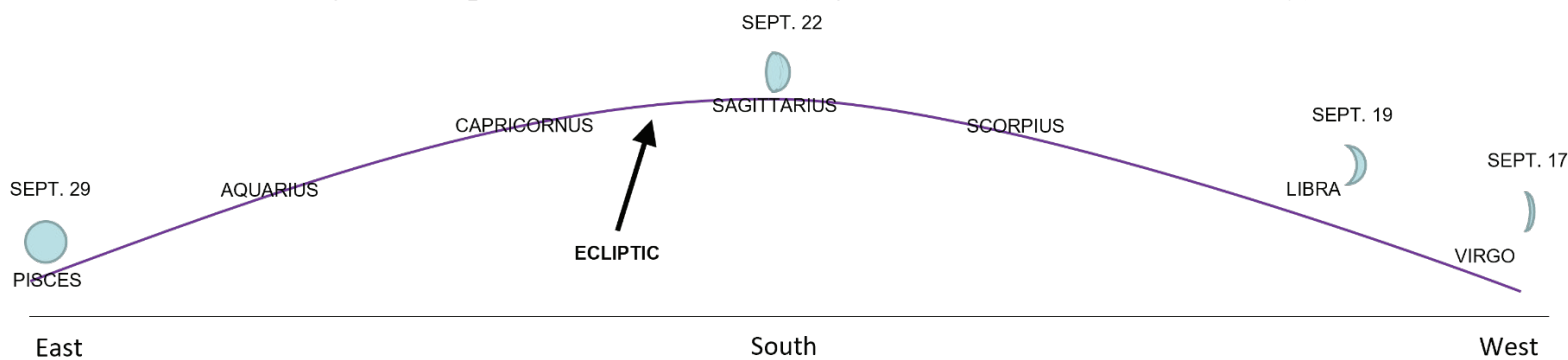


WHAT'S UP?

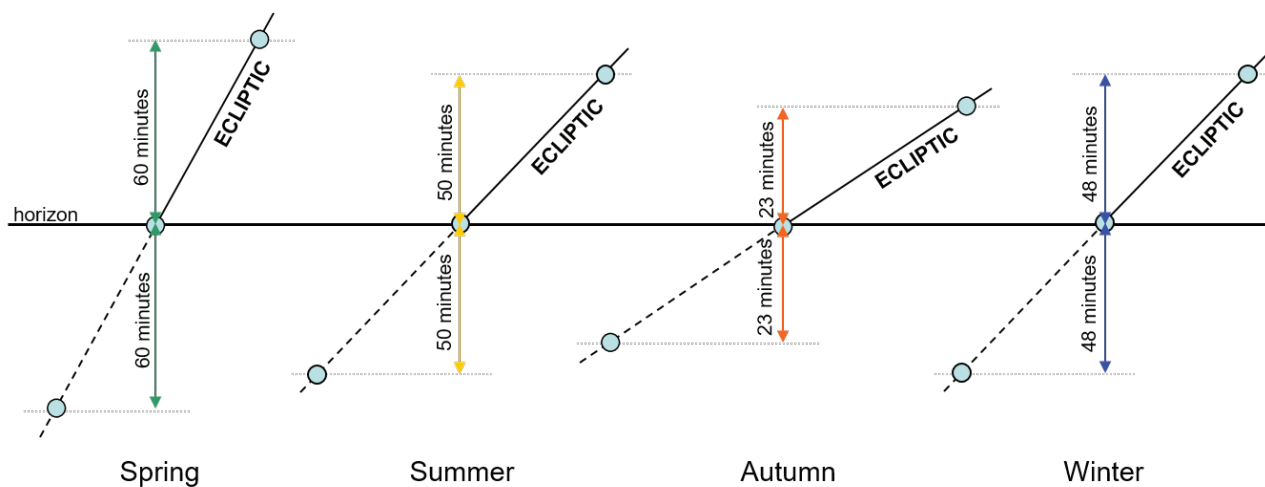
In this installment, we'll take a break from deep sky objects (the nebulas that we've been looking at) and see what makes the Harvest Moon special. The Harvest Moon, besides just being a great excuse to dance with someone special out under the Moon and stars, is the Full Moon that occurs closest to the Autumnal Equinox, which heralds the beginning of autumn. For example, this year, the Equinox occurs on the 23rd. The dates of the full moon that fall on either side of it are August 30th (24 days before the Equinox) and September 29th (6 days after the Equinox). So, the Harvest Moon is on September 29th. So, what makes the Harvest Moon special? Well, for a few days in a row, that big, bright, nearly full Moon is in the sky and ready to take over lighting fields by the time the Sun has completely done its job for the day, giving farmers more time to bring in their crops. Why is this full moon different than those in the other months? The answer is that at sunset, the Ecliptic (the line in our sky over which the Sun, Moon, and planets move) makes a shallow angle with the eastern horizon at this time of year. Now, as the Moon orbits the Earth, it moves along the Ecliptic from west to east (right to left as we see it in the sky). It takes the Moon about 30 days

