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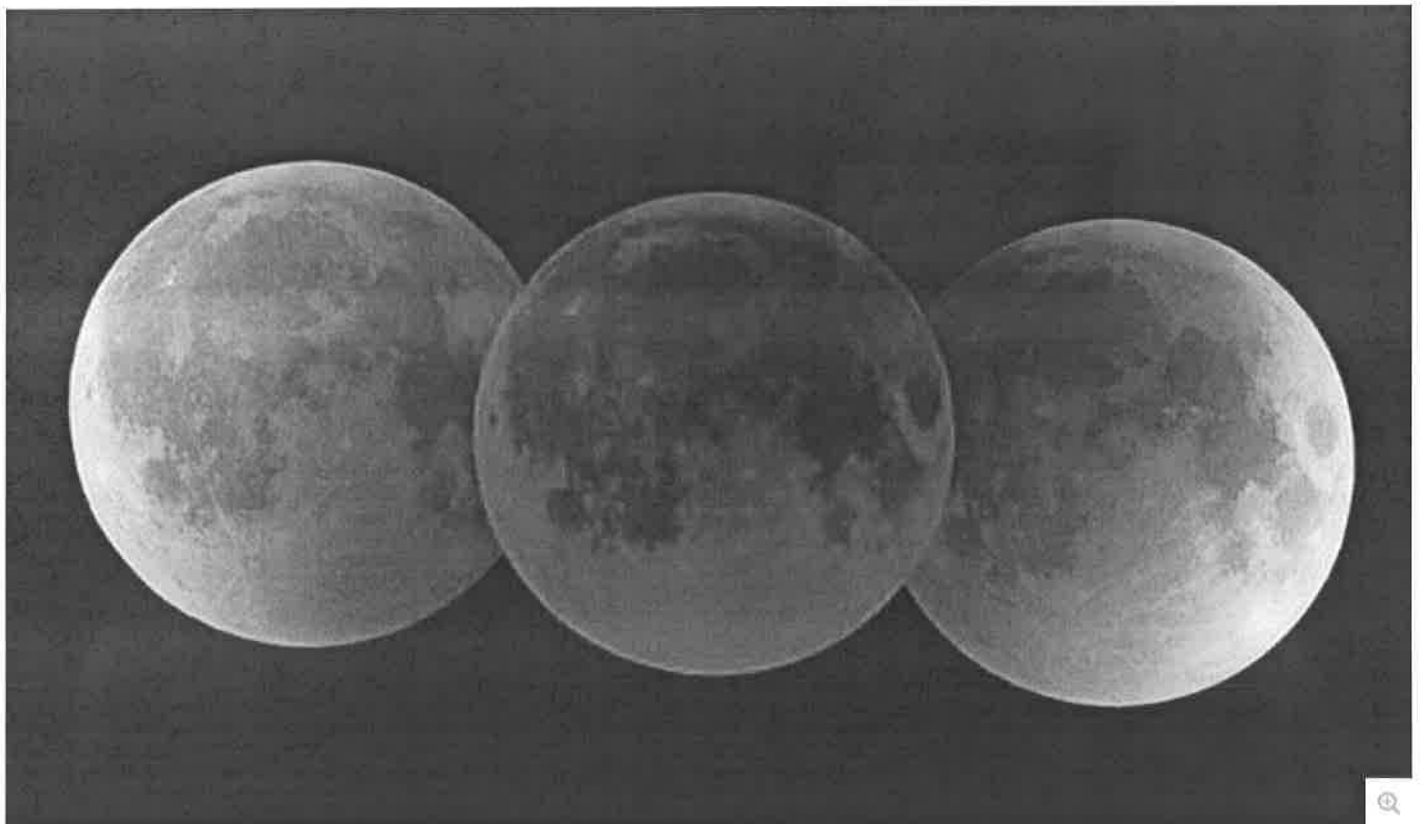
Why Does the Moon Turn Red During a Total Lunar Eclipse?

