Richland Astronomical Society
The Warren Rupp Observatory

M111

September 2026

The newsletter of the Richland Astronomical Society and Warren Rupp Observatory

Summer Clean Up a Success!

-By Mitch Luman, Vice President

A semi-annual clean-up of the Observatory and grounds took place on Saturday, June 13. Beginning in the early afternoon fourteen people showed up to pull, trim and kill weeds organize and clean the Education Center, eLoo, Garage and Observatory.

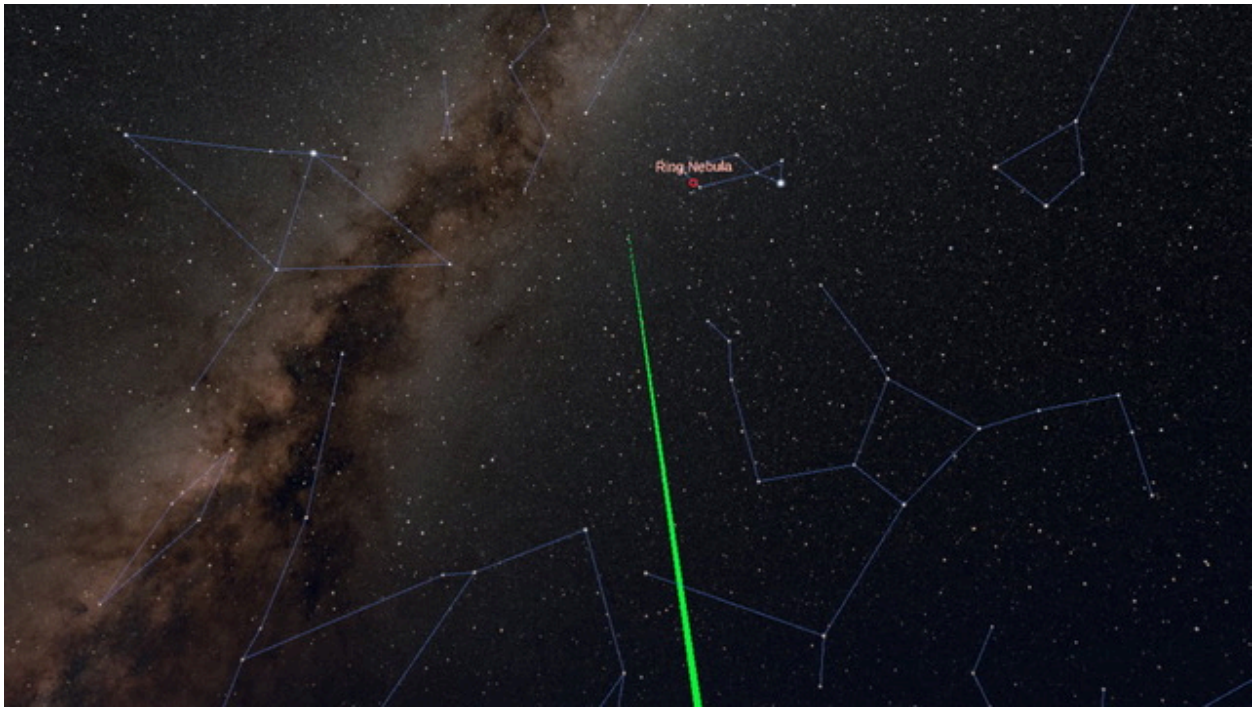
The officers would like to thank everyone who showed up to assist, including: Bob R, Phil L, Phil H, Delores, Kim, Ron, Jeremy, Terry, Mike R, Michael M, Delores, Mark, John K, and Rich. Apologies if I left out anyone, or omitted any task which was completed. A lot of things got done that I did not personally witness. Thanks to all.

If you weren't able to make it and want to pitch in at a future clean-up, you'll likely get another chance sometime before the Hidden Hollow Star Party and Conference in September.

Our Program for September

Mark Vanderaar will demo the multi-user planetarium computer program he's been working on. His project is similar to a physical planetarium, but uses VR headsets instead of the night sky projected on a dome. He'll communicate all the details at the meeting.

