


June Skies over the Pinnacles

Evening Star, Morning Star

Did you know that the “morning star” and “evening star” aren’t stars at all but the planet Venus? The orbits of Mercury and Venus lie inside that of Earth. So they never travel across the sky from eastern horizon to western horizon like the planets which lie further from the Sun than the Earth. Think of watching a horse race and imagine the race track is a nearly circular one. If you are in the stands you see the horses go all around the track. If you can bet lots of money, you may imagine yourself in a “superior” position to the jockeys riding those horses. If you are *inside* the track you see the horses and riders going all the way around you so the horses and jockeys are “superior” to you. I use these terms, “inferior” and “superior”, because those are the terms astronomers use to describe the planets of our solar system. Planets like Venus and Mercury, whose orbits lie inside that of Earth, are referred to as “inferior” and we would be able to see them go all around their orbits, just by looking near the direction of the Sun. But there is a problem. The sun is so bright that we can only see the stars and planets when the sun is below the horizon. So, we can only see Venus and Mercury when their orbits cause them to swing east of the Sun in the evening and west of the sun in the morning. Mars, Jupiter, Saturn, Uranus and Neptune are “superior” planets and, to them, Earth is an “inferior” planet. It just depends on your point of view.

June’s four principal phases of the moon

June 5	Full Moon	
June 13	Last Quarter	
June 21	New Moon	
June 28	First Quarter Moon	

Dance of the Planets

I tried, I really tried, but failed to find the planet Mercury which was so near Venus last month. Did you have better luck? The weather probably prevented you from seeing Mercury, too. In my 50 or so years gazing at the sky I’ve only seen Mercury twice. The innermost planet lies so close to the Sun that it rarely travels far from our star. I suppose an astronomer on Saturn would say the same thing about the Earth. In June, we still have a chance to see Mercury. On the 4th just after twilight, we might catch this little guy about 24 degrees east of the Sun. Hold your left hand, fingers up, with your wrist on the western horizon, right where the Sun had set. The little planet should be above your little finger. Mercury sets less than 2 hours after the Sun in early June.

Venus did put on a nice show throughout May! When weather permitted, I took pictures through my telescope of the changing phases of our bright “evening star”.



Not only does Venus go through phases like the moon, it appears to get larger when it gets more crescent-shaped. That's because it is swinging closer to Earth during this time, so it appears larger.

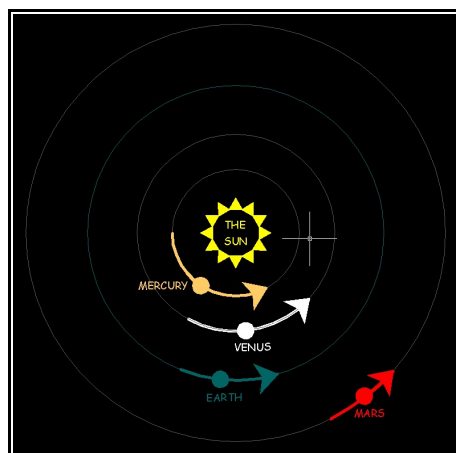
Look for the giants of our solar system rising together in the east just before midnight in June. It will be quite a sight! You'll recognize Saturn as being a little higher and to the right of Jupiter. Jupiter is brighter. If you have good binoculars and a way to steady them in your grip, look carefully. You might glimpse one of more of it's bright moons, right next to the planet. You'll need a telescope with at least 50-times magnification to see Saturn's rings.

Orange Mars will follow these bright planets into the sky by about 2AM in June. Other than it's unusual color, you can't see much of this planet without a moderate-sized telescope and at least 100-times magnification.

Uranus and Neptune are too dim to see without a telescope but can be seen in binoculars if you know where to look. If you want to try, blue Uranus and Neptune can be found a little northeast of Mars.

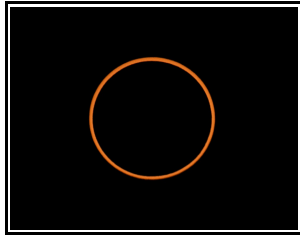
Here's a trick you can use to tell a planet from a star. With the exception of Uranus and Neptune, visible planets are generally brighter than the surrounding stars in the sky (except for Uranus and Neptune). Here's another: stars twinkle and planets usually glow with a steady light.

Here's a diagram that shows Earth, Venus and Mercury in their respective orbits in June. If you are on the Earth in this picture, it would be noon if you were on the side most directly toward the Sun and it would be midnight if you were on the side facing directly away from the Sun. Viewed from the Earth's North Pole, Earth is turning clockwise.



What do realtors say about the value of a house? Location, location, *location*! In June, there are a number of interesting sky-events happening - if only we could be there to see them!

If we could be in Africa or Asia during the New Moon on June 21st, the daytime sky would turn dark. That's because the moon will drag its narrow shadow across those two continents. Do I mean a total solar eclipse? Well, sort of. You see, the Moon's orbit around the Earth is elliptical, not a circle. So sometimes it's close to us (as it was during its full phase in March, April and May) That's called **perigee**. When the Moon passes in front of the Sun over Africa and Asia this month, it will be near **apogee**. That's when it is at its greatest distance from Earth. So it will appear small, too small to cover the Sun's blazing disk. **At NO time during such an event is it safe to look toward the Sun.**



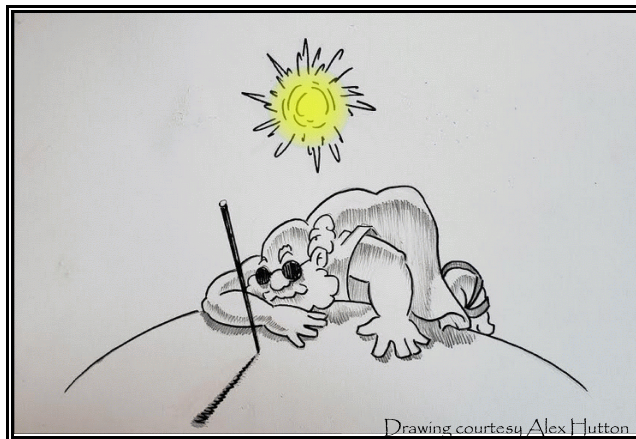
Annular Solar Eclipse



Total Solar Eclipse

Here's a new term for you. Occultation. It sounds dark and mysterious but all it means to astronomers is that one object in the sky covers another. A solar eclipse is an occultation of the Sun by the moon. On June 19, Venus will rise in the pre-dawn twilight, followed by the thin crescent moon. If we were living up north in Newfoundland, the Sun would rise much later and we would see the Moon moving on its orbit to cover up, or **occult** Venus. We'll still see a very pretty site. No telescope or binoculars required!

Let's not forget that the **Summer Solstice** occurs on June 21. That's the point when the Earth's North Pole is most pointed toward the Sun. So starting on this date, on the first day of summer, the days begin to grow shorter toward the **Winter Solstice**. Sound depressing? Think about this! 300 years before the birth of Christ, a fellow named Eratosthenes used this day to be the first to accurately calculate the circumference of the Earth!



Most of the information found in this article is courtesy of the May issue of Sky & Telescope Magazine. For more detailed celestial information, check out skyandtelescope.org.