By Jeanna Bryner, Live Science Managing Editor | August 24, 2016 09:11pm ET

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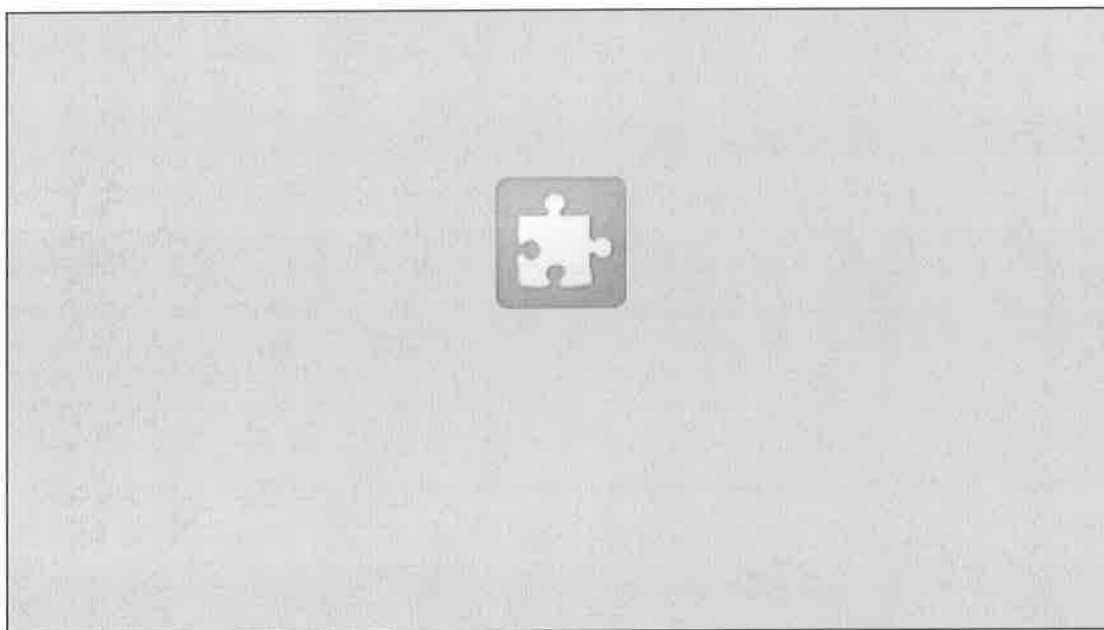
Total lunar eclipse of July 16, 2000.

Credit: Fred Espenak/NASA's Goddard Space Flight Center

An oversized ruby-colored sphere rising in the sky as a total lunar eclipse turns the normally pallid moon scarlet is enough to make some people swoon. And perhaps with good reason, as the fiery glow is the most dramatic of the three types of lunar eclipses (the other two are called partial and penumbral).

In addition, perfection is a must: A total lunar eclipse happens only when the sun, Earth and moon are perfectly lined up.

So when the moon tiptoes into the outer portion of Earth's shadow, becoming totally bathed in the darkest part of that shadow, why isn't the result a "lights out" for the sky? Why instead does the moon become engulfed in a light-orange to blood-red glow?



Here's why: Picture yourself standing on the moon (lots of dust and craters at your feet), looking down on Earth during the spectacular night-sky event. When the Earth is directly in front of the sun — blocking the sun's rays from lighting up the moon — you'd see a fiery rim encircling the planet. [Infographic: Total Eclipse of the Moon]

"The darkened terrestrial disk is ringed by every sunrise and every sunset in the world, all at once," according to NASA. Even though our planet is way bigger than the sun, our home star's light bends around the edge of Earth. This light gets reflected onto the moon.

But not before it travels through our atmosphere, which filters out the shorter-wavelength blue light, leaving the reds and orange unscathed to bathe the moon's surface. And voila, a red moon.

The moon will change various shades during different stages of a total lunar eclipse, going from an initial grayish to orange and amber. Atmospheric conditions can also affect the brightness of the colors. For instance, extra particles in the atmosphere, such as ash from a large wildfire or a recent volcanic eruption, may cause the moon to appear a darker shade

of red, according to NASA. [Lunar Eclipses: What Are They & When Is the Next One?]

The moon doesn't always hide completely behind Earth's shadow. During partial lunar eclipses, the sun, Earth and moon are slightly off in their alignment and so our planet's shadow engulfs just part of the moon.

A novice skywatcher might not even notice the third type of lunar eclipse, the penumbral kind, in which the moon sits in Earth's penumbra, or its faint outer shadow.

The next total lunar eclipse will occur on Jan. 31, 2018, and is expected to be visible from Asia, Australia, the Pacific Ocean and western North America.

As for the other types of lunar eclipses, the next two penumbral eclipses will occur on Sept. 16, 2016, and Feb. 11, 2017. The next partial eclipse, expected to be visible from Europe, Africa, Asia and Australia, will occur on Aug. 7, 2017.

Original article on Live Science.

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