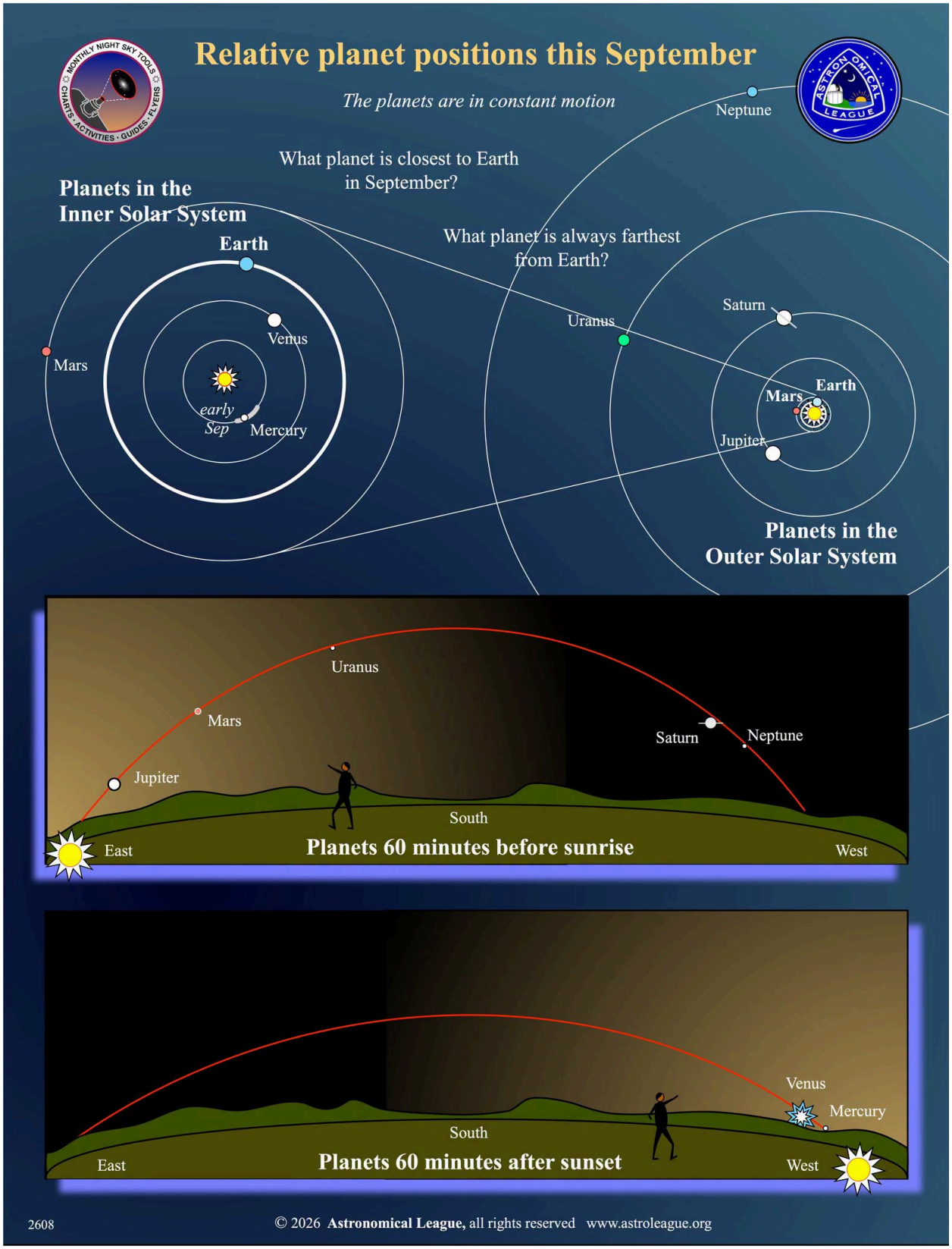
Mark's presentation gets underway at 8 PM following the business meeting on September 5th.



International Observe the Moon Night is September 19, 2026

Our club will serve as the regional host for International Observe the Moon Night on Saturday, September 19 from 7:00 PM-10:30 PM. This event has the potential to be the most attended event of the year for our club. Last year saw over 300 guests. Volunteers are needed for parking, our educational activities and telescope viewing. The event will take place rain or shine.

