



Good Things Come in Pairs

JUST TWO WEEKS after the solar eclipse, the Moon takes its turn in the shadow. Eclipses always come in pairs, with a lunar eclipse occurring two weeks before or after a solar eclipse. This happens because the Moon is still close enough to the Sun-Earth orbital plane to cross into Earth's shadow.

On the night of August 27–28, the full Sturgeon Moon undergoes a deep partial eclipse. There's more than one shadow at play during a lunar eclipse. The semi-dark outer shadow, the *penumbra*, becomes obvious some 30 minutes before the partial phase begins and disappears after it ends. Look for a smudgy gray cast on the Moon's limb.

At mid-eclipse, Earth's dark inner shadow, the *umbra*, will cover 96.2% of the Moon. Only the north polar region escapes umbral darkness. Like a turtle's head it pokes out beyond the shadow's edge into the gray outer penumbra. The reddened Moon fringed in white eerily resembles the planet Mars with its north polar cap.

The eclipse is widely visible across the Americas, Europe, Africa, and the eastern Pacific. **Greatest eclipse, when the Moon nestles deepest within the umbra, occurs at 12:13 a.m. (August 28th)**

▲ PHASES OF THE LUNAR ECLIPSE On August 27–28 the Sturgeon Moon dives deeply enough into Earth's shadow to undergo a near-total eclipse. The partial phase lasts more than 3 hours, with a maximum obscuration of 96.2% – dark enough to conduct a search for meteorite impact flashes through a telescope with a low-light video camera. The eclipse is visible across more than half the Earth. Penumbral shading will be obvious up to half an hour before and after partial eclipse.

Eastern Time. For many U.S. observers the lunar pageant gets underway during convenient evening viewing hours. That, and pleasant August temperatures, should encourage lots of people to step outside and watch the show.

Sunlight streaming around Earth's circumference is first reddened and then refracted into the umbra by the atmosphere, painting the shadowed Moon in shades of burnt orange, red, and copper. The hue varies from eclipse to eclipse depending on the state of the atmosphere. Clouds, dust, volcanic ash, and water droplets all affect the particular shade of red. In binoculars and small telescopes, you may notice that the umbra's fuzzy border has a turquoise color. Ozone in the upper stratosphere absorbs red light, allowing only the bluer colors to pass.

Seeing the Moon transform from a glaring white disk into a ruddy ball suspended in a star-studded sky never gets old, no matter how many lunar eclipses you've experienced.