ASTROFILES

Auburn Astronomical Society Newsletter

September 2023 *Newsletter Editor — John Wingard — jwin1048@gmail.com*

Moon Phases

October 6 — Last Quarter

October 14 — New Moon

October 21 — First Quarter

October 28 — Full Moon

November 5 — Last Quarter

November 13 — New Moon

November 20 — First Quarter

November 27 — Full Moon

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http://www.auburnastro.org

https://www.facebook.com/groups/79864233515/

News and upcoming activities

We hope that everyone is enjoying the cooler weather after a brutally hot summer. Also, the nights are gradually getting longer thus giving us more observing time earlier in the evenings. We have a couple of important events happening next month. First, the annular solar eclipse is coming up on Saturday, October 14, 2023. Although we are quite a distance away from the central path, we can still expect approximately 55-56% coverage here in Alabama. Please refer to the map on the next page that shows the central path of the eclipse as it travels from southern Texas through several western states before exiting the U.S. in Oregon. Along with the map are some time listings for our area. Hopefully the weather will cooperate and with it being on a Saturday, those that normally work during the week will have a chance to see it. ***As always, never look directly at the eclipse without some approved eclipse glasses or a properly filtered telescope!***

The scheduled stargaze at Camp Tukabatchee in Prattville, AL on Saturday, October 21 is not too far away. This is an event for cub scouts and they are expecting up to 500 scouts and their parents. Their camp will be for the entire weekend but the primary focus for our part will be observing on Saturday evening beginning around 8:00 PM CDT. The organizer of the event, Emily Sweitzer, has also asked us if we would be willing to conduct a brief presentation on the moon, stars and planets. AAS president Allen Screws has agreed to do this. She has also requested that if any AAS members have solar scopes that they bring them during the day on Saturday to look at the Sun. The AAS has several members in the Wetumpka, Montgomery and Prattville area that can hopefully bring their scopes and assist. I will send out a reminder email to the AAS members about a week prior to the event, hopefully with a map of the Camp and more specific instructions and directions. She also indicated that there will be food available in the evening and AAS members are welcome to eat there as well. Hopefully the weather will cooperate. There will also be a first quarter moon available for viewing that evening.

A correction and apology from last month's newsletter. I inadvertently credited a photo to the wrong individual. In my haste to get the newsletter out I failed to note the watermark in the photo that clearly showed the originator of the photo. Duh!...how did I miss that!

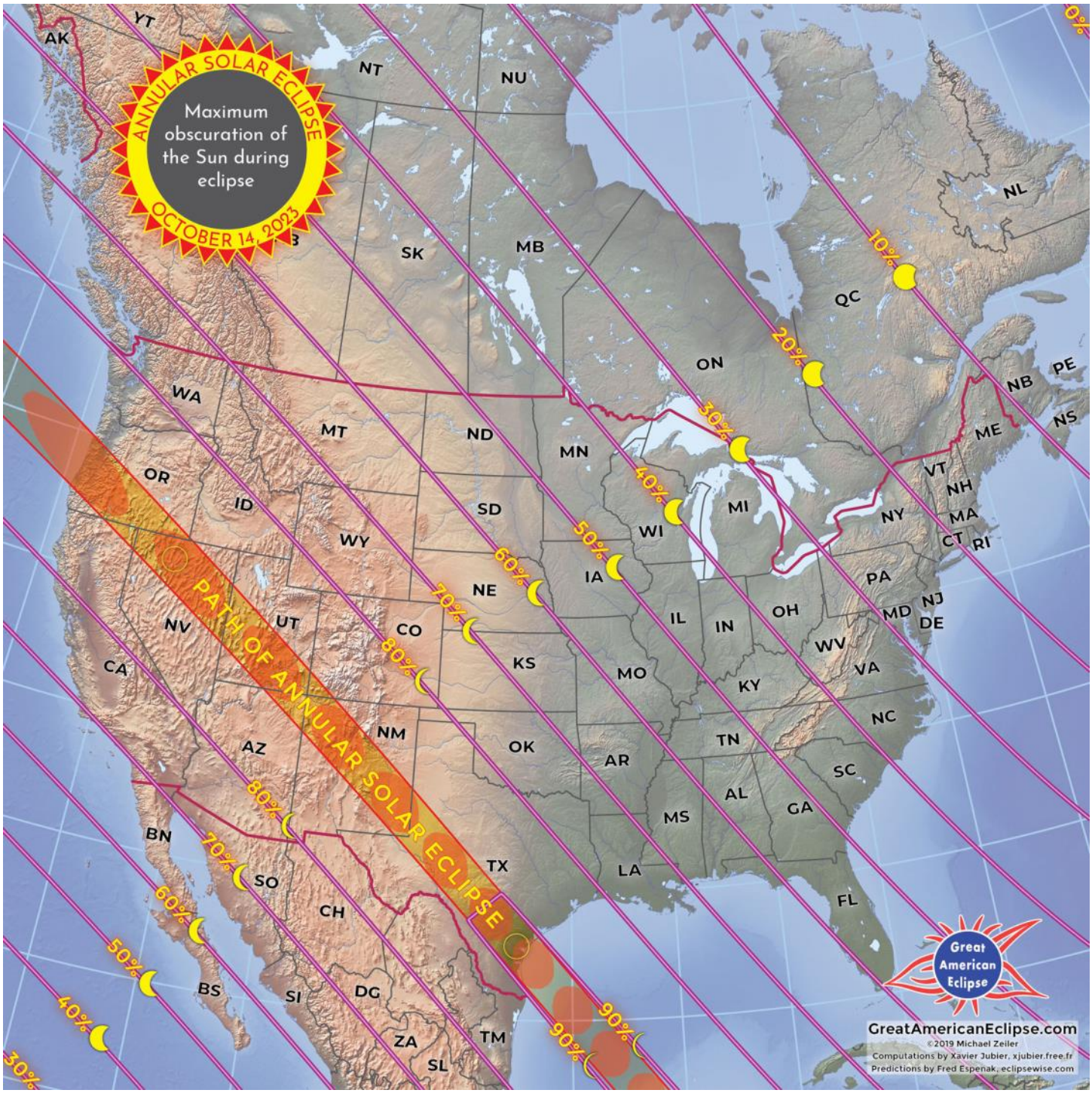
Annular Solar Eclipse—Saturday, October 14, 2023

