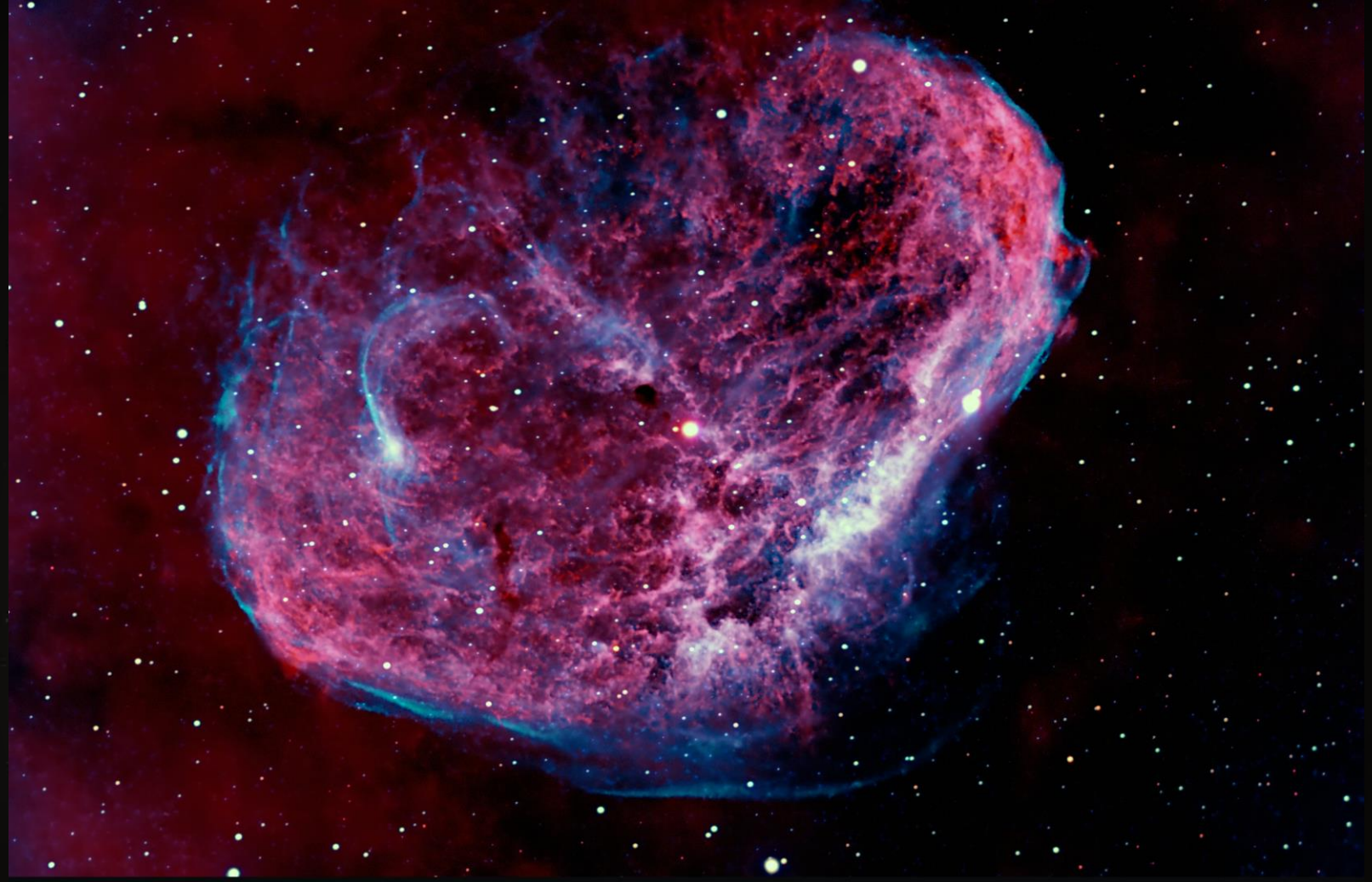


Baily’s Beads

Canon EOS Rebel t6s camera at 300mm f/11
1/500 second, ISO 800

Jim Tomney

Travis Totten



NGC 6888 “The Crescent Nebula”

By: Ken Everhart
August 19, 20, 21,
and 27, 2023
Hanover, Maryland
Alpha Ridge Park, Maryland.

