



ASTROFILES

Auburn Astronomical Society Newsletter

August 2020

Newsletter Editor — John Wingard — jwin1048@gmail.com

Moon Phases

August 25 — First Quarter
September 2 — Full Moon
September 10 — Last Quarter
September 17 — New Moon
September 23 — First Quarter
October 1 — Full Moon
October 9 — Last Quarter
October 16 — New Moon

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Latest News and Events

Well, it's almost September and we still find ourselves in the grips of the COVID-19 pandemic with no real relief in sight. All of our regular club meetings have been put on hold and the majority of our star gazes and public outreach activities have either been cancelled or not even planned. It is looking more and more like the remainder of this year will be more or less the same as the past 5 or 6 months. We hope that everyone in our astronomy community is well and staying safe and at least enjoying the skies in solitude or with close family. Personally, I am very much looking forward to the cooler temperatures and earlier darkness that fall and winter bring as well as the clearer and drier atmosphere.

Next month the Auburn Astronomical Society will celebrate its 40th anniversary. It was founded in 1980 in Auburn with the primary mission of public outreach astronomy. We had originally hoped to mark this occasion at the second National Astronomy Day on Saturday, September 26, 2020 with a possible star gaze at the W. A. Gayle Planetarium in Montgomery. However, with the current pandemic still very much in play, this will not likely happen. The AAS would like to thank all of the current and past members for generously volunteering their time, equipment and knowledge to help bring the wonders of the night sky to the general public.

In case you haven't noticed, Mars is being invaded once again by a fleet of spacecraft presently on their way to the red planet. In addition to the U. S. rover *Perseverance*, it will be joined by an orbiter from the United Arab Emirates (UAE) as well as a combination orbiter, lander and rover from China. Launch opportunities like these come around approximately every 26 months.

We always like to feature examples of astronomical imaging by our members and here are two nice shots by AAS members Jay Hall and Chris Young. They just happen to be of the same object, the Pelican Nebula that is located in the constellation of Cygnus approximately 1,800 light-years away.