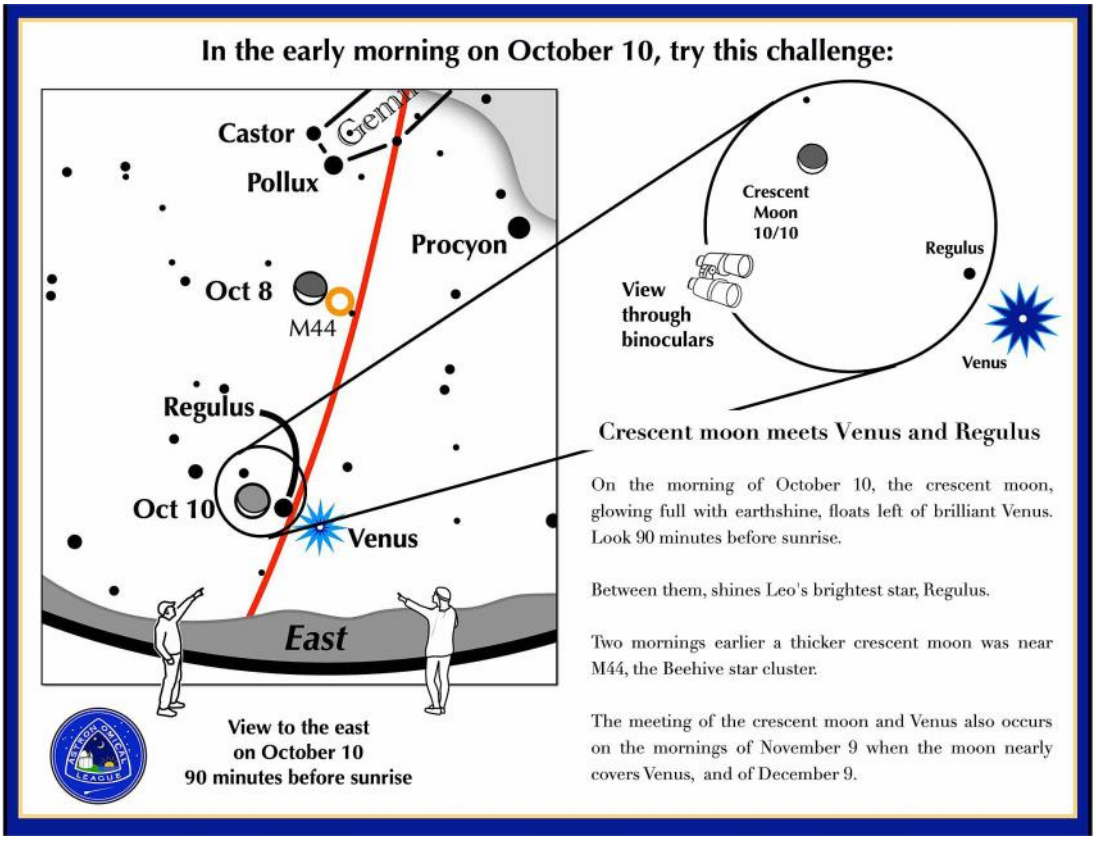
Below is the map showing the path of the eclipse. The diagonal lines away from the central path indicate the approximate percentage of coverage depending on where you are located in the U.S. or Canada. For those of us here in Alabama, here are the approximate times for the beginning, the maximum and the ending of the eclipse:

