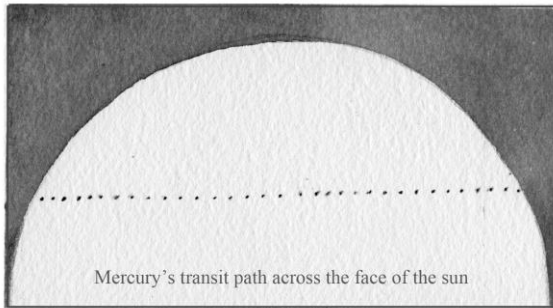


The Outside Story



There's A Little Black Spot on the Sun in May

By: Laurie Morrissey

It's just a tiny black dot moving very, very slowly. But if you're interested in astronomy, this is an exciting dot. It is Mercury, the smallest planet in our solar system, passing between the earth and the sun. The transit of Mercury is a relatively rare event, so sky-watchers are hoping for clear skies between 7:13 a.m. and 2:41 p.m. on May 9.

"To us, it's a very neat thing to see this phenomenon, and perhaps to take photographs during the course of the event. We can't get enough of it!" said William Vinton, president of the Northeast Kingdom Astronomy Foundation. Weather permitting, he will view the event with his students at St. Johnsbury Academy.

A transit is the movement of one celestial object across the face of another. The most familiar kind of celestial transit is a solar eclipse, which occurs when the moon passes between the sun and the earth. When the moon crosses the face of the sun, it blocks the sun mostly or completely.

The transit of Mercury is essentially a mini-eclipse. Because the planet is so small ($1/160$ of the sun's diameter as seen from the earth), the area it covers is tiny. This phenomenon also occurs more slowly than a solar eclipse. While a total solar eclipse is over in minutes, the transit of Mercury across the sun's disc takes seven and a half hours.

Mercury transits can occur only in early May or early November, and happen, on average, 13 times each century. May transits of Mercury happen every 13 or 33 years. A May transit was last visible from the United States in 2003, and we'll wait 33 years for a chance to see it again. November transits of Mercury occur at intervals of 7, 13, and 33 years. The next November transit will occur on November 11, 2019. (There are also transits of Venus, the other planet between the earth and the sun, but they're far more rare. These occur in pairs eight years apart, at intervals of more than a century.)

Although you won't be able to see the transit of Mercury well with the unaided eye, you can view it by making a simple pinhole camera that magnifies the image of the sun against a white screen. You can find complete instructions on how to make one online. While you're there, you might visit the Solar and Heliospheric Observatory

(<http://sohowww.nascom.nasa.gov/>), where a spacecraft will provide real-time images of the transit on May 9. This will allow you to see the event even if it's cloudy.

Of course the best views are through specialized equipment. At observatories and planetariums, astronomers have telescopes with special solar filters that protect the eyes and allow direct viewing of the sun at high magnification.

Bobby Farlice-Rubio, of the Fairbanks Museum, said that this direct observation can be a "mind-blowing" experience. "It lets you see how tiny all the planets are in relation to this massive star we call the sun. It turns all the imagining and all the hypothetical scenarios into a very real thing and lets you realize your place in the solar system."

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