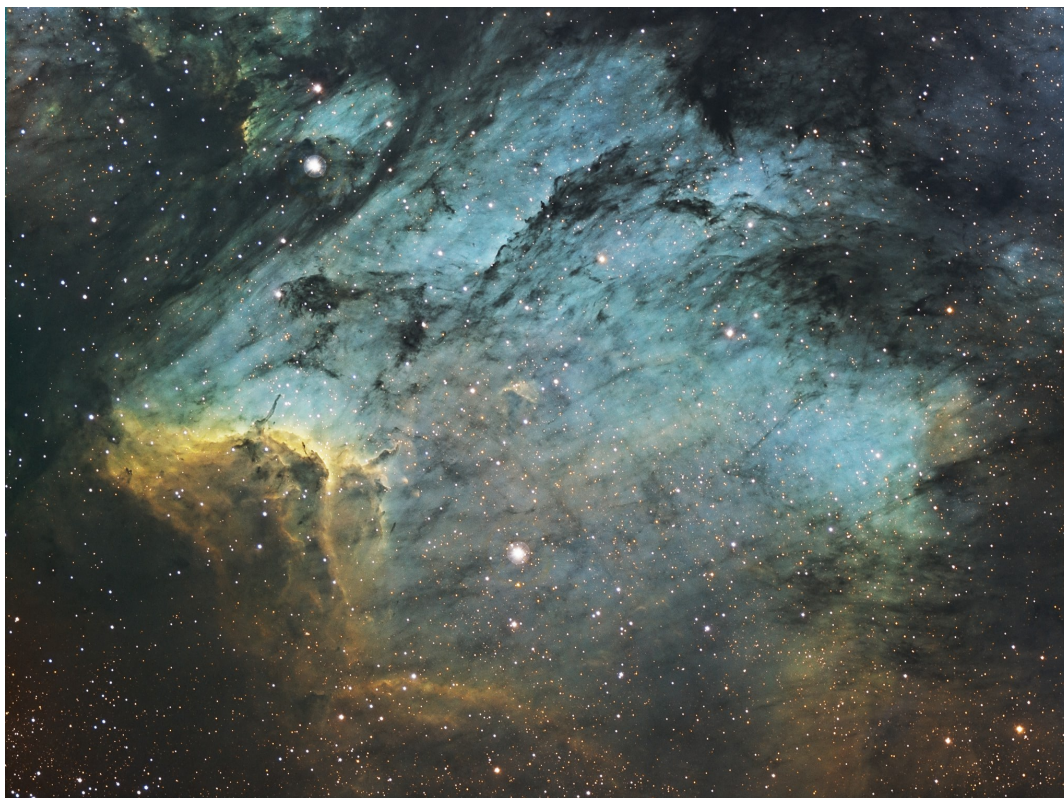


Image by Jay Hall

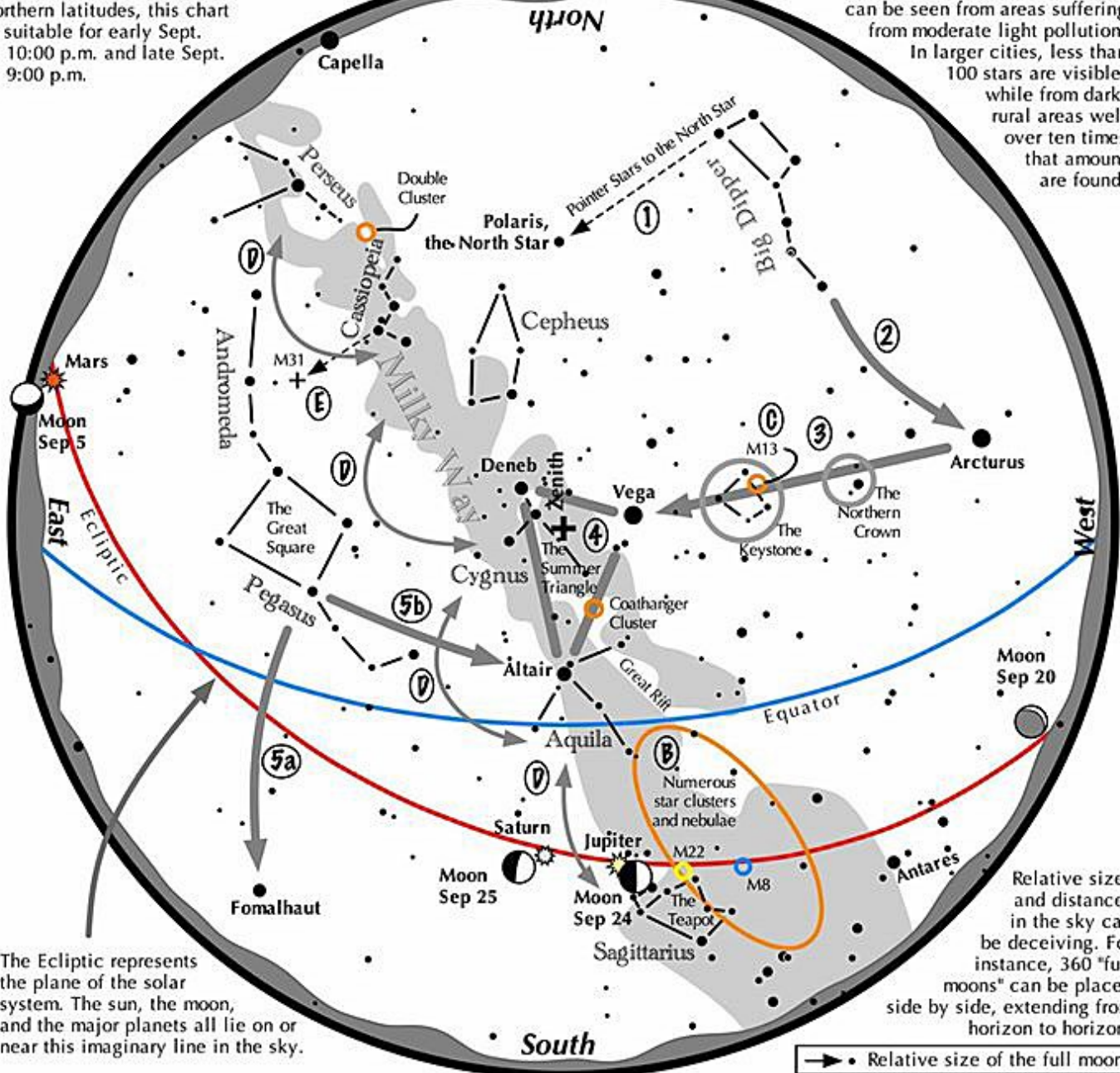


Image by Chris Young

Navigating the mid September Night Sky

For observers in the middle northern latitudes, this chart is suitable for early Sept. at 10:00 p.m. and late Sept. at 9:00 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 September 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 September evening sky.
- 3 Nearly overhead shines a star of similar brightness as Arcturus, 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 The stars of the summer triangle, Vega, Altair, and Deneb, shine overhead.
- 5 The westernmost two stars of the Great Square, which lies high in the east, point south to Fomalhaut. The southernmost two stars point west to Altair.

Binocular Highlights

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



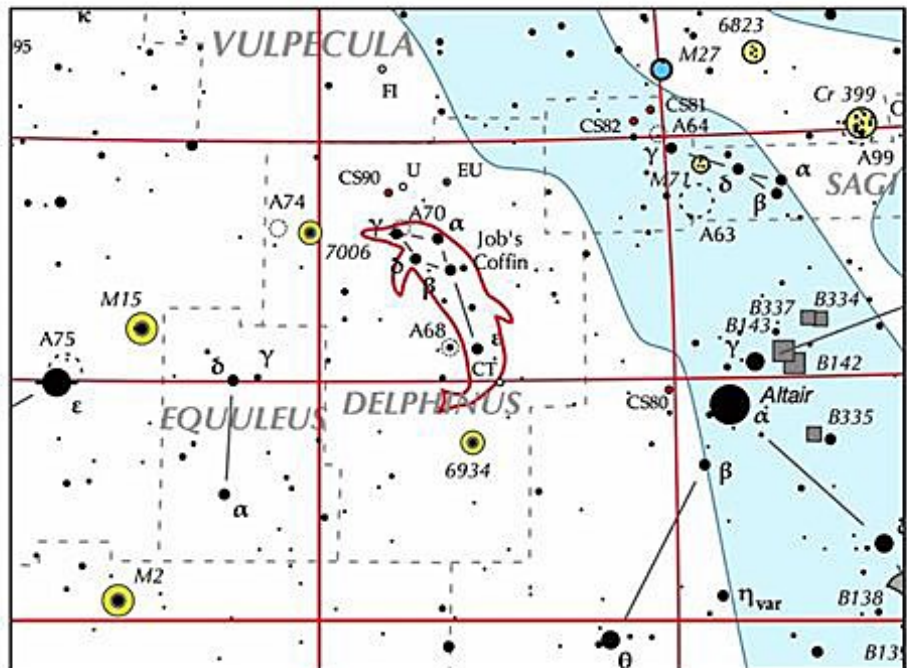
Why do we feel the need to stargaze in times like these?

People have gazed into the starry realm since time immemorial. What drives them to head outside when they could readily be doing something else?

1. Quietly gazing skywards is a personal activity, often giving one comfort in the seemingly immutable nature of the heavens. The stars of this year are the same stars of last year – and of many year's past. Knowing that they still shine in the proper places in the sky strongly validates that all is right with the universe, even if all is in complete disarray on Earth. So, just by looking up, a sense of steadiness is brought into our lives.

2. Looking skyward also gives us a way of seeing into our past, evoking pleasant memories from our youth: Enjoying a late night session counting Perseids, gasping at the sight of the Orion Nebula swinging into the eyepiece on a chilly evening, and, of course, exclaiming the inevitable "Wow!" when first seeing Saturn through a telescope. Those are personal astronomical experiences that skywatchers remember as long as they live. Unforgettable.