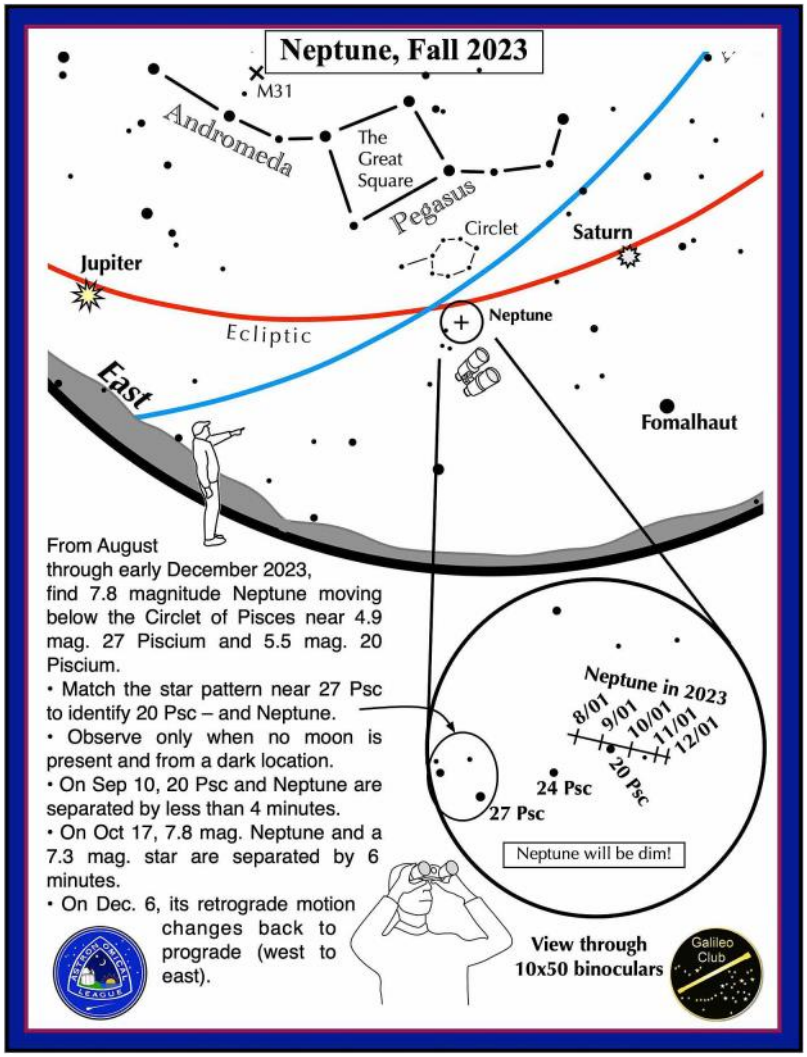
Start of the eclipse (first contact) : 10:41 AM CDT (15:41 UTC)

Maximum coverage: 12:11 PM CDT (17:11 UTC) Maximum coverage 56.4%

End of the eclipse (last contact) : 1:46 PM CDT (18:46 UTC)