International Observe the Moon Night is a worldwide public event that encourages observation, appreciation and understanding of our Moon and its connection to space science, exploration, and human culture. International Observe the Moon Night is sponsored by NASA's Lunar Reconnaissance Orbiter mission and the Solar System Exploration Division at NASA's Goddard Space Flight Center, with many contributors.


Relative planet positions this September
The planets are in constant motion
What planet is closest to Earth in September?
What planet is always farthest from Earth?
Planets in the Inner Solar System
Earth
Venus
Mars
early Sep
Mercury
Neptune
Uranus
Saturn
Earth
Mars
Jupiter
Planets in the Outer Solar System
Uranus
Mars
Saturn
Neptune
Jupiter
South
East
Planets 60 minutes before sunrise
West
Venus
Mercury
South
East
Planets 60 minutes after sunset
West
2608
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Libra's Beta star is its brightest.

Zubeneschamali

Say that 5 times fast!

To find Beta Librae:

• Locate 2.8 magnitude Alpha Librae (Zubenelgenubi) midway between Spica and Antares.

• 9° northeast – that is about the angular size of a fist-width on an extended arm – of Alpha is the slightly brighter 2.6 magnitude Beta (Zubeneschamali).

Star colors vary according to the surface temperature of the star. Blue-White is hottest with deep red being the coolest. While green wavelengths are emitted, they are not distinguished by the human eye because the eye is overwhelmed by the all the other wavelengths.

Olcott's Field Book of the SKIES

"Beta Librae is green in color. Early writers mention the brilliance of this star. Claudius Ptolemy gives it as equal to Antares. One of these two stars has possibly varied in light since ancient times."

Carefully examine Beta Librae:

• View through binoculars or a small telescope.

• Slightly de-focus the star.

Beta Librae Characteristics:

• Spectral class: B8 V,

• Color: Blue-white

• Surface temperature: 11,900 K

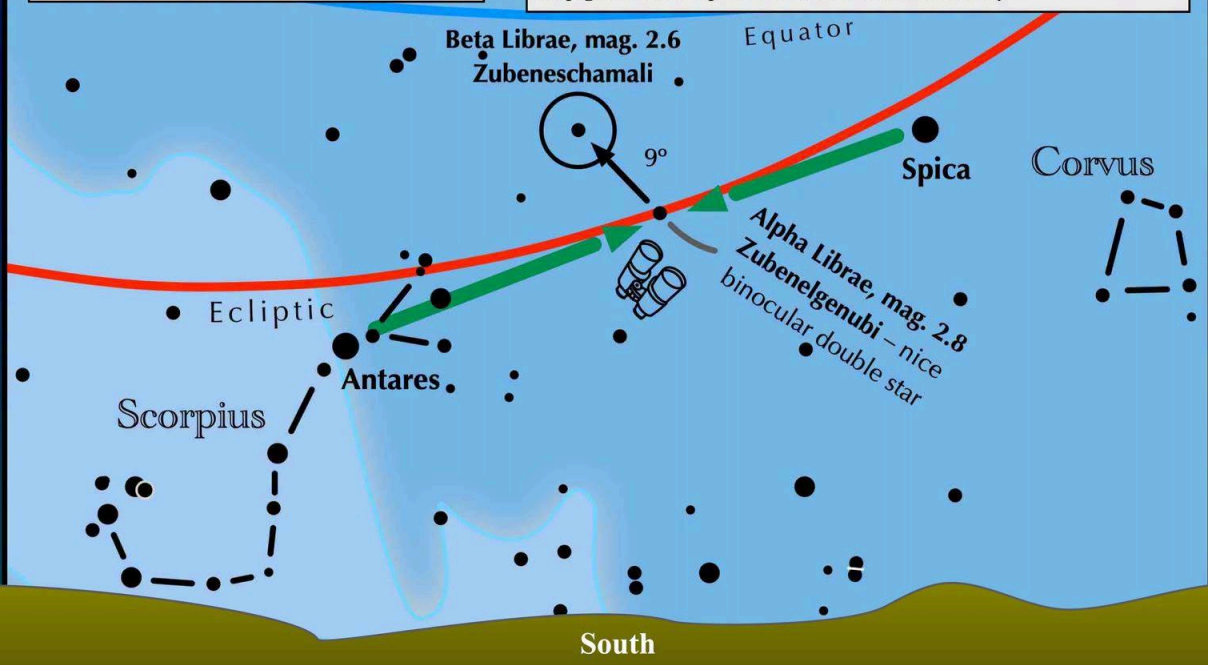
What color do you see?