to move from one full moon to another. In other words, it moves 1/30 of the way along in its orbit each



day. The illustration below shows how the Ecliptic runs across our southern sky at sunset at this time of year. The Moon is shown where it can be found against the background of stars each day, just after sunset.

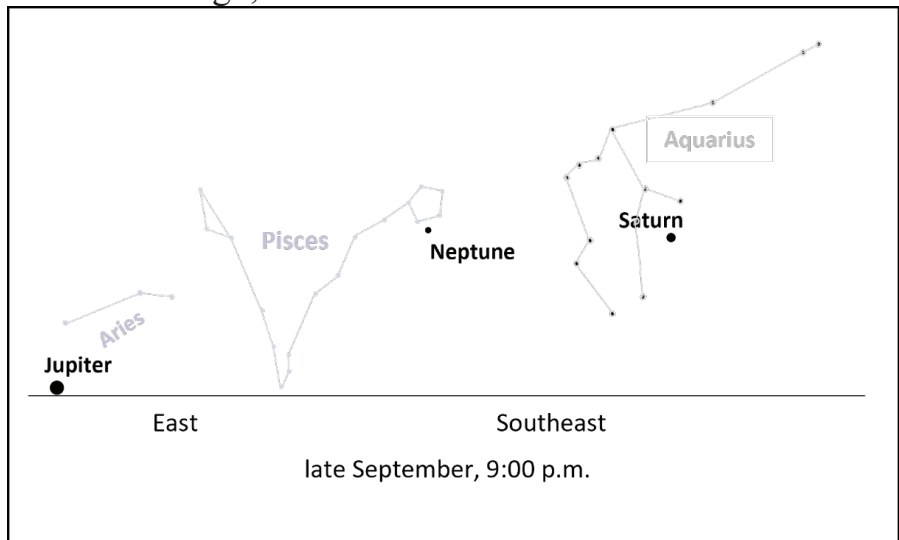
When the Ecliptic is at its steepest angle, the daily rising of the Moon differs the most from day to day (about 60 minutes). When the Ecliptic is at its shallowest angle to the horizon, the time between moonrise each day changes the least (about 23 minutes). So, for a few days in a row, the moon though no longer full, is still “pretty-Full”, and begins to brighten the landscape



before the evening twilight fully ends. This reminds me of a discussion I had with a friend recently. How long does the Full Moon actually last? Well, the Moon is “full” only just for an instant! The Moon is constantly in motion around the Earth and in only one instant do the centers of the Moon, Earth, and Sun align. The instant before, the Moon is a waxing gibbous and the instant after, the Moon is a waning gibbous. Of

course, the Moon moves too slowly for us to see the difference from instant to instant. Within a day though, a keen eye can spot that that the Moon isn't quite “full”. There is one other time each lunation (one cycle of the Moon around the Earth) that the centers align, and that is at the moment of the New Moon. Again, it only lasts for an instant. Just before, it is a waning crescent and just after, it is a waxing crescent.

Planet Roundup: By 9:00 p.m., Saturn is a good 30 degrees above the southeastern horizon now. With a magnitude of 0.5, it easily stands out. Neptune is 2/3 as high up as Saturn at this hour in south-southeast and Jupiter is just peeking over the eastern horizon. Uranus follows about a half-hour after later. The 1st Quarter Moon is on the 22nd, the Full Moon (Harvest Moon) occurs on September 29th. The 3Q Moon is on October 6th and the next New Moon is on October 14th. This year, the Autumnal Equinox occurs in the early morning hours of September 23rd.



You can reach me at astroblog@comcast.net with any questions and comments. This is *What's Up?* installment #76.

Barry