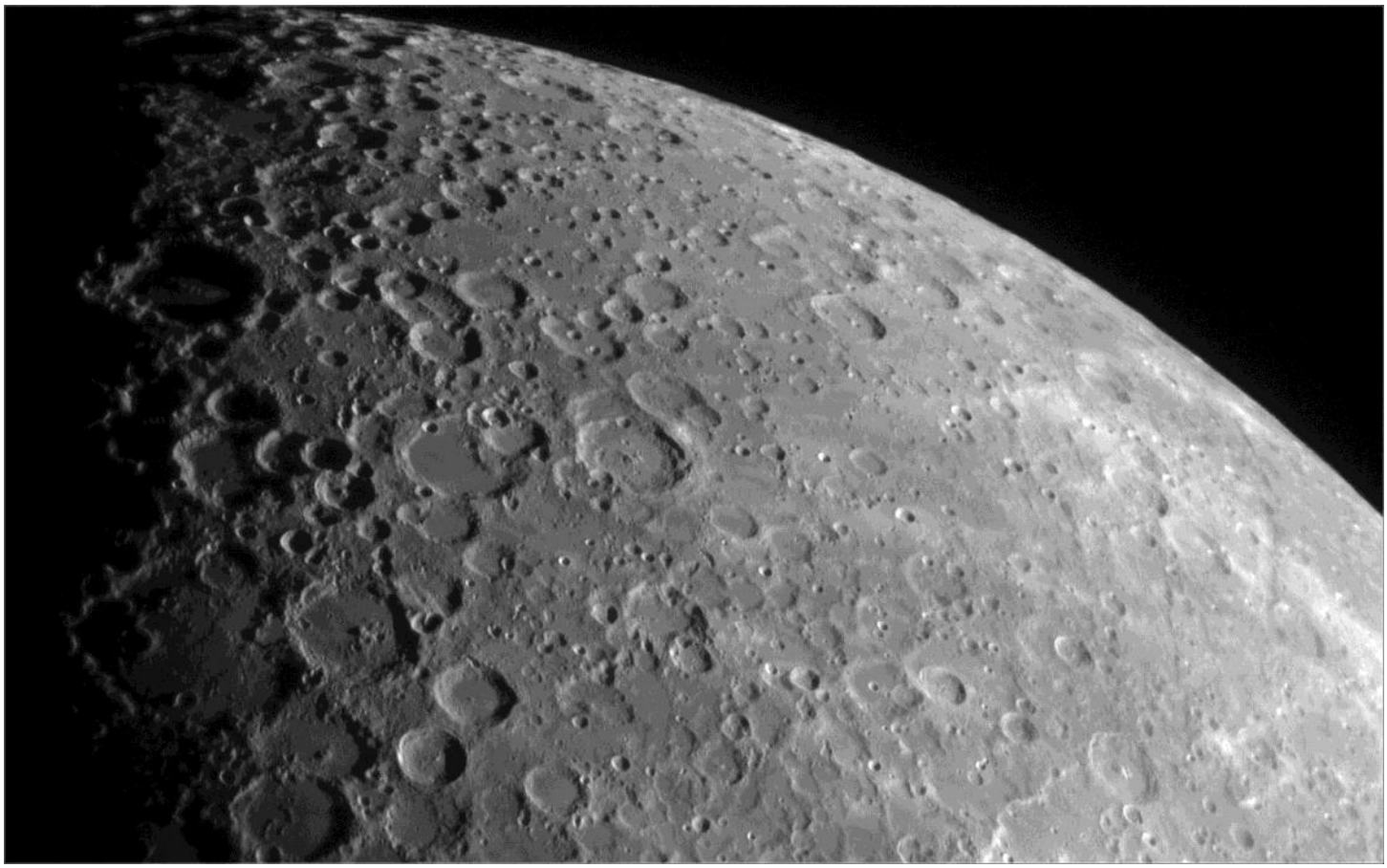

In the early morning on October 10, try this challenge:
Castor
Pollux
Procyon
Oct 8
M44
Regulus
Oct 10
Venus
East
View to the east
on October 10
90 minutes before sunrise
Crescent
Moon
10/10
Regulus
View
through
binoculars
Venus
Crescent moon meets Venus and Regulus
On the morning of October 10, the crescent moon, glowing full with earthshine, floats left of brilliant Venus. Look 90 minutes before sunrise.
Between them, shines Leo's brightest star, Regulus.
Two mornings earlier a thicker crescent moon was near M44, the Beehive star cluster.
The meeting of the crescent moon and Venus also occurs on the mornings of November 9 when the moon nearly covers Venus, and of December 9.