Astronomy with an Opera-Glass, Garrett Serviss

"... Beta has a singular greenish tint ..."

Webb's Celestial Objects for Common Telescopes

"... its beautiful pale green hue, very unusual among conspicuous stars; deep green, like deep blue, is unknown to the naked eye."



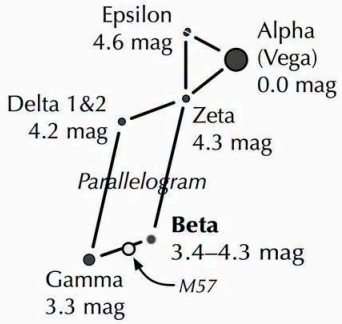
An easy naked-eye eclipsing variable star

Beta Lyrae

Observing Activity

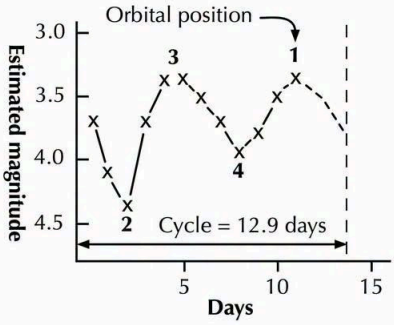
Where is Beta Lyrae in the sky?

• On summer evenings, the bright star Vega shines nearly overhead. (It the fall, Vega lies high in the northwest.) It is the primary star of the small constellation Lyra. (It is also 0.75° wnw of M57, the Ring Nebula.)
• Stretching from Vega's southeast are four dim stars in the shape of a parallelogram.
• Beta Lyrae is the star at the parallelogram's southwest vertex.



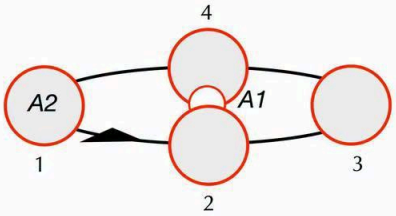
Your Observing Project

• Viewing through binoculars helps greatly.
• Closely examine the brightness of Beta Lyrae each night for up to two weeks. Try not to miss a night. (Yes, weather is always a problem!)
• Determine its estimated magnitude by interpolating the stated magnitudes for Delta, Gamma, and Zeta.
• Construct a graph showing the brightness of Beta over the two week period.



Brightness cycle of Beta Lyrae

Orbit of Beta Lyrae A2 around A1



Day	Orbital position
0.0	**1**: System at maximum brightness
3.2	**2**: Dimmer A2 partially transits brighter A1 Deep minimum system brightness
6.4	**3**: System at maximum brightness again
9.7	**4**: Brighter A1 eclipses dimmer A2 Secondary minimum
12.9	**1**: Cycle repeats

Examine the Beta Lyrae reports at the American Association of Variable Star Observers: app.aavso.org/webobs/results/?star=000-BCD-386&num_ results=200

What you are seeing

• Beta Lyrae A consists of two stars, A1 & A2, of unequal brightness and size. They are so tightly separated that a telescope can not split them.
• When the dimmer but larger star, A2, is off to either side of the brighter, A1, the system appears at its maximum brightness of 3.4 magnitude. (Positions 1, 3)
• As the dimmer star orbits in front of the brighter, their total magnitude drops to the deep minimum, because the dimmer star is partially blocking the brighter one. (2)
• Again, when the dimmer star is off to the other side, the system is at maximum brightness. (3)
• When the dimmer star passes behind the brighter one, it is partially blocked causing the system's brightness to reach its secondary (shallow) minimum at 4.3 magnitude. (Position 4)

2405

Dark Nebula Observing Program

It's all a matter of contrast!