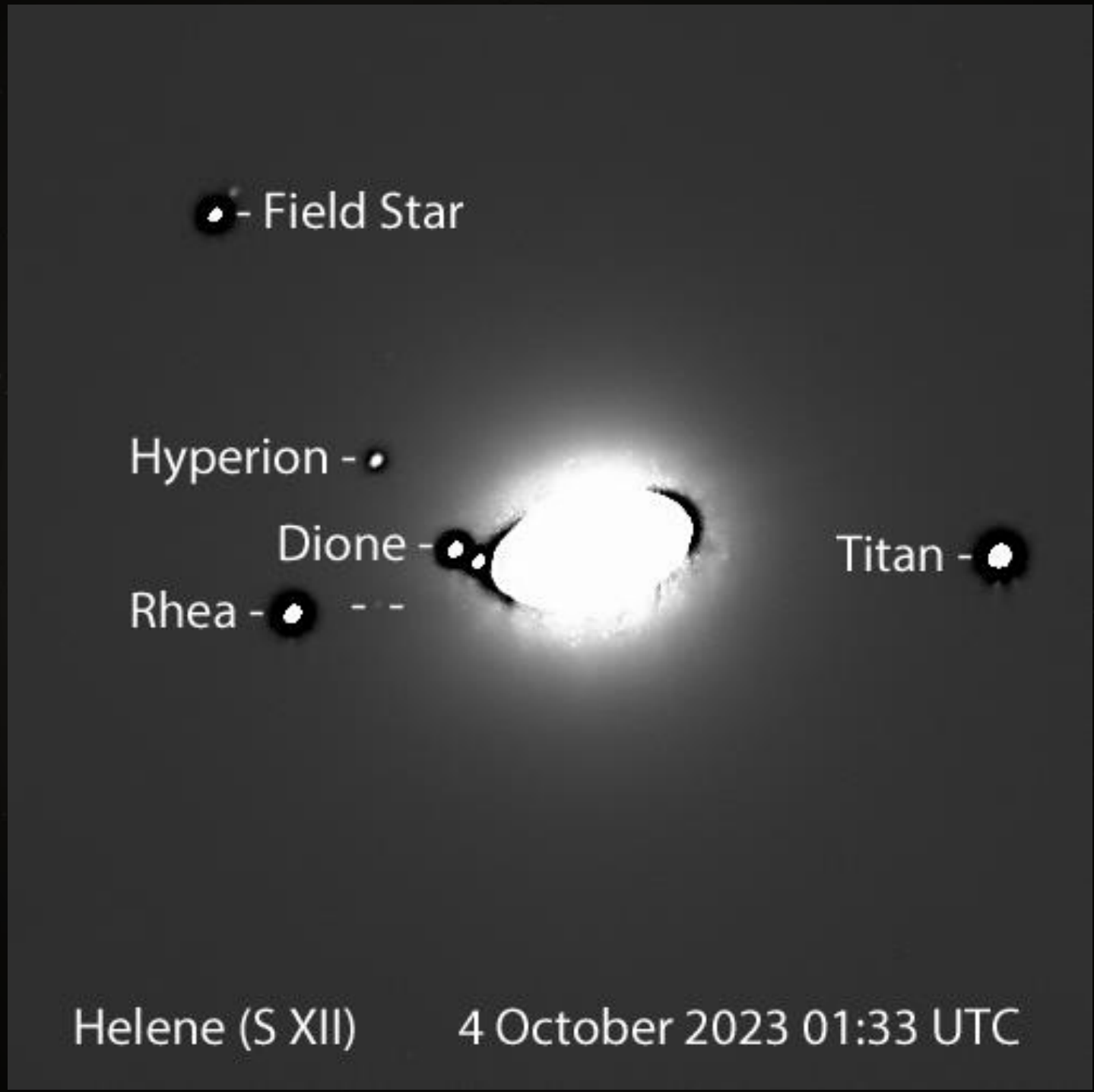
Telescope: Meade LX-850 - 14”
Camera: Zwo ASI2600MM
Processing: Pixinsight
Photoshop Elements

Red:	10	X	30 Secs.
Green:	10	X	30 Secs.
Blue :	10	X	30 Secs.
H-Alpha:	27	X	300 Secs.
OIII :	27	X	300 Secs.
Total :	4.75 -Hours		