Neptune, Fall 2023
M31
Andromeda
The
Great
Square
Pegasus
Circlet
Saturn
Jupiter
Ecliptic
Neptune
East
Fomalhaut
From August
through early December 2023,
find 7.8 magnitude Neptune moving below the Circlet of Pisces near 4.9 mag. 27 Piscium and 5.5 mag. 20 Piscium.
• Match the star pattern near 27 Psc to identify 20 Psc – and Neptune.
• Observe only when no moon is present and from a dark location.
• On Sep 10, 20 Psc and Neptune are separated by less than 4 minutes.
• On Oct 17, 7.8 mag. Neptune and a 7.3 mag. star are separated by 6 minutes.
• On Dec. 6, its retrograde motion changes back to prograde (west to east).
Neptune in 2023
8/01
9/01
10/01
11/01
12/01
20 Psc
24 Psc
27 Psc
Neptune will be dim!
View through
10x50 binoculars
Galileo
Club

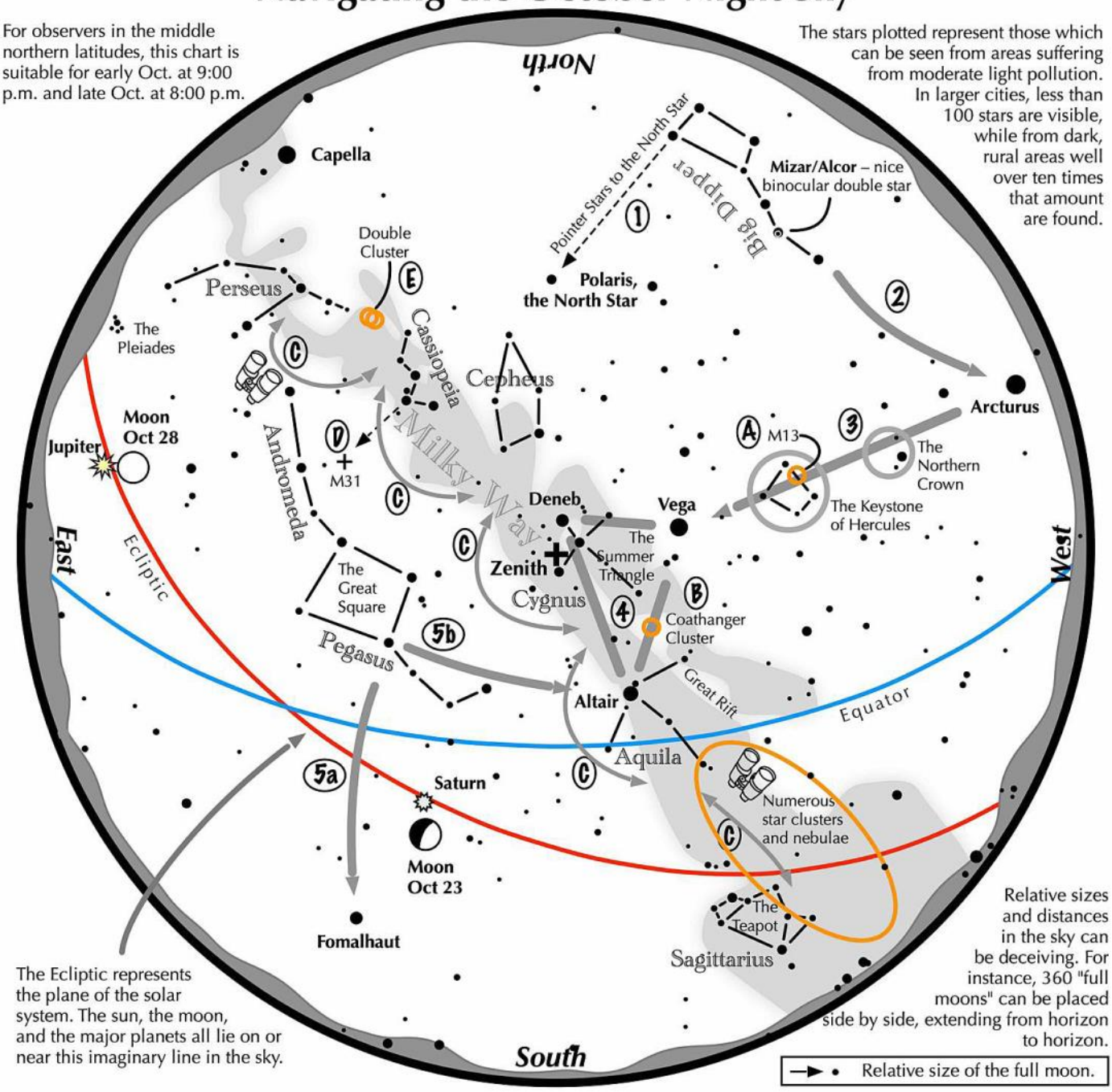
AAS Member Photography

AAS member John Wingard captured the image of the Moon below during a session on Friday, September 22, 2023 at the first quarter phase. The area covered is part of the southern hemisphere, which is actually at the top in this view. The southern hemisphere is heavily cratered and the lunar south pole region, which is at the extreme top of the image, is of high interest due to the discovery of water ice in and around the pole. The interiors of some of the craters in this region are in perpetual darkness, thereby preserving ancient deposits of ice. In fact, NASA's current Artemis manned lunar program has targeted this region for the next phase of exploration. This location is a radical departure from most of the previous manned and unmanned landing missions that were concentrated in the Moon's equatorial region.

