





October Skies over the Pinnacles

Mars about as close as it ever gets!

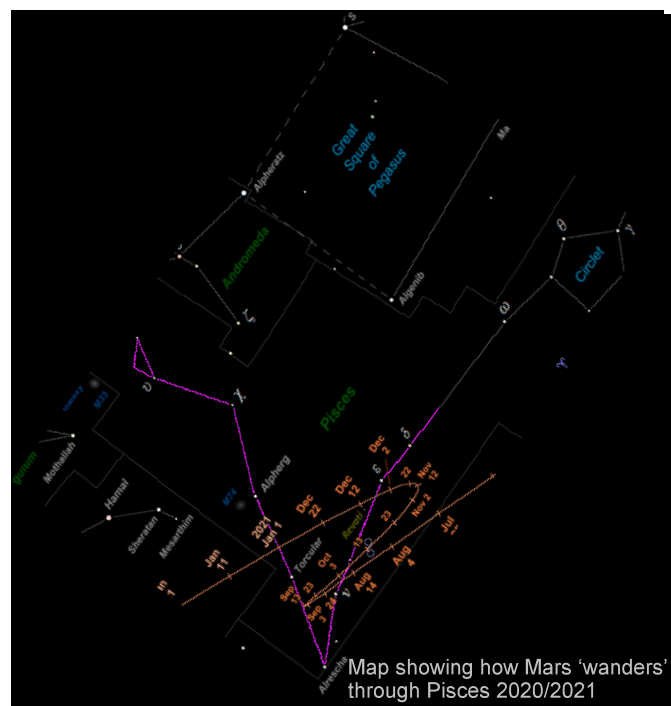
October's four principal phases of the moon

October 1	Full Moon	
October 10	Last Quarter	
October 16	New Moon	
October 23	First Quarter	

The Mars Month

Before the age when humans began to accept the natural world as being controlled by predictable and **knowable** forces, the heavens were believed to be perfect and never-changing. This was fine, as long as you weren't too keen an observer. These folks might have called a "star" that moved against the starry background something like "fake news". But we are a curious species and many people noticed that things in the night sky **do** change.

The image I used in last month's issue was taken from my back yard on August 24. The map on the right, provided by Nakedeyeplanets.com, shows how Mars 'wanders' through the constellation Pisces in 2020 and 2021. This motion against the starry background is hard to understand - without science. What makes it do that?



Go to <http://www.nakedeyeplanets.com/mars.htm> to see this map better.

Think of a NASCAR race, except that the race track is nearly circular. Also, all the cars must stay in their lane and their speed is dictated by how far out their lane is from the center. I know, no crashes and no excitement. But we're lucky the planets in the solar system follow those rules! Now imagine yourself in one of the race cars and you are going faster than the car in the next lane out. (Remember that cars the inner lanes go faster than the cars in the outer lanes.) When you are far away from the slower car you don't notice much about how fast the outer car is going. As you approach the slower car and pass it, the slower car **appears** to be going backward. Well, it is, compared to your, faster car. When faster Earth, on its orbit, passes Mars, on its slower orbit, Mars **appears** to do a loop and goes backward against the starry background. As you might guess, when this happens the distance between Earth and Mars is especially small and Mars appears brighter than usual and through a telescope, both brighter and bigger!

This is prime time to observe Mars through a telescope. If you are a scientifically-minded country, you choose this time to send robotic missions to Mars. On July 19, the United Arab Emirates launched their probe, called *Hope*, on July 23, China sent up their *Tianwen-1* and the United States launched NASA's *Perseverance* mission with the first helicopter to be used to explore Mars.

Other Attractions in October

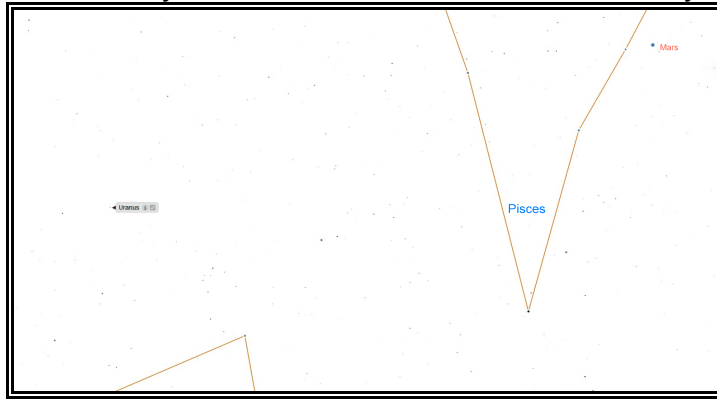
Let's drag our gaze away from Mars long enough to sample some other celestial delights that will b happening in October.

Are you too young to have seen Halley's Comet when it last visited the skies in 1986? Here's the next best thing. Peaking on October 30 we'll warm up some coffee or hot chocolate and try to catch some meteors from the Orionid meteor shower. At the end of the month, Earth will slide through the dust 'contrail' left behind by this most famous of comets. The "shooting stars" you may see are remnants of Comet Halley. The meteors from this shower will appear to come from the constellation Orion because that's the direction Earth is headed on its orbit in late October. There will be no moonlight to fade our view of the Orionid meteors. To see the most meteors, try going to bed early and (ugh!) Set your alarm for about 3AM. Meteors are best seen between midnight and dawn.



By the way, the correct pronunciation of Halley rhymns with "valley" not "daily". We can thank the 1950's music icons, "Bill Haley and his Comets" for the incorrect pronunciation!

Feeling ambitious? Try to find the planet Uranus in the sky! It is bright enough to see in binoculars that have front lenses at least 2 inches in diameter. It appears a little ways to the left of Mars in October. The tiny blue disc of Uranus can be found by using this chart.



Jupiter and Saturn continue to rule the southwestern sky. Jupiter is the brighter “star” on the right and Saturn is just to the left.

October 2 Watch for Mars and the Moon to rise together-a very pretty sight!

October 6 Mars will be nearer to the Earth than any time until 2035. It will be bright!

Mid October If you can be far away from city lights, look for the Zodiacal Light in the east as a large tilted faint cone of light. Sunlight reflecting off interplanetary dust makes for a ethereal display of light.



I took this picture of the Zodiacal Light last year in New Mexico.

October 20-21 The Orionid meteor shower midnight to dawn.

October 31 The “spooky” Blue Moon can be seen rising in the east at sunset. The name means that this will be the second full moon in October. Sorry, it will be white and grey, a usual!