

WHAT'S UP?

Hi. Let's finish-up our look at the *retrograde motion* of the planets. In the last installment, we saw that this motion is not a real motion of the planets, it is only an apparent motion. We see it in our skies through the interplay of the Earth's and the other planets' steady orbiting of the Sun. We know from Kepler's Third Law that the further away a planet is from the Sun, the longer it takes the planet to complete an orbit around the Sun. In the case of Venus and Mercury, being closer to the Sun than the Earth, they have the inside track relative to the Earth. As they come around and pass between the Earth and the Sun, their motion relative to the stars appears to reverse. After a month or so, the motion resumes its former direction. Let's take a look at what's happening. Figure 1 shows the positions of Earth and Venus over the 2-½ month period from April 15th through July 1st from a point of view above the plane of our Solar System. The dotted lines in Figure 1 are the lines of sight from Earth to Venus. If we extend the lines out to the stars, we can figure out where Venus will be seen against the background of stars. In Figure 1, notice that Venus doesn't actually change directions. It still orbits the Sun in the same direction. It is only because Venus is on the inside track around the Sun and passes the Earth as Venus moves in its orbit, that Venus appears to move backwards for a few weeks. Trace the numbers 1 through 6 in the diagram with your finger to get a better feel for the changing directions of Venus' movement in our sky. At present, Venus is found among the stars of the constellation Taurus. Figure 2 shows the positions of Venus in relation to the stars of Taurus from April 15th through July 1st of this year. With variations in time and extent of the apparent motions, Mercury follows this same pattern. Notice one other thing – the relationships between the Earth, Venus, and the Sun during this period. Between positions 3 and 5 (between May 15th and Jun 15th), Venus passes between us and the Sun. The impact on our seeing Venus in the sky is that Venus changes from an evening planet to a morning planet. We won't be seeing Venus in the West after sunset. After June 6th, the morning sky-watchers among us will begin to see Venus creeping up in the eastern sky before dawn. It will still appear in binoculars and telescopes as an ever-so-thin crescent, but the direction that the crescent curves will flip from right to left. And, it will change from a waning crescent (one that gets thinner and thinner) to a waxing crescent (one that gets thicker as the weeks go past.) Lastly, these diagrams are not to scale, and the exact positions shown are not precise, but are only meant to illustrate the point.

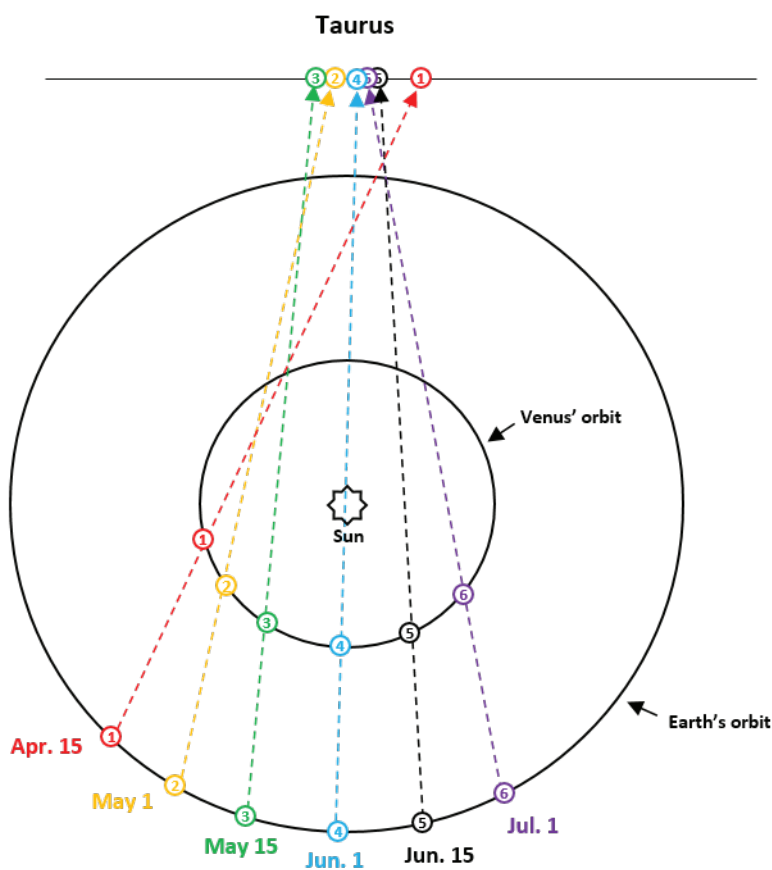


Figure 1

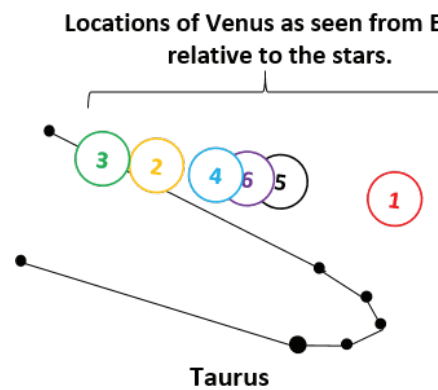


Figure 2

In addition to the morning and evening planets, asterisms, and constellations that are now visible and that we've see in the previous two installments, I'd like to begin to talk about the Moon and interesting features that can be noticed with just our eyes as well as with binoculars and telescopes. Now is a good time to start to observe the Moon because we just had a New Moon on May 22nd. Between that day and June 5th, what we can see of the Moon will enlarge and change from a thin sliver of a crescent to a fully illuminated disk. In the next *What's Up?* we'll start by looking at why we see the Moon constantly change its shape over a month's time. In the meantime, what do you notice about the Moon? What shapes or shadings to you see? Can you see any of the unlit part of the lunar disk? I encourage you to keep a small notebook handy and jot down what you notice. Be sure to add in the date and time of day, too. Keeping notes on what you see is a great way to build your understanding of the night sky.

You can reach me at astroblog@comcast.net with any questions and comments you have. This is *What's Up?* Installment #21.

Until next time,
Keep looking up!

Barry