Equipment used: A 1975 vintage Questar 3.5" Maksutov-Cassegrain telescope on a Questar Tri-pier mount with a Questar Powerguide for tracking. Camera was an ASI 174MC camera through the eyepiece port of the telescope. This image was post-processed from 40% of 1000 frames of video using Autostakkert 3.0 for stacking and Registax 6.0 wavelets for sharpening. Final level adjustments were done in Photoshop. Some additional photos from this session have been posted to the club's Facebook page.



Navigating the October Night Sky



Navigating the October night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper's handle. It intersects Arcturus, the brightest star in the early October evening sky.
3. To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
4. Nearly overhead lie the summer triangle stars of Vega, Altair, and Deneb.
5. High in the east are the four moderately bright stars of the Great Square. Its two southern stars point west to Altair. Its two western stars point south to Fomalhaut.

Binocular Highlights

A: On the western side of the Keystone glows the Great Hercules Cluster, a ball of 500,000 stars. **B:** 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger. **C:** Sweep along the Milky Way for an astounding number of fuzzy star clusters and nebulae amid many faint glows and dark bays, including the Great Rift. **D:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **E:** Between the "W" of Cassiopeia and Perseus lies the Double Cluster.

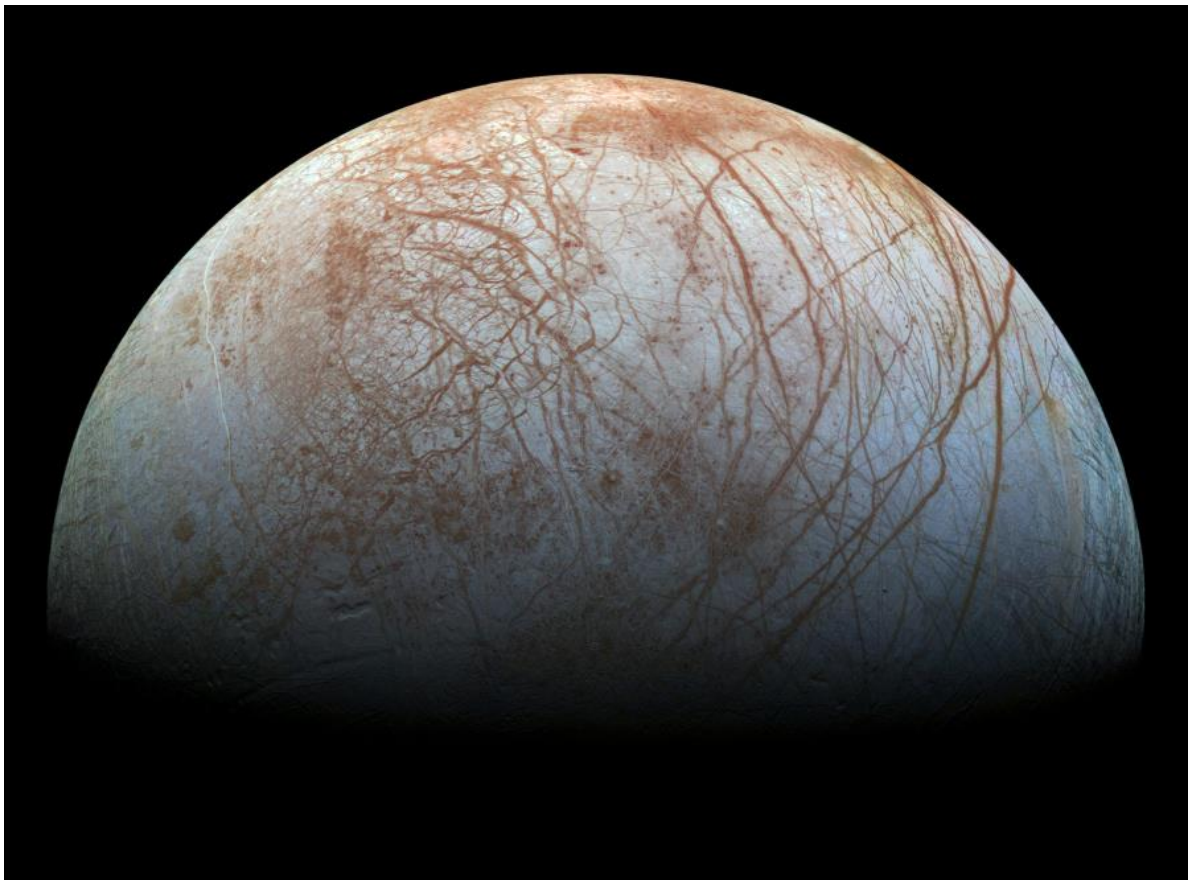
This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

