ASTROFILES

Auburn Astronomical Society Newsletter

June 2022 *Newsletter Editor — John Wingard — jwin1048@gmail.com*

Moon Phases

June 20 — Last Quarter

June 28 — New Moon

July 6 — First Quarter

July 13 — Full Moon

July 20 — Last Quarter

July 28 — New Moon

August 5 — First Quarter

August 11 — Full Moon

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News and events

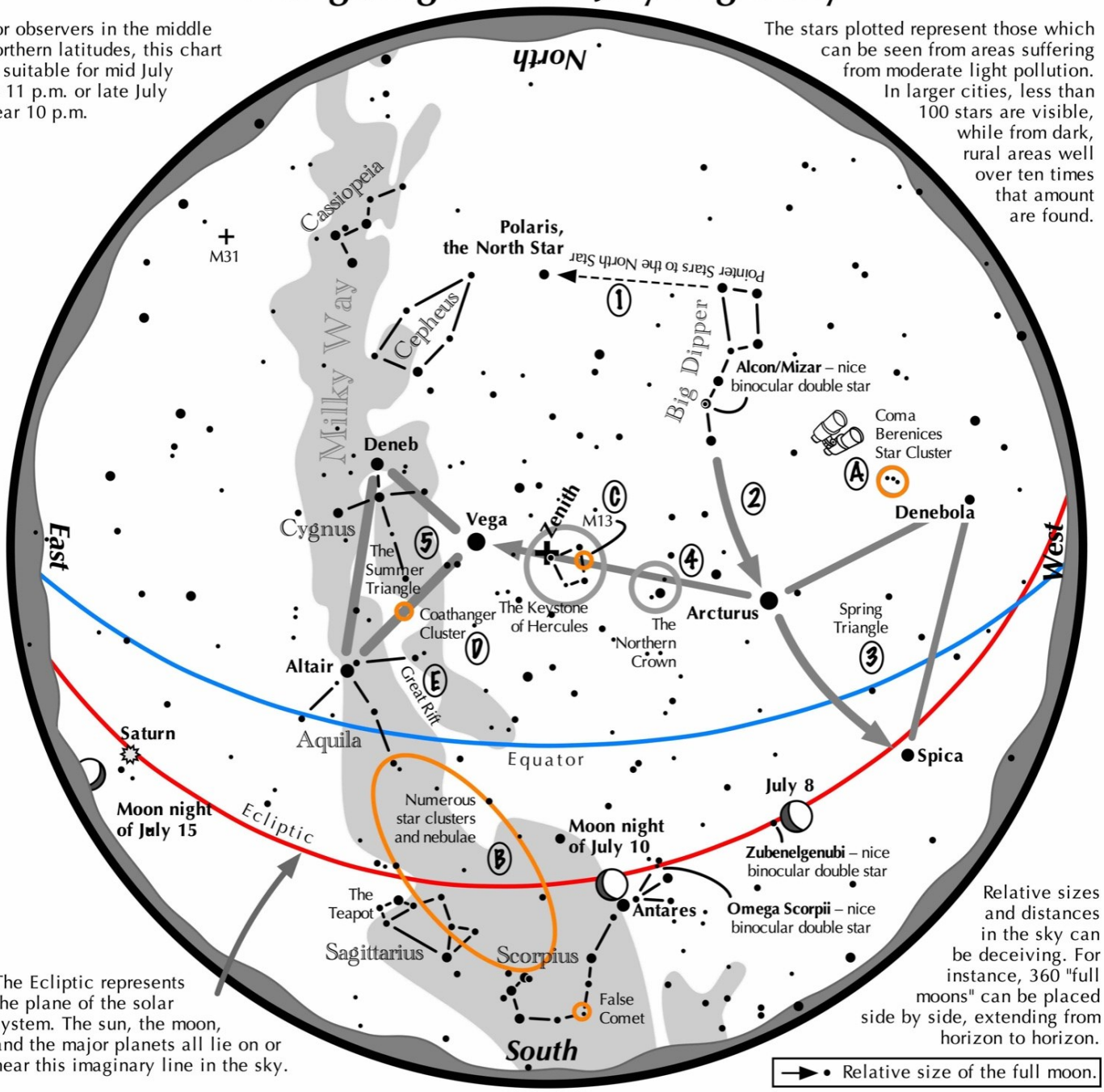
As we noted in last month's newsletter, the W.A.Gayle Planetarium in Montgomery has been closed by Troy University and turned over to the City of Montgomery. The future of the planetarium is uncertain. Recently, on the evening of June 8, 2022, the long-time director of the planetarium, Rick Evans, was honored at an event held at Baumhower's Victory Grille on Eastern Blvd. in Montgomery. The event was co-hosted by NewsTalk 93.1, WACV-FM in Montgomery. Rick asked us if we could help out by providing a telescope or two for a sidewalk astronomy display for the public prior to the dinner at the restaurant. AAS member Mike Lewis graciously volunteered to attend and help out. He also provided the photos that accompany this article. The AAS wishes Rick all the best in the future, regardless of the eventual fate of the planetarium and all of us certainly enjoyed all of the times that the club helped out with many annual astronomy day events there at the planetarium. *(more photos on the next page)*

All photos courtesy AAS member Mike Lewis

Navigating the mid July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July near 10 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→• Relative size of the full moon.

