A beauty of solar eclipse

Science, Astronomy

“ If this could be repeated every day for a year, I would never budge from where I stood” (Mass 71). This powerful sentence is a woman’s opinion upon viewing a total solar eclipse. This natural phenomenon is said to be extraordinary, and it continues to fascinate many people around the world. Solar eclipses are called Nature’s Greatest Coincidence, and they are a thing of beauty that can have a strong effect on people.

A solar eclipse can only occur if the moon is in its new moon phase when it passes between the earth and the sun. If the moon’s shadow falls on the earth’s surface at that time, then we would be able to see some part of the sun eclipsed, or covered, by the moon. Even though we have a new moon about every month, we don’t have an eclipse. The moon’s orbit around Earth is tilted five degrees toward the earth’s orbit around the sun, resulting in the shadow just missing it. However, usually about twice a year does the geometry line up so that the moon’s shadow falls somewhere on Earth and an eclipse is able to be seen from that area.

The aforementioned geometry is what makes a solar eclipse so amazing. A solar eclipse is often called Nature’s Greatest Coincidence because the moon and the sun happen to look the exact same size from Earth. In reality, the sun is 400 times bigger than the moon, and the moon is 400 times closer to the sun than the earth. Had it been a few miles smaller across, the moon wouldn’t hide the sun when it passed in front of it.

During a solar eclipse, the moon’s shadow falls on the earth. This shadow is made up of two parts: the umbra, and the penumbra. The penumbra is the moon’s faint outer shadow, where partial solar eclipses are visible. The

umbra is the moon's dark inner shadow, where total solar eclipses can by viewed. If the moon's inner shadow (or umbral shadow) falls on the earth, then a total solar eclipse occurs. The narrow track of the umbral shadow across the earth is called the path of totality. Totality is when the moon completely covers the sun during an eclipse, usually for only a few minutes. After totality, the eclipse reverses itself, showing the sun once more. The path is only a few hundred kilometers wide, making total solar eclipses even more rare and difficult to see. A person would have to be somewhere along the path of totality to see a total solar eclipse.

People actually travel thousands of miles these days to witness solar eclipses. They are called " eclipse chasers". Bill Kramer is one of these. He says that the name " sounds better than eclipse stalker, paparazzi, or voyeur, which are more accurate terms". Kramer has seen over ten total solar eclipses and has around a half-hour of totality under his belt.

People often ask him why he chases eclipses. To this question, he responds quite eloquently:

" If you are asking this question then the chances are very good that you've never seen a total solar eclipse…When you tell someone about the solar eclipse experience they normally just smile that smile that indicates they don't really get it. You can see it in the eyes. Eyes that have seen a total solar eclipse seem to hold something different when the topic comes up in conversation. For the benefit of the eclipse novice all I can say is that an eclipse is an astronomical event that does not have any parallel…an eclipse is an all sky phenomenon from horizon to horizon with details around the

moon that beckon the eye to the telescope. But it is over all too quickly and the only thing you can do is ask when the next one will be and try to get back in the path of the shadow again…My recommendation is that the eclipse novice needs to come along to an eclipse and experience it for themselves. I've seen all sorts of reactions from people and there is no way to know what yours would be until you join us under the shadow of the moon".

Kramer understands that a solar eclipse is something that must be seen to be understood. Its beauty is not captured in photos or on film. A solar eclipse defines the word phenomenon: something remarkable, impressive. Extraordinary.