Dark nebulae were once thought to be holes in the Milky Way. This viewpoint changed as astronomers such as EE Barnard started serious study of these dark areas, and as photography was developed as a useful tool to study the heavens. These pioneers discovered that the dark regions were not holes in the Milky Way, but obscuring interstellar dust clouds blocking our view – nebulae.

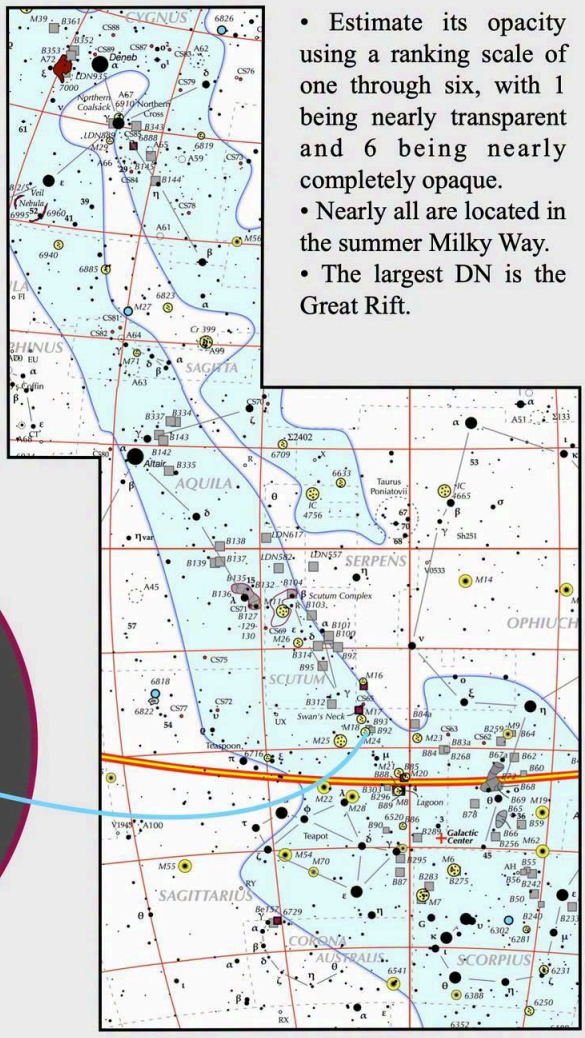
How to best observe dark nebulae:

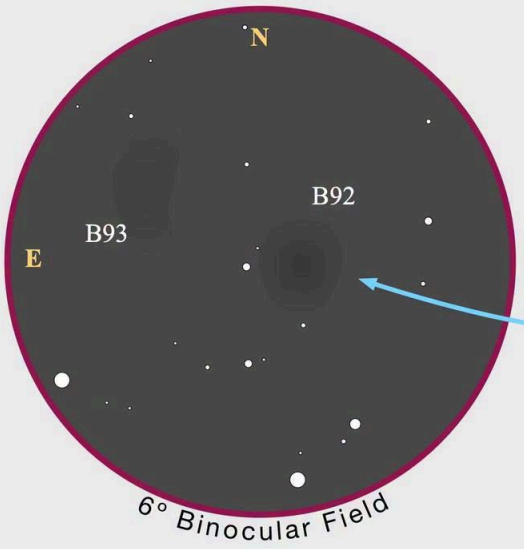
- Nothing larger than an 8 inch telescope is needed.
- Dark, transparent skies are a must.
- For low contrast nebulae, try tapping the scope gently.
- Most successful sightings occur near culimination.
- If the sighting attempt is unsuccessful, return on a another night with different sky conditions or try observing from a darker site.

A few DN require a telescope, many need only binoculars, while some can be seen with the unaided eye.

In the Dark Nebula Observing Program:

- Estimate its opacity using a ranking scale of one through six, with 1 being nearly transparent and 6 being nearly completely opaque.
- Nearly all are located in the summer Milky Way.
- The largest DN is the Great Rift.