From Galileo to Clipper, Exploring Jupiter's Moons

By Vivian White

"…We, too, are made of wonders, of great
and ordinary loves, of small invisible worlds,
of a need to call out through the dark."
From *In Praise of Mystery: A Poem for Europa* by Ada Limon



As autumn begins, if you're up late, you may notice a bright point of light rising in the east. Look a bit closer, with a pair of binoculars, and you'll notice it's not a star at all. While stars look point-like no matter how big your backyard telescope, this light appears as a circle under closer examination. Even more curious, you will likely see a line of smaller dots on one or both sides. Congratulations! You've rediscovered the king of the planets - majestic Jupiter - and its four largest moons.

dentalis proxima min. 2. ab hac vero elongabatur oc-

Ori. * ○ * * Occ.

cidentalior altera min: 10. erant præcisè in eadem recta, & magnitudinis æqualis.

Die quarta hora ſecunda circa Iouem quatuor ſtabant Stellæ, orientales duæ, ac duæ occidentales in

Ori. * * ○ * * Occ.

eadem ad vnguem recta linea diſpoſitæ, vt in proxima figura. Orientalior diſtabat à ſequenti min. 3. hęc verò à Ioue aberat min. 0. ſec. 40. Iuppiter à proxima occidentali min. 4. hæc ab occidentaliori min. 6. magnitudine erant ferè ęquales, proximior Ioui reliquis paulo minor apparebat. Hora autem ſeptima orientales Stellæ diſtabant tantum min. 0. ſec. 30. Iuppiter

Ori. ** ○ * * Occ.

ab orientali viciniori aberat min. 2. ab occidentali verò ſequente min. 4. hæc verò ab occidentaliori diſtabat min. 3. erantque æquales omnes, & in eadem recta ſecundum Eclypticam extenſa.

Die quinta Cœlum fuit nubiloſum.

Die ſexta duæ ſolummodo apparuerunt Stellæ me-

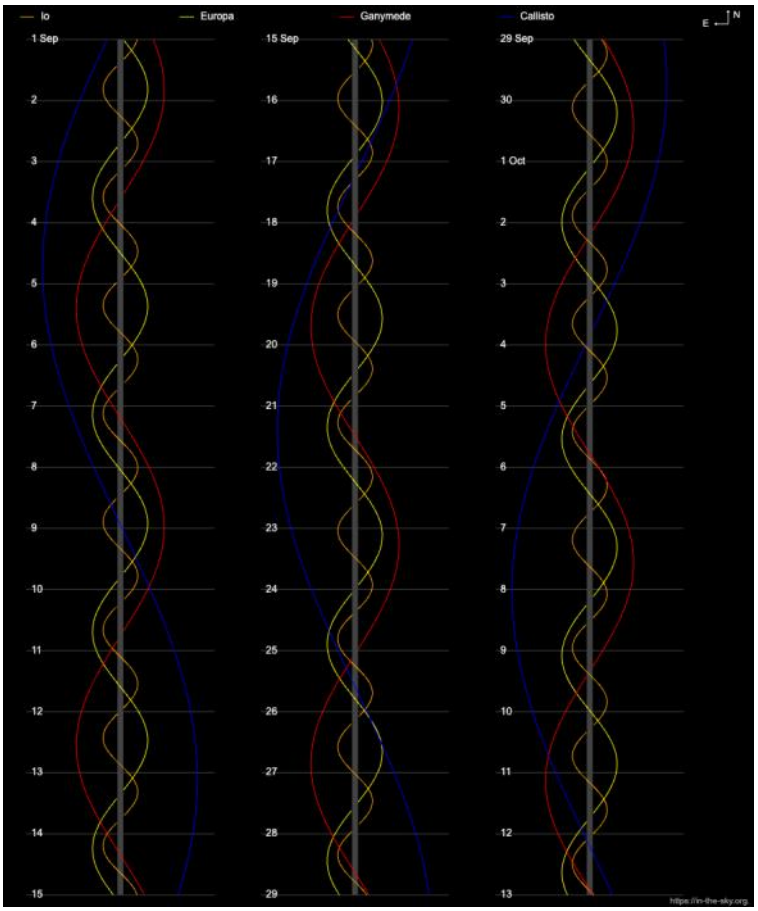
Ori. * ○ * Occ.