Navigating the mid July 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 first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica.
3. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
4. To the northeast of Arcturus shines another star of similar 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.
5. High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

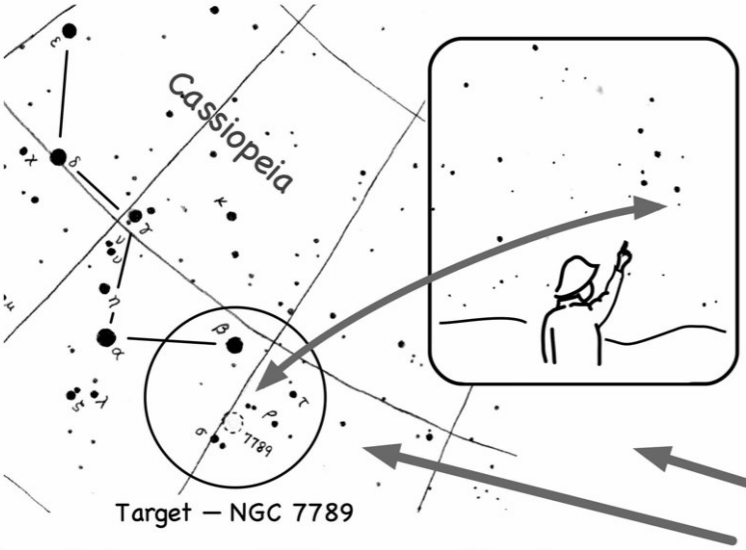
How do you find celestial objects?

☆ Finding celestial targets the modern way ☆

Computerized "GoTo" telescopes ... the quick and easy method:

1 Level the telescope mount
2 Point the tube towards north
3 Indicate the date and time
4 Indicate observing location
5 Center on first guide star
6 Center on second guide star
7 Enter the target's designation
8 The scope automatically slews to it

☆ Finding celestial treasures the old fashioned way ☆

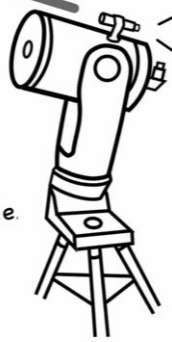


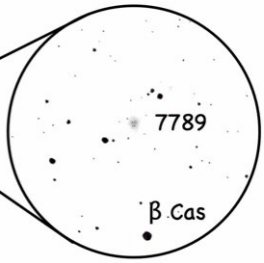
Target — NGC 7789

1 Learn the stars and constellations

★ There is no subsitute for sitting under the stars with a map and red flashlight.
★ Use a star map that plots all stars visible to the unaided eye.
★ Start by finding well-known star patterns such as the Big Dipper, or the constellation of Orion or Cassiopeia.
★ Continue by identifying neighboring star patterns.

2 Finderscope: little scope, big view



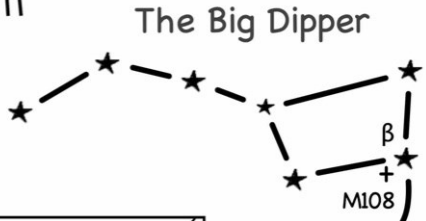


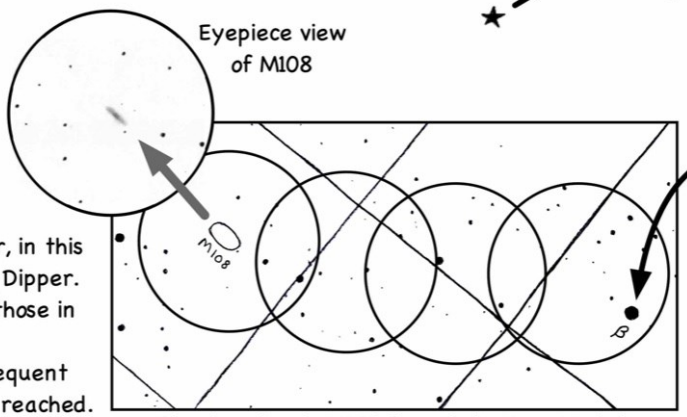
Finderscope view, note the inverted image

Why a finderscope?
★ Gives a wide field of view, about 5º,
★ Must be aligned with the main telescope,
★ Only the bright planets, brighter nebulae and star clusters are visible.