3. People like making seasonal friends in the sky, ones that return year after year, with some being ones that aren't readily recognized by many casual stargazers: The four quadrangle stars plus a dangling luminary marking Corvus in spring; the five or six leaping lights of Delphinus just trailing the Milky Way in summer; the two single and the one tight trio of stars outlining the heavenly tubular bell of Triangulum (Borealis) in autumn, and the eight muted points of light of Lepus nestled below the domineering



Orion in winter. Once these patterns and sky locations are committed to memory, they will gladly greet any stargazer on the same dates, year after year. They will be true friends. Always.

4. Other people want to feel more in tune with the cosmos. After they learn about a particular heavenly wonder, they seek to discover it first hand, desiring to gain a deeper appreciation of their place in the universe. They not only want an understanding of the astrophysical nature of a celestial entity, such as the globular cluster NGC 6522, or the mysterious and elusive dark nebula B289, or the ghostly wisp of galaxy NGC 4565, they want to see it for themselves. They want to "take it in."

The Astronomical League gets it. Celestial sessions like these give people what they want: the Authentic Observing Experience. They want to be under the stars with telescope or binoculars at hand. They want to be intellectually challenged and comforted by what they witness with their own eyes and through the eyepiece. They want to be part of Observer, Telescope, and Sky.

... by John Jardine Goss, excerpts from the 2020 Observers' Handbook of the Royal Astronomical Society of Canada (RASC), page 82, with permission.



This article is distributed by NASA Night Sky Network

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

Summer Triangle Corner: Altair

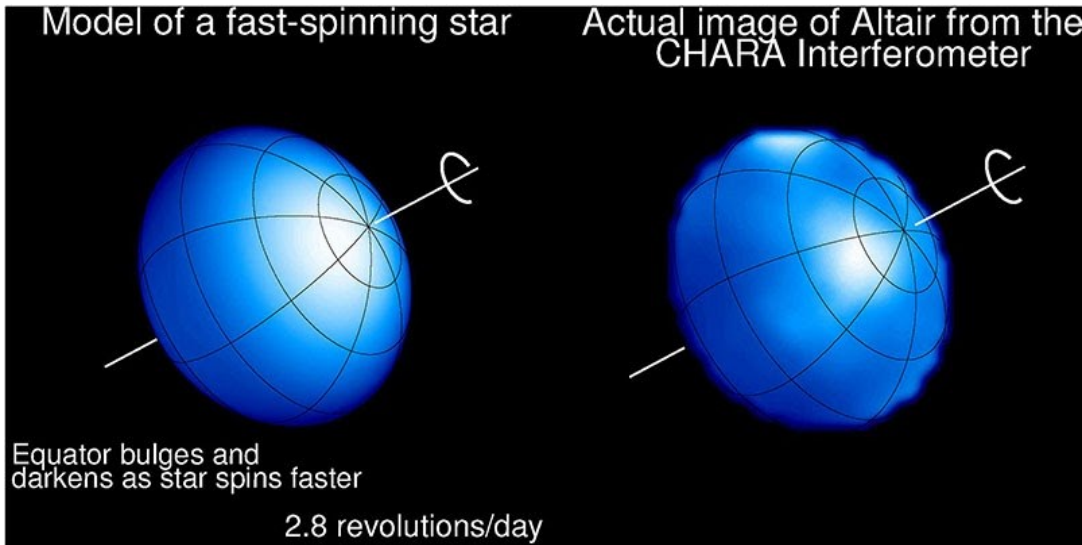
David Prosper

Altair is the final stop on our trip around the Summer Triangle! The last star in the asterism to rise for Northern Hemisphere observers before summer begins, brilliant Altair is high overhead at sunset at the end of the season in September. Altair might be the most unusual of the three stars of the Triangle, due to its great speed: this star spins so rapidly that it appears “squished.”