For complete details, https://www.astroleague.org/dark-nebula-observing-program/

2407

"The Gem of the Milky Way" -- EE Barnard

The Scutum Star Cloud

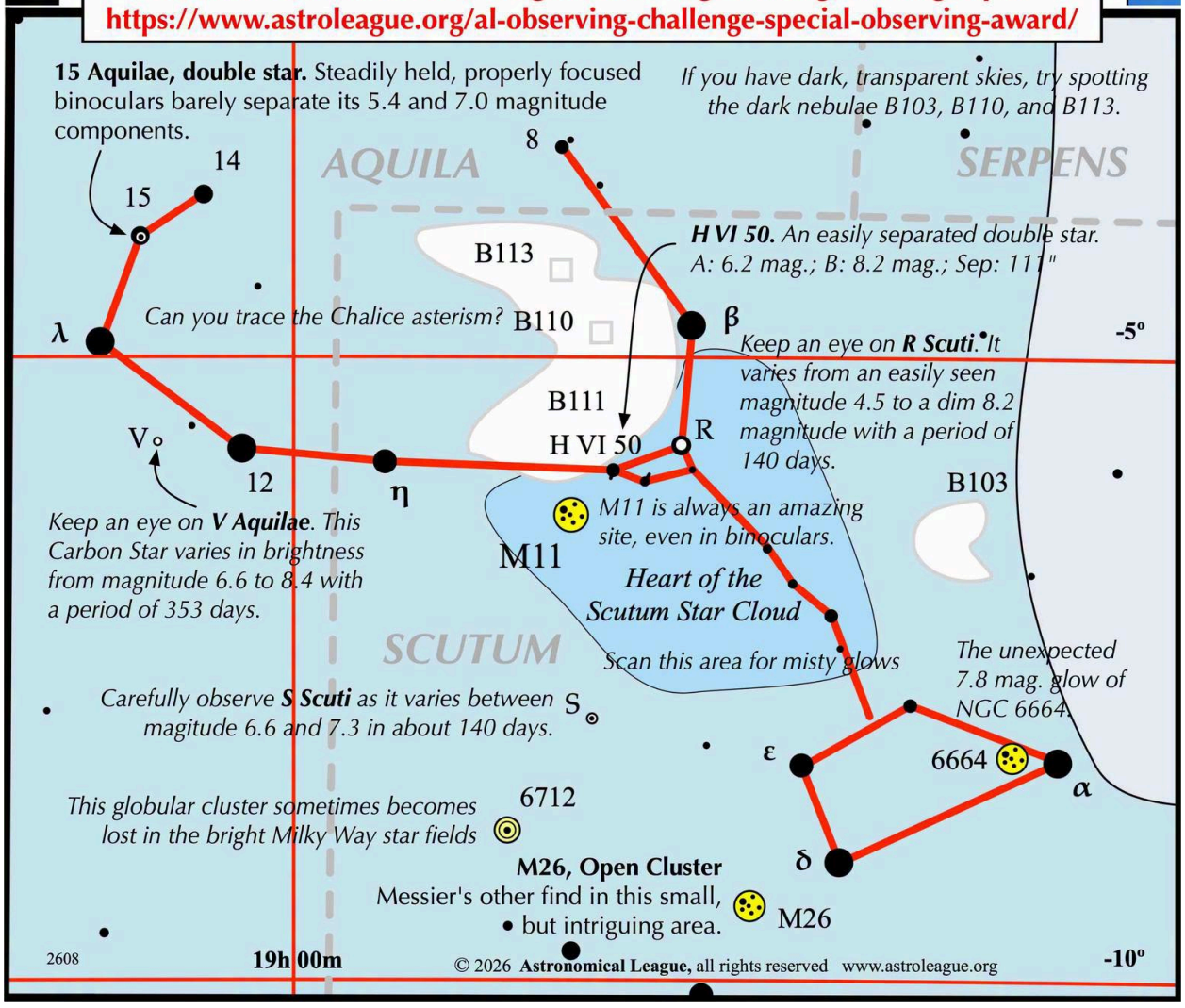
Culminates higher than the Sagittarius Star Cloud to its southwest.

Packed with Naked eye and binocular sights

Looking like a cloud with the unaided eye, this region hints at sights just out of reach. Bring out the binoculars for a totally different, but revealing view. Mottled, variegated background glows spread throughout the area because of the intermingling of star dust and dark nebulae. The result? An intriguing 3-dimensional effect.

Stars of 5th, 6th, and 7th magnitude pepper the area making a rewarding binocular exploration.