dium

Galileo's drawings of Jupiter and its Medicean Stars from Sidereus Nuncius. Image courtesy of the History of Science Collections, University of Oklahoma Libraries.

Galileo famously chronicled the four moving dots near Jupiter and surmised that they were orbiting the distant world. While Jupiter has well over 80 discovered moons as of September 2023, these brightest four are called the “Galilean Moons” - Io, Europa, Ganymede, and Callisto. (Great mnemonics exist to remember these in order of distance from Jupiter, such as “I Eat Green Caterpillars”) You can follow these like Galileo did, using stargazing apps or the handy image below. A favorite beginning observing challenge is to track the movement of the Galilean Moons over the course of many nights. Even within a few hours, you will notice them moving in relation to Jupiter, just as Galileo did.

Fast forward 414 years, and NASA will be sending a robotic mission to investigate the surface of one of these distant worlds. The Europa Clipper Mission is launching to the cold, icy moon in 2024, to begin orbiting in 2030. With its salty oceans covered by ice, Europa was chosen as an excellent location to continue the search for life outside of Earth. Clipper will be the largest spacecraft ever sent to another planet, designed to withstand Jupiter’s punishing radiation. Once it arrives at Jupiter in 2030, NASA plans to do about 50 flybys of Europa, mapping almost the entire surface of this watery world.



The position of the Galilean Moons of Jupiter in October 2023: https://in-the-sky.org/jupiter.php

What was once only dreamed of in the small telescope of Galileo, or in great works of fiction, NASA is turning our wildest imagination into reality. One of the celebrated quotes from the classic 2010: Odyssey Two warns, “All these worlds are yours, except Europa. Attempt no landing there.” Science fiction fans can feel relieved knowing that writer Arthur C. Clarke gave his blessing for the Europa Clipper mission.

Join the Europa Message in a Bottle Campaign to send your name with the spacecraft, hear the rest of the poem by the US Poet Laureate, and learn more about the wonders of space travel with the Clipper Mission: https://europa.nasa.gov/participate

Auburn Astronomical Society

Application for Membership

To insure that our records are accurate, please print information clearly

Name: _____

Address: _____

City: _____ **State:** _____ **ZIP:** _____

Phone: _____ **Date of Application:** ____/____/____

E-Mail: _____

Telescopes owned (if any): _____

_____

Area(s) of special interest: _____

_____

Enclose $20.00 for regular annual membership, payable in January. *Full-time* student membership is $10.00.

For *NEW* members joining after January, refer to the prorated dues table below for the month you are joining:

Jan $20.00	Feb $18.33	Mar $16.66	Apr $14.99	May $13.33	Jun $11.66
Jul $10.00	Aug $8.33	Sep $6.66	Oct $4.99	Nov $2.33	Dec $1.66

☐ New—Just Joining

☐ Renewal

Please make checks payable to: Auburn Astronomical Society and return this application with your payment to:

Auburn Astronomical Society
c/o John Wingard, Sec/Treasurer
5 Wexton Ct.
Columbus, GA 31907

Note: At this time we do not have an option for online payment of dues.

The Auburn Astronomical Society is a member of the Astronomical League, the national organization representing astronomy clubs throughout the United States. As a club benefit, paid members of the Auburn Astronomical Society are eligible to received quarterly issues of *The Reflector*, the official publication of the Astronomical League. It will be mailed to the address that you provided above but could be delayed somewhat until their mailing lists are updated.

For additional information about our club, please go to our website *www.auburnastro.org* . You can also follow us on our Facebook page. Just search for "Auburn Astronomical Society."