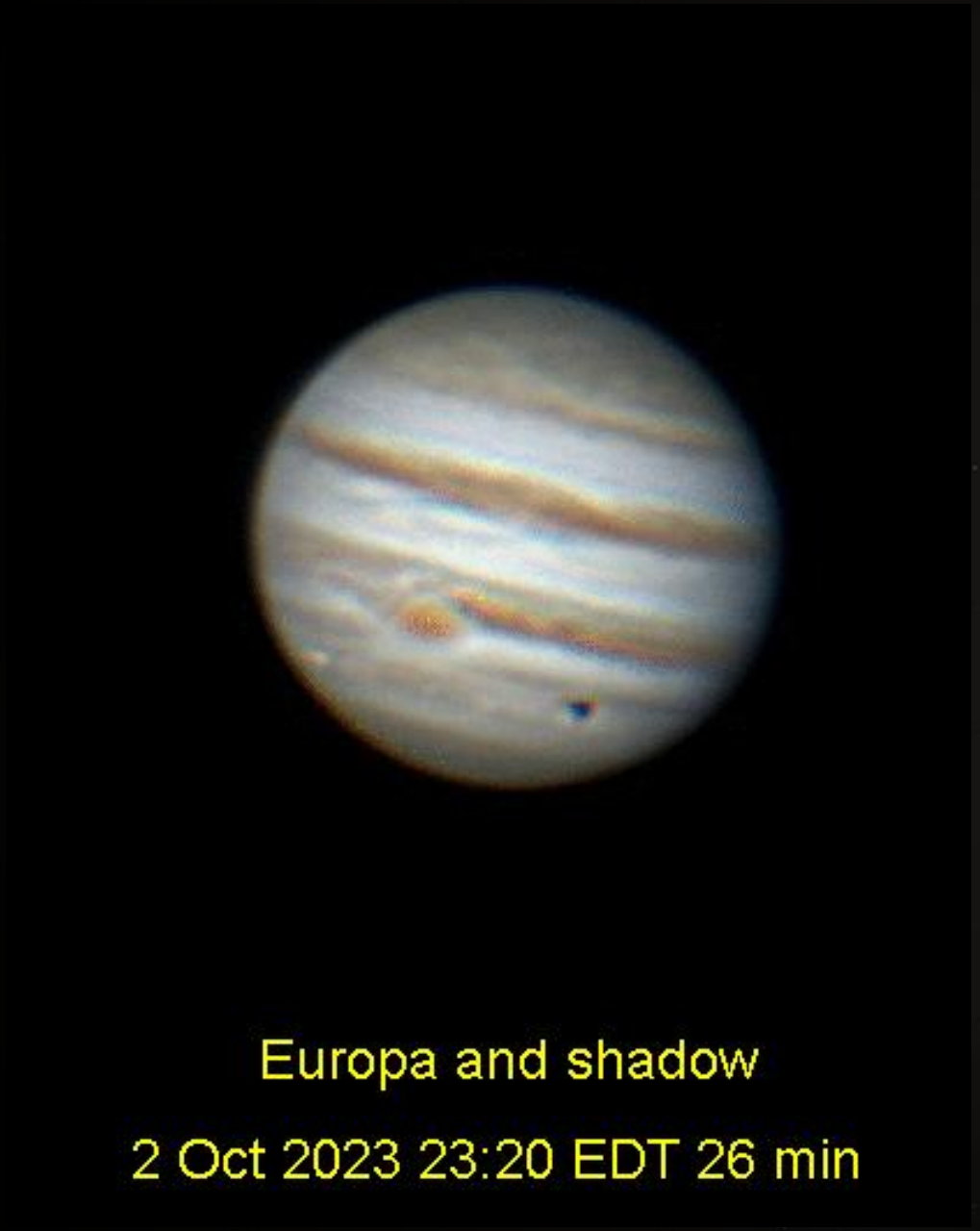
Ken Everhart

Daniel Maletz

Joseph Novotka



Ken Everhart



7 October

10 October

12 October

15 October

C-14 ZWO2600MC

12P Pons-Brooks 2023

45 sec exp

