August Skies over the Pinnacles

August 2024 by Jeff Hutton August's Four Principal Phases of the Moon

August 4	New Moon	\bigcirc
August 12	First Quarter	
August 19	Full Moon	
August 26	Last Quarter	

The View from Here

So often we glance at something, think we understand it, and then move on. Politicians take advantage of this with short "bumper-sticker" pronouncements, and we're supposed to accept them, then move on. If astronomy teaches us anything, it makes us accept that we cannot understand the Cosmos in one short glance.

An example of this can be appreciated by the many centuries it took for us to understand the true nature of the planets of our solar system. The Church taught us that we were center of the universe. It fit with religious narrative and even if one took the time to notice how the stars seem to wheel overhead during the night, that was confirmation enough that the universe was, indeed, centered around us! Planets were a little more troublesome. They seemed to wheel overhead the same as the stars-in <u>one night</u> but if you watched, say the planet Mars, it sometimes did a sort of drunken dance against the stars over the weeks and months. I've been watching the stars for about 30 Mars orbits and have seen this motion many times. Other planets do this. The planets, Mercury and Venus never even make the trip from horizon to horizon, like the outer planets do. The ancient Greek name for 'planet' meant 'wanderer'.

If you were lucky enough to make it into the path of the Moon's shadow on April 8 you saw a sight that even a glance showed an awesome sight. But would you have noticed what else was visible in the sky on either side of the Sun? Once totality began and the entire disk of the sun was covered by our Moon, your gaze would be transfixed on the pearly beauty of the Sun's corona. Maybe your eyes wandered away from the eclipsed sun and noticed some other "stars" on either side of the Sun. If you did, you saw the bright planets Jupiter, Venus, Saturn and maybe even Mars. Below is a cell phone image taken during totality and some of these planets showed up! Afterward, I was inspired to make the 'poster' below.



Last month I had the privilege to use Berea College's planetarium to introduce some wonderful and curious people to the constellations of the night sky. This instrument is powered by a software package called **The Sky**. The home Windows version is useful for presenting illustrations for the **Attractions in August** portion of this article. The displays of the stars and planets are more impressive when projected onto the planetarium dome but when used on the home computer very useful demonstrations of cosmic events are possible.

For instance, look again at the illustration, above, taken during the April 8 total eclipse of the sun. I've marked the positions of the planets shown to the left and right of the Sun. During this time, the Moon completely obscured the face of the Sun and the brightness of the sky was as about as bright as during the full Moon. If you've ever enjoyed a night under the full Moon, you probably noticed that some bright stars, and maybe planets, are visible. Below is an illustration that **The Sky** program produces of this event. The orbits of the planets' orbits are displayed.



At above left is the cell phone photo and at right is the illustration, showing the planets and their orbits that were present at the time of the eclipse.

At right is a diagram of our solar system at the time of the solar eclipse of April 8, 2024. The color-coded orbits are marked. This diagram is not drawn to scale.

Imagine this diagram being laid on the floor and you were standing on the green dot representing Earth. You would look to the left of the Sun to see Jupiter and to the right of the Sun to see Venus and Saturn, just like in the picture above!. The other planets would not be bright enough to see without a telescope.



Attractions in August

When you hold your hand all the way out and hold three fingers out, like the scout's salute in panel 2, your fingers create an **angular distance** of 5 degrees, about the width of the bowl of the Big Dipper. When I talk about the angular distance between, say, the Moon and a star or planet, I'll say that they are separated by a certain number of degrees. Sky and Telescope magazine is my source for most of the following information.



All summer and fall

Eall Keep an eye on Corona Borealis! As of July 30, the last time I looked, the recurring nova in the constellation, Corona Borealis (Northern Crown) hadn't gone off. To find Corona Borealis, face north and find the Big Dipper. Then follow the arc of the Big Dipper's handle the bright orange star, Arcturus. Now, find the kite-shaped pattern of stars that form the constellation Bootes. Draw a straight line from the Big Dipper's handle through the top of the kite, pointing north, and find the backwards "C" of Corona Borealis. The double star known as T CrB will dramatically brighten for a few weeks is summer or fall and it is identified below.



August 1 If you're up before the Sun's glare, check out the Moon rising right in front of Gemini with the "Twin's" stars Castor and Pollux, just to the left. During these hot months, remember that colder days aren't far ahead. A good reminder are the winter consrellations, Auriga, Taurus and Orion are already visible.



August 5 Binocular Alert! Just as the glare of the already-set Sun is fading try to fine the thinnest crescent Moon just above the horizon. Next, notice a bright spot under the Moon. That's Venus. Now look to the lower left. Can you see little Mercury? In the illustration below, I show the orbit of Venus in blue and inside that, the orbit of Mercury in red.



Below is a view of the orbits of Mercury, Venus and the Earth that shows where they all are when viewed from "above". The source is a nifty website called The Planets Today .com.



Compare the two diagrams!

August 11-12 The Persied Meteor Shower! This will be a good year for this event. Meteors (shooting stars) from this particular cloud of interplanetary dust left over from Comet 109P Swift Tuttle can be seen from mid July to September. On these dates, the Earth is sweeping through the densest part of the comet's left-over dust cloud.



The best time to see the most meteors is between midnight and dawn. That's because at that time, we're riding on the part of the earth that is turning toward the meteoroid cloud as we hurtle along on our orbit around the Sun.



The radiant, shown by the orange 'star', is the point in space where the earth is headed in mid-August. Because the Earth is orbiting the Sun, that point is always moving. It's like holding your arm straight out and pointing ahead when you are on a moving carousel. What you are pointing at changes as you go around!

August 20 Looking for Saturn? This evening the Moon will point the way! Watch as it rises (it'll be one day past full) Saturn will be 1/4 degree above it. A very pretty sight. The orbits of the Moon (green) and Saturn (tan) are shown. See where they cross? That crossing point is called a node. Saturn's orbit is way behind the Moon's but if both the Moon and Saturn were at that node at the same time, the Moon would cover-up or occult Saturn.



August 27 Try to crawl out of bed early this morning before sunrise and be rewarded with a pretty gathering of the Moon, Jupiter and Mars. They will be high above the bright constellation, Orion, in the southeast. The Moon and planets' respective orbits are also shown.