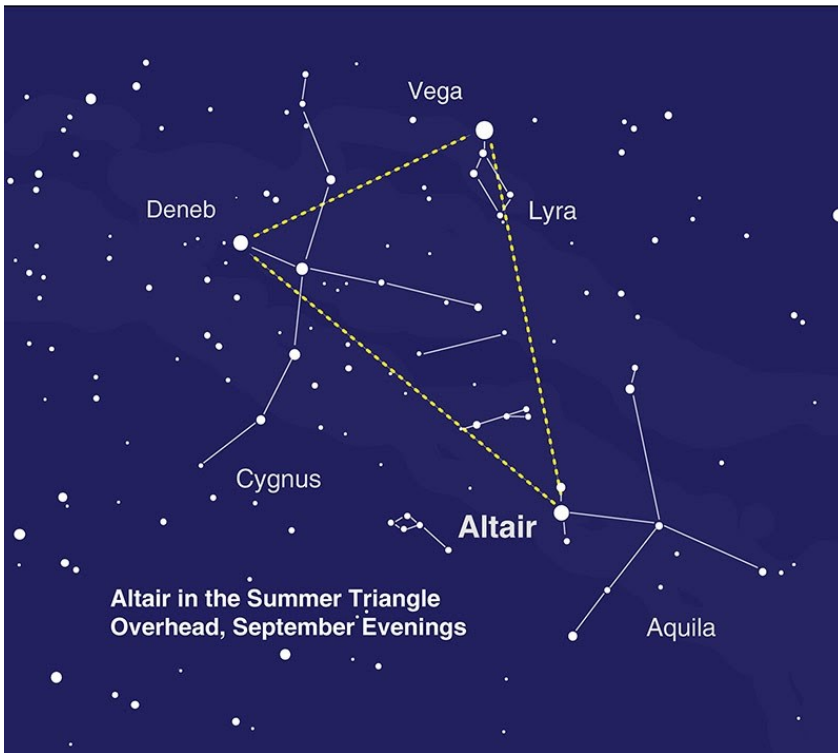
A very bright star, Altair has its own notable place in the mythologies of cultures around the world. As discussed in our previous edition, Altair represents the cowherd Niulang in the ancient Chinese tale of the “Cowherd and the Weaver Girl.” Altair is the brightest star in the constellation of Aquila the Eagle; while described as part of an eagle by ancient peoples around the Mediterranean, it was also seen as part of an eagle by the Koori people in Australia! They saw the star itself as representing a wedge-tailed eagle, and two nearby stars as his wives, a pair of black swans. More recently one of the first home computers was named after the star: the Altair 8800.

Altair’s rapid spinning was first detected in the 1960s. The close observations that followed tested the limits of technology available to astronomers, eventually resulting in direct images of the star’s shape and surface by using a technique called *interferometry*, which combines the light from two or more instruments to produce a single image. Predictions about how the surface of a rapidly spinning massive star would appear held true to the observations; models predicted a squashed, almost “pumpkin-like” shape instead of a round sphere, along with a dimming effect along the widened equator, and the observations confirmed this! This equatorial dimming is due to a phenomenon called *gravity darkening*. Altair is wider at the equator than it is at the poles due to centrifugal force, resulting in the star’s mass bulging outwards at the equator. This results in the denser poles of the star being hotter and brighter, and the less dense equator being cooler and therefore dimmer. This doesn’t mean that the equator of Altair or other rapidly spinning stars are actually dark, but rather that the equator is dark in comparison to the poles; this is similar in a sense to sunspots. If you were to observe a sunspot on its own, it would appear blindingly bright, but it is cooler than the surrounding plasma in the Sun and so appears dark in contrast.

As summer winds down, you can still take a Trip Around the Summer Triangle with this activity from the Night Sky Network. Mark some of the sights in and around the Summer Triangle at: bit.ly/TriangleTrip. You can discover more about NASA’s observations of Altair and other fast and furious stars at nasa.gov.



The image on the right was created using optical interferometry: the light from four telescopes was combined to produce this image of Altair's surface. Image credit: Ming Zhao. More info: bit.ly/altairvsmodel



Altair is up high in the early evening in September. Note Altair's two bright "companions" on either side of the star. Can you imagine them as a formation of an eagle and two swans, like the Koori?



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.

If you are a NEW member joining after the first of the year, refer to the prorated 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, Secretary/Treasurer
#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!