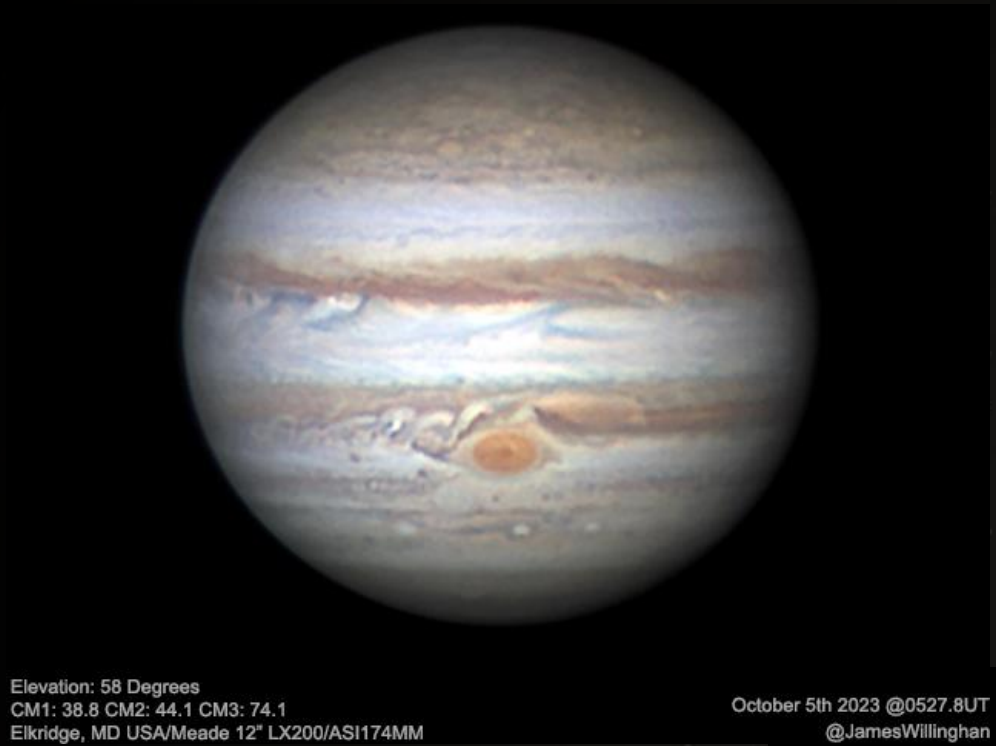
Steven Gauss

Io Eclipse – October 5, 2023 12:40 AM

GIF animation of Io sliding into Jupiter's shadow

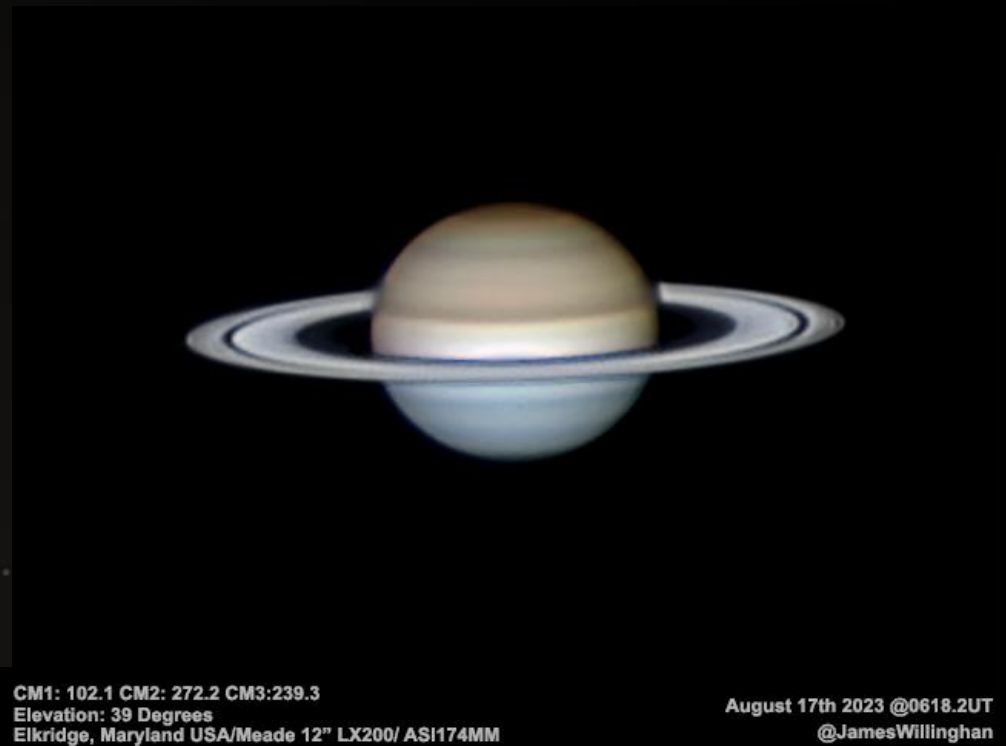
(16 frames taken over 2 minutes)

