



PISGAH  
ASTRONOMICAL  
RESEARCH  
INSTITUTE

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## ***Mountain Skies***

**July 16, 2018**

### **MARS SHINES AT ITS BRIGHTEST**

**The planets:** In describing the planets, I often point out that Venus and Jupiter are, after the moon, the brightest objects in the nighttime sky. Even Sirius the Dog Star, the brightest star in the night sky, is not as prominent as these planets. But, this month, Mars joins the club. As the earth approaches this beautiful red planet's closest point on the 31st, Mars will increase in brilliance until it outshines the giant Jupiter (but not Venus). This is the closest and, thus, the brightest it's been since 2003. The earth passes Mars about every 26 months. Within a few days of this point of opposition, the two will be at their closest. The orbit of Mars is significantly elliptical in shape which results in each closest approach varying somewhat. This time around Mars and earth will pass each other by a mere 35.8 million miles. Mars is now rising shortly after the sun so, by the time darkness sets in, it can be spotted low in the east.

As we described in detail in the last column, we are in a time when all five of the visible planets are in the sky before midnight. Mars, in fact, is now the last of these to make an appearance each night. At sunset for the rest of the month we have Mercury, Venus, Jupiter and Saturn stretching in a line from low in the western twilight across the sky to low in the southeast. By the time the sky gets truly dark, Mercury will have set with Mars rising in the east. This show will continue for the rest of the month although Mercury will be diving into the evening twilight from night to night such that, by the last week of the month, it will be too low to spot. As we move into August Mercury will disappear into the sunset, pass by the sun on August 8, and emerge into the morning twilight. By that time Venus and Jupiter will be setting before midnight with Saturn and Mars setting before dawn. That will leave the elusive Mercury all by itself as the dawn twilight sets in.

**The stars:** Now that summer is upon us, it's not too early to look high in the east in the early evening for the so-called "Summer Triangle." This pattern of three bright stars is not one of the classical constellations but rather what astronomers refer to as an asterism. In fact, the corners of the triangle lie in different constellations each associated with a bird in classical sky lore. Highest and brightest is Vega in the constellation of Lyra the lyre or harp. This is the musical instrument with which Orpheus charmed so many of the young ladies in his time. After the untimely demise of his wife Eurydice on their wedding day, Orpheus rescued her from the underworld but left his lyre behind. Jupiter sent the vulture to retrieve it. Thus, on star maps we often see the lyre carried by a vulture.

To the northeast of Lyra is the bright star Deneb that represents the tail of the beautiful swan Cygnus. Tracing a line of stars from Deneb towards the south, we note the body and long neck of the swan terminating in the star Albireo that marks the eye of the swan. (Look at Albireo with a small telescope and you will spy a colorful double star.) To the sides of the swan we can trace out his wings. Cygnus was the close friend of Phaeton who was the son of Helios the god of the sun. When Phaeton lost control of his father's horses and was knocked from the sky by a thunderbolt from Jupiter, Cygnus dove into the river Eridanus to recover his friend's body. For this kind deed he was placed in the sky to be a reminder to all of us that it is good to help a friend. For some people the swan can be found more easily if imagined as "The Northern Cross" with the top of the cross in Deneb and the bottom of the upright marked by Albireo. The wings of the swan then become the cross arm of the cross.

Finally, to the south is the bright star Altair in Aquila the eagle. Jupiter sent his royal bird to earth to bring the boy Ganymede to Mount Olympus to become the cup bearer for the gods.