Simply...
★ Point the finder at a suitable guide star, or
★ Triangulate to the object by using nearby recognizable stars.

3 Star Hopping: finding the faintest of objects...





Star hopping to M108 from Beta Ursa Majoris

Before hopping begins:
★ Must have a **detailed** star map.
★ Must know the field of view of the eyepiece.

As an example, find galaxy M108:
★ Begin hopping at a reference star, in this case Beta (β) Ursa Majoris in the Big Dipper.
★ Match the stars on the map with those in the eyepiece.
★ Hop among the stars in each subsequent field of view until the correct field is reached.
★ Look closely to see the dim galaxy M108.

ASTRONOMICAL LEAGUE
www.astroleague.org/outreach

Just What Is a Supermoon?

We often hear the term “Supermoon” when referring to a particular full moon, but why is it called a super-moon? It all stems from the fact that the Moon’s orbit around the Earth is not exactly circular, but more of a slight ellipse. That means that at certain times in the Moon’s orbit, it is either a little closer or a little farther away from us. This change in distance makes the Moon appear slightly smaller or larger. The closest point in the Moon’s orbit is called “perigee,” approximately 226,000 miles away. The farthest point in its orbit is called “apogee” and at that point it is approximately 253,000 miles from Earth. Now, when a full moon phase happens to coincide with its closest approach (perigee), this creates what is called a “Supermoon,” a term that is relatively recent, having been coined in 1979.

To better illustrate this visual change in the size of the moon at the two distance extremes, refer to the photo composite below. These are actual full moon photos taken by amateur astronomer Soumyadeep Mukherjee in India at the apogee and perigee points in the Moon’s orbit and clearly show the difference in visual size. The average observer may not notice this size difference, especially if the moon is in a clear area of sky with no other size references around it such as trees, buildings or other structures.

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!

Find Hercules and His Mighty Globular Clusters

David Prosper

Hercules is one of the standout heroes of Greek mythology, but his namesake constellation can be surprisingly hard to find - despite being one of the largest star patterns in our night skies! Once you find the stars of Hercules, look deeper; barely hidden in the space around his massive limbs and "Keystone" asterism are two beautiful globular star clusters: M13 and M92!

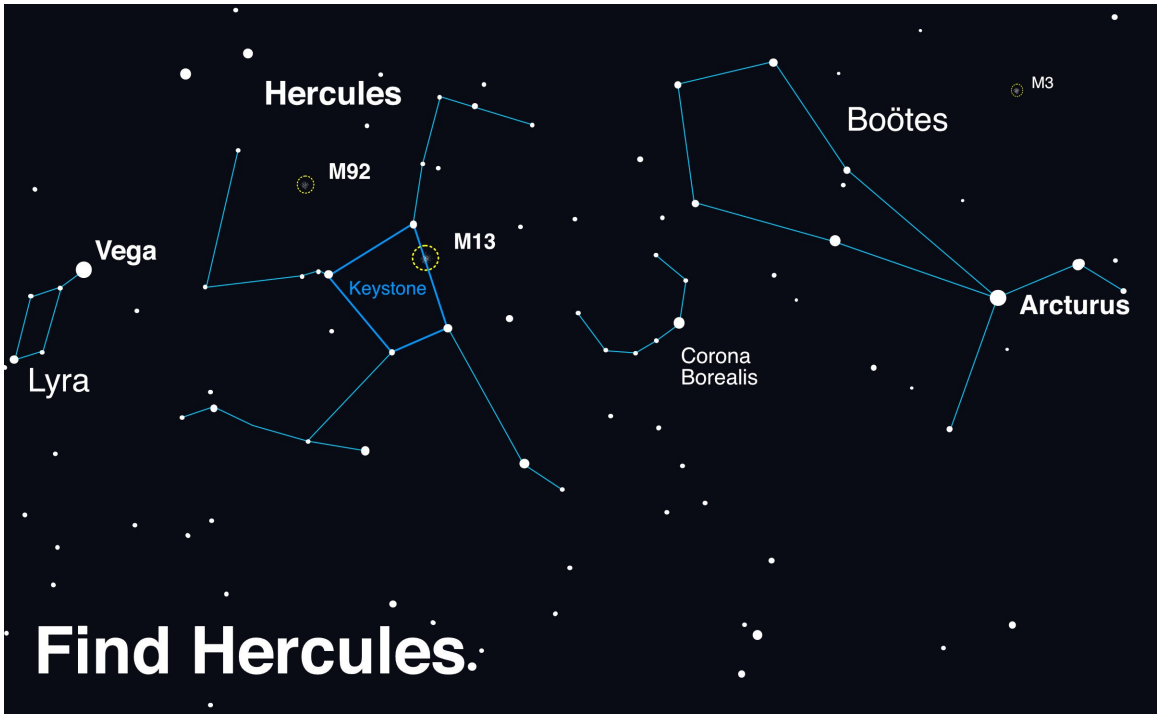
Since the constellation itself is relatively dim but bordered by brighter constellations, you can find the stars of Hercules by looking between the bright stars Vega and Arcturus. They are fairly easy to identify, and we have tips on how to do so in previous articles. Vega is the brightest star in the constellation Lyra and one of the three stars that make up the Summer Triangle (*June 2020: Summer Triangle Corner: Vega*). Arcturus is the brightest star in the constellation Boötes, and can be found by "arcing to Arcturus" from the handle of the Big Dipper (*May 2021: Virgo's Galactic Harvest*). You may be able to Hercules's "Keystone" asterism first; this distinct pattern of four stars is traditionally shown as the torso of the great hero, though some illustrators prefer marking the Keystone as the head of Hercules. What pattern do *you* see in the stars of Hercules?