Jim Tomney



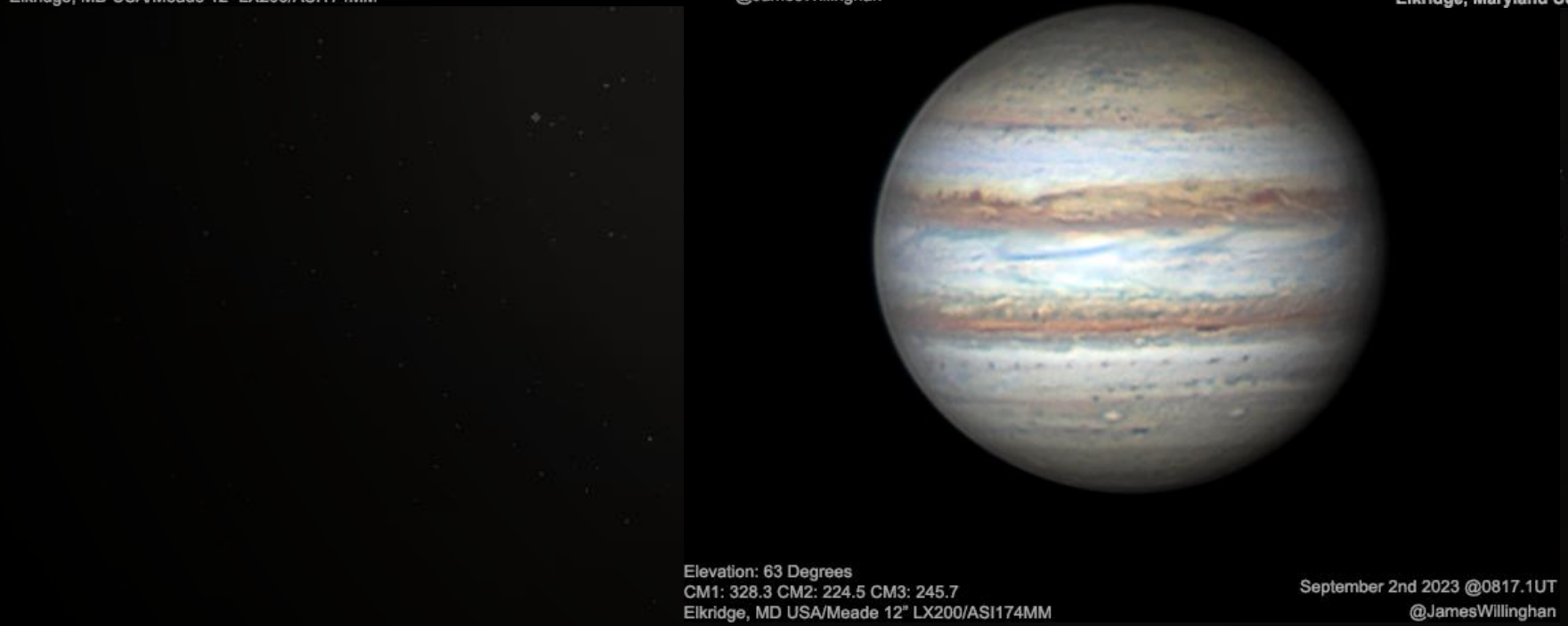
Elevation: 58 Degrees
CM1: 38.8 CM2: 44.1 CM3: 74.1
Elkridge, MD USA/Meade 12" LX200/ASI174MM

October 5th 2023 @0527.8UT
@JamesWillinghan



CM1: 102.1 CM2: 272.2 CM3:239.3
Elevation: 39 Degrees
Elkridge, Maryland USA/Meade 12" LX200/ ASI174MM

August 17th 2023 @0618.2UT
@JamesWillinghan



Elevation: 63 Degrees
CM1: 328.3 CM2: 224.5 CM3: 245.7
Elkridge, MD USA/Meade 12" LX200/ASI174MM

September 2nd 2023 @0817.1UT
@JamesWillinghan

James Willinghan