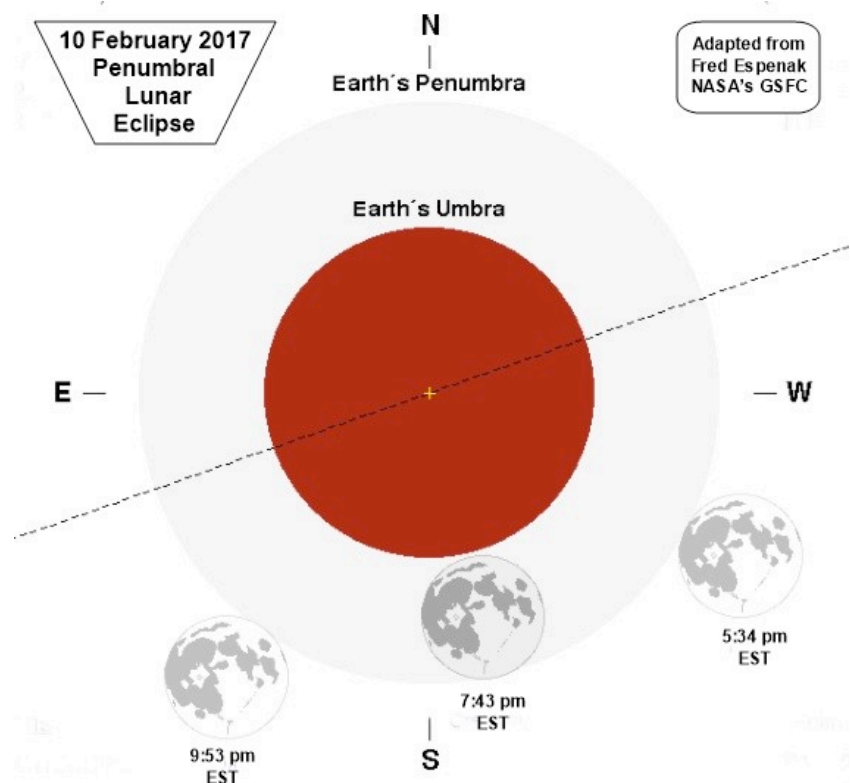




Mountain Skies February 6, 2017

MOON SLIDES THROUGH EARTH'S SHADOW FRIDAY EVENING

The Moon: This coming Friday evening, there will be a *penumbral* eclipse of the moon that will be visible from western North Carolina, weather permitting. As the full moon rises that evening, it will be passing through the very bottom of the earth's shadow, not entering the *umbra*, the dark part of the shadow, but passing through the much fainter outer part of the shadow, the *penumbra*. Observers will notice a darkening of the moon from bottom to top as it slides through the lower part of the earth's shadow. The eclipse technically begins at 5:34 p.m. EST and ends at 9:53 p.m. EST. However, moonrise in Brevard, NC does not occur until 6:03 p.m. In any case, shadowing on the moon as it passes through the penumbra of the earth's shadow is so subtle that the best time to observe it will be about 30 minutes before and after the central time of the eclipse at 7:43 p.m.*



For more information from NASA on this eclipse set your browser to...

<https://eclipse.gsfc.nasa.gov/LEplot/LEplot2001/LE2017Feb11N.pdf>

The stars: It's hard to talk about the winter stars without talking about Orion the hunter. He is the most spectacular constellation in the entire sky and can be used to find other objects and patterns in the sky. Orion lies high in the east as the sky darkens. The three stars in a row marking his belt are

fairly obvious. To the north of these are two more that mark his shoulders and two below the belt in his legs. Note the colors of the stars in Orion. A reddish colored star named *Betelgeuse* (sometimes called *Beetlejuice*) marks his right shoulder (He is facing you.). *Rigel*, on the opposite side of the constellation, is quite blue in color. Stars have different colors, not so much due to their compositions, but more because of their temperatures. Hot stars like Rigel might be 20,000 degrees Fahrenheit or more while “cool” supergiants like Betelgeuse might be only 5,000 or 6,000 degrees.

Extend the belt of Orion down to the southeast...to the Dog Star, Sirius. Note its white color; its temperature is about 10,000 degrees Fahrenheit, intermediate between those of Rigel and Betelgeuse. Sirius is actually a double star although it takes a telescope of moderate size to find the companion. The companion star, known as “Sirius B,” is a faint white dwarf star, one of a class of stars that typically have the mass of a star similar to the sun but are only the size of a planet like the earth. Thus, they are very dense with surface gravities perhaps 30,000 times that of the Earth. Astronomers understand they are old stars at the ends of their energy producing lifetimes.

Sirius (or “Sirius A”) and Sirius B orbit each other around their common center of gravity once every fifty years. Because Sirius A is so much brighter, it is hard to spot Sirius B when they are close together. However, their mutual orbits are very elliptical and they were at their closest point in 1994. Thus, we have entered a period of time when they are appearing progressively farther apart; for the next 20 years or so it will be much easier to spot the companion with a moderate size telescope.

The planets: These February nights are starting off with the brilliant Venus high in the west after sunset. One can’t miss it as it looks like a headlight coming towards the observer. Just above the queen of the planets is the much fainter red planet Mars. These two have appeared particularly close in evening sky since the first of the year but are now pulling apart.

Jupiter, the second brightest of the planets, is the next to appear. It rises just after 11 p.m. this evening and dominates the sky along with Sirius the dog star, the brightest star in the nighttime sky.

Finally, Saturn is rising tomorrow at 4 a.m. which is well before sunrise. Below and to the left of this ringed planet we will find the elusive Mercury each morning until late in February when it again disappears into the morning twilight.

Celestial Calendar:

February 10, 7:33 p.m. EST, Full Moon – Penumbral Eclipse visible from the Carolinas

February 16 – The Sun moves from Capricorn the sea-goat into Aquarius the water-bearer.

February 18, 2:33 p.m. EST, Last Quarter Moon