Look for the Astronomical League Observing Challenge starting Sep 1:
https://www.astroleague.org/al-observing-challenge-special-observing-award/



A curious episode in astronomy

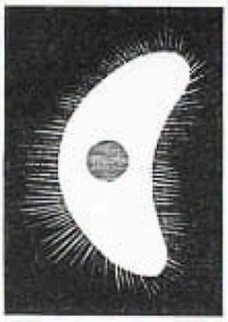
Have you seen the moon of Venus?

Beginning in 1645 and continuing through the late 1700s,
a few astronomers, some of them well-known, believed they saw a moon of Venus.

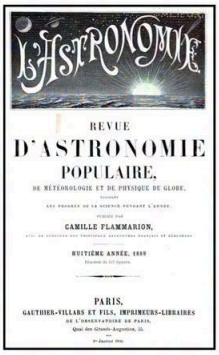
Some well-known people believed they saw Venus' moon:
Francesco Fontana, a Neapolitan lawyer, 1646
Giovanni Cassini, Jan. 25, 1672 and Aug. 28, 1686
James Short, 1740
Andreas Mayer, 1759
Joseph-Louis Lagrange, 1761
Christian Horrebow, 1768
Johann Lambert, 1773
and at least 11 others.

But these well-known astronomers saw nothing:
Johann Schröter
William Herschel
Johann von Mädler

G Cassini wrote of his sighting in 1686, "Venus was then horned, as this object, which was diameter of almost 1/4 that of Venus, was of the same shape. It was distant from the southern horn of Venus a diameter of Venus on the western side."



Venus and its presumed satellite in a woodcut based on a drawing by Francesco Fontana. (left Nov 11, 1645; right Jan 22,1646) from l'Astronomie 1889, p 136.



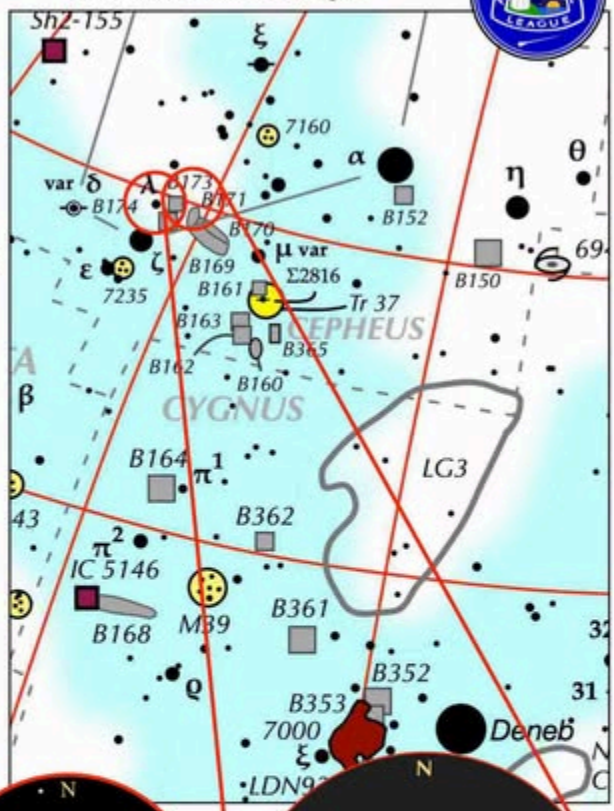
Likely explanations:
1. Paul Stroobant of Brussels Obs., in 1887 proposed that the sightings were primarily due to viewing internal reflections of the very bright planet in long focal length refractors. Also, some sightings included stars thought to be a moon.
2. Ghost reflections: Internal reflections in the eyepiece, and optical tube.
3. Father Maximilian Hell postulated that this was merely due to reflections off the cornea in the eye.

These observations and claims were made by experienced observers. Why didn't they realize what they were seeing was due to internal reflections in the telescope and eyepiece?

Venus is <u>now</u> nearing its horned – i.e., crescent – phase.
Do you see what Giovanni Cassini thought he saw?