### **Celestial Calendar:**

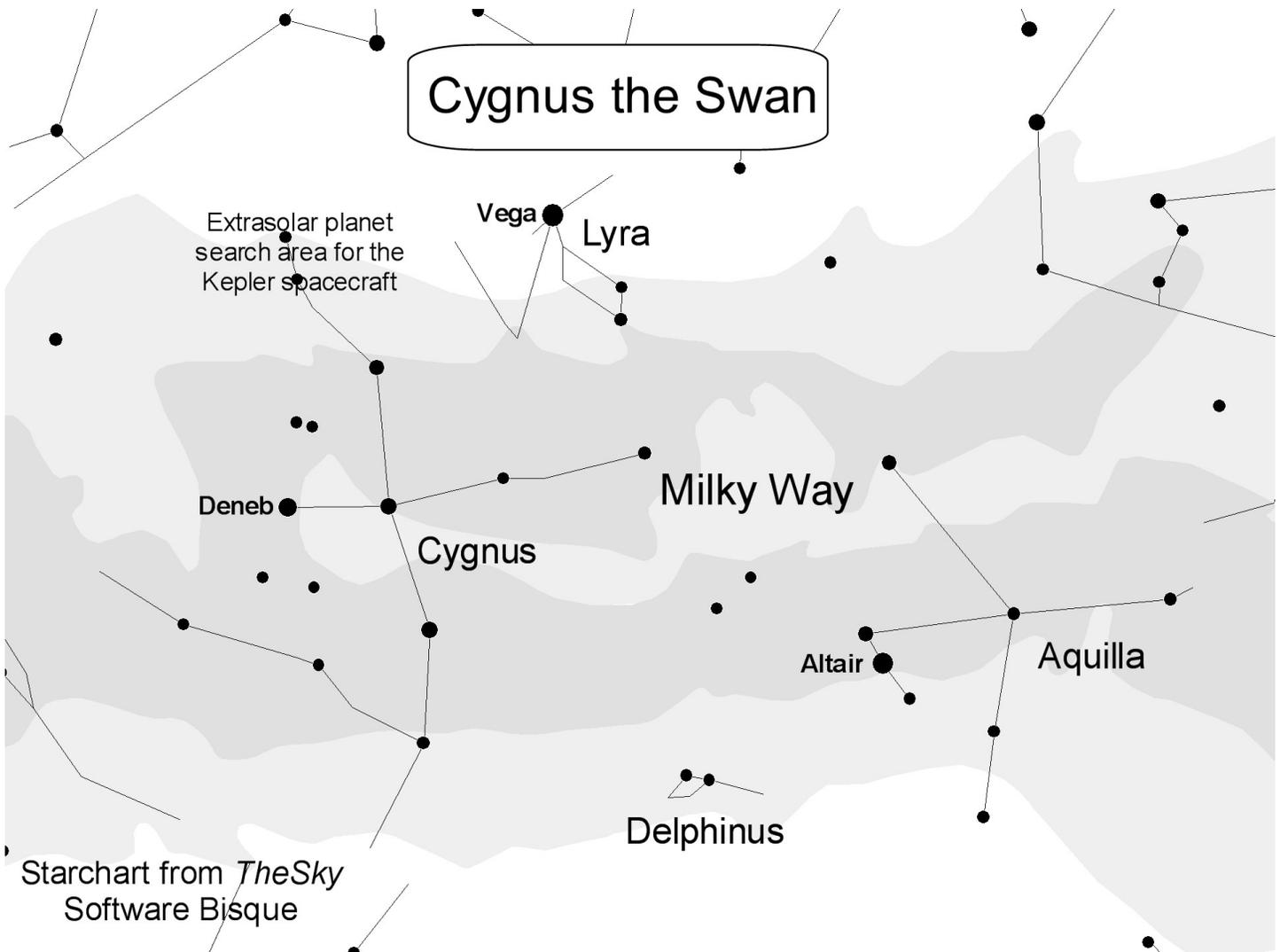
July 19, 3:52 p.m. EDT – First Quarter Moon

July 27, 1 a.m. EDT – Mars at opposition – up all night

July 27, 4:20 p.m. EDT Full Moon – smallest in 2018. Total lunar eclipse, not visible from the Carolinas.

July 31, 4 a.m. EDT – Mars at its closest approach to Earth: 35.8 million miles (0.39 Astronomical Unit)

August 1, 2:18 p.m. EDT – Last Quarter Moon



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**About the Learning Center at PARI:** The Learning Center at PARI is a public not-for-profit 501 (c) (3) organization established in 1998. Located in the Pisgah National Forest 30 miles southwest of Asheville, NC, the Learning Center provides STEM educational programs at all levels, from K-12 through post-graduate research. For more information about the Learning Center at PARI and its programs, visit [www.pari.edu](http://www.pari.edu). Graphics produced with TheSky Astronomical Software, Software Bisque.