Globular star clusters appear "fluffy," round, and dense with stars, similar to a dandelion gone to seed, in contrast to the more scattered and decentralized patterns of open clusters. Open clusters are generally made up of young stars that are gradually spreading apart and found inside our Milky Way galaxy, while globular clusters are ancient clusters of stars that are compact, billions of years old, bound to each other and orbit around our galaxy. Due to their considerable distance, globular clusters are usually only visible in telescopes, but one notable exception is M13, also known as the Great Cluster or Hercules Cluster. During very clear dark nights, skilled observers *may* be able to spot M13 without optical aid along the border of the Keystone, in between the stars Zeta and Eta Herculis - and a bit closer to Eta. Readily visible as a fuzzy "star" in binoculars, in telescopes M13 explodes with stars and can fill up an eyepiece view with its sparkling stars, measuring a little over half the diameter of a full Moon in appearance! When viewed through small telescopes, globular clusters can appear orblike and without discernable member stars, similar in appearance to the fuzzy comae of distant comets. That's why comet hunters Edmund Halley and Charles Messier discovered and then catalogued M13, in 1714 and 1764 respectively, marking this faint fuzzy as a "not-comet" so as to avoid future confusion.

While enjoying your view of M13, don't forget to also look for M92! This is another bright and bold globular cluster, and if M13 wasn't so spectacular, M92 would be known as the top celestial sight in Hercules. M92 also lies on the edge of naked-eye visibility, but again, binoculars and especially a telescope are needed to really make it "pop." Even though M92 and M13 appear fairly close together in the sky, in actuality they are rather far apart: M13's distance is estimated at about 25,000 light years from Earth, and M92's at approximately 27,000 light years distant. Since M13 and M92 appear so close together in our skies and relatively easy to spot, switching between these two clusters in your scope makes for excellent star-hopping practice. Can you observe any differences between these two ancient clusters of stars?

Globular clusters are closely studied by astronomers for hints about the formation of stars and galaxies. The clusters of Hercules have even been studied by NASA's space telescopes to reveal the secrets of their dense cores of hundreds of thousands of stars. Find their latest observations of globular clusters - and the universe - at nasa.gov.

Composite image of the dense starry core of M92 imaged in multiple wavelengths. While your own views of these globular clusters won't be nearly as crisp and detailed, you might be able to count some of its member stars. How far into their dense cores can you count individual stars? Credits: ESA/Hubble & NASA; Acknowledgment: Gilles Chapdelaine. Source: https://www.nasa.gov/feature/goddard/2017/messier-92



Auburn Astronomical Society

Membership Application Form

Name:
_____

Address:
_____

City: _____ **State:** _____ **Zip:** _____

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

E-mail:
_____

Telescope(s):
_____

_____

Area(s) of special interest:
_____

_____

Enclose: $20.00 for regular membership, payable in January. *Full-Time* student membership is half the Regular rate.

*** For *NEW* members joining after January, refer to the prorated Dues Table below:**

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

Make checks payable to: Auburn Astronomical Society and return this application to:

Auburn Astronomical Society
c/o John Wingard
5 Wexton Court
Columbus, GA 31907

For questions about your dues or membership status, contact: jwin1048@gmail.com

Thank you for supporting the Auburn Astronomical Society