OΣ461

in the Otto Struve catalogue



Observe it first, then ask yourself this:

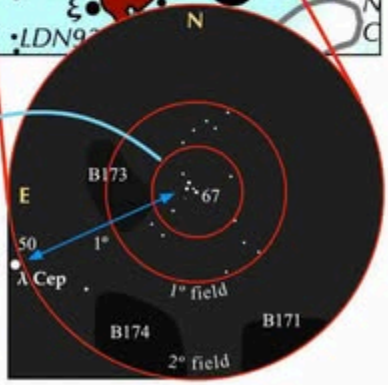
What is it?

1. A very scant open cluster,
2. An intriguing multiple star,
3. An asterism.

How to find ΣO461

1. Locate Delta, Zeta, and Lambda Cephei lying northeast of Deneb.
2. Center 5.0 magnitude Lambda, 2° north of 3.4 magnitude Zeta, in a low power eyepiece.
3. Move the telescope 2° northwest of Lambda.
4. A small grouping of 5-7 stars should lie near the center of a 1° field.
5. Midway between Lambda and ΣO461 hides the dark nebula B173 where few stars shine.

Primary star:
HIP 108925
(OΣ461),
6.7 mag.



Bonus Features:
Observers with very dark skies might be able to spot the dark nebulae B171, B173, and B174

2602

Observing the Caldwells

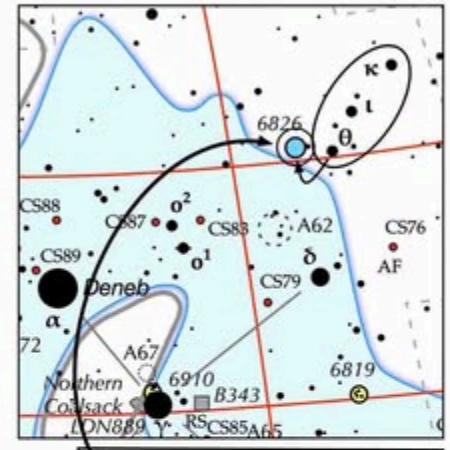
By the late 1700s, Charles Messier had catalogued many – but not all – of the finest deep sky objects. The Caldwell list, developed by Sir Patrick Caldwell–Moore in the 1990s, gathered another 109 candidates worthy of scrutiny by amateur observers.

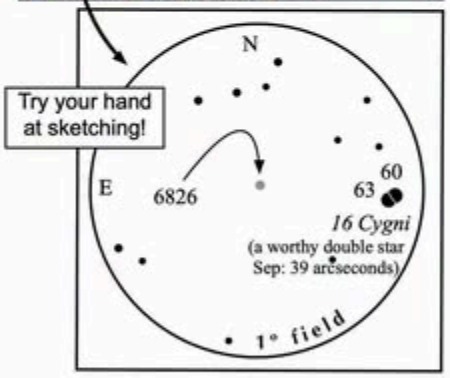
Caldwell 15, NGC 6826: "Blinking Planetary"

Navigate to Caldwell 15, NGC 6826:

1. Locate the 4th magnitude stars Kappa, Iota and Theta Cygni. They are approximately 6 degrees north of Delta Cygni, the northwestern member of the crossbar of the Northern Cross.
2. Place Theta Cygni near the southern edge of a low-power eyepiece.
3. NGC 6826 lies 2 fields east.

Why the "Blinking Planetary?"
Through telescopes of 6-10 inch aperture, the small planetary is easily visible with averted vision. When directly viewing the central star, however, the nebula is invisible. So, when your eye moves first on then off the star, the planetary nebula appears to blink off and on. An intriguing effect.





Published Characteristics for Caldwell 15:
Integrated magnitude: 8.9
Central star magnitude: 10.6
Diameter: 30 arcseconds

Eyepiece Impressions:

- 8 inch SCT, f/10; 107x & 147x: "Some mottling w/averted; LPR no help, contrast improved w/ UHC & OIII; still only mottled." AB
- 10 inch, LX200, 98x: "Planetary appears to wink in and out. I can discern a central ring with hole, and a bright spot in the center." DL
- 12 inch, 188x & 230x: "Very small at 188x. At 230x, central star visible. Appears almost perfectly round." PH
- 12.5 inch, 250x: "OIII did not really help, disappearance would happen after viewing directly. Bright, bluish spread out with somewhat fuzzy edges." CK