

COLUMNISTS

What's behind the mystery and history of the moon?

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Throughout history, the moon has been a topic of wonder, allure and excitement. People have used the moon and its features to explain the unexplainable.

Today, public servants such as policemen, firemen, teachers, doctors and even animal control officials swear there is an increase in accidents, crime and other mayhem each full moon. This belief gives credence to the term “lunatic,” derived from the Latin root “luna.”

Many theories try to explain the origin of the moon. One relatively popular and well supported theory is the Giant Impact Hypothesis. It theorizes that 4.5 billion years ago, during the formation stages of the solar system, two major bodies collided, resulting in a major release of both matter and energy.

The larger body, the earth, melted to its core. Another smaller body was formed when molten matter from the collision coalesced into the moon.

Gravitational forces then swung the two bodies into what is known as a tidally locked relationship where one side of the moon (the near side) always faces the earth while the other (the far, or the dark) side is never visible from the earth’s surface.

As the two worlds began to cool, debris from the collision continued to pelt the lunar surface, creating craters, mountains and mare (pronounced “mah-ray”). Craters, formed from the impact of the smaller debris, are smooth, bowl shaped and may have small mountains around the rim and a small central mountain in the center. Mountains are formed from larger debris, even asteroids or comets, hitting the lunar surface at high velocity.

Both craters and mountains are generally found in the lighter colored, highlands area of the moon’s surface. Maria (plural for mare), Latin for seas, was thus called when early lunar observers incorrectly assumed that the smooth, darker areas on the surface were oceans. Scientists now believe that these areas were hit with a very large body that had such an

impact that it created fissures in the crust, allowing molten lava to flow to the surface, which explains the darker (basalt) color.

The light-colored highlands of the moon and the darker colored maria provide the contrasting color we see while observing the moon with our naked eyes.

The United States and its international partners continue to make the moon a focus of scientific study. In 2009, NASA launched the Lunar Reconnaissance Orbiter as part of its Lunar Mapping and Modeling Project (LMMP). This resulted in extensive lunar maps of the near and far sides of the moon.

Earlier this year, the Chinese landed the first space craft, Chang'e-4, on the far side of the moon to conduct surface exploration, radio astronomy experiments and determine if plant growth is possible on the lunar surface.

In 2017, NASA established the Artemis Program with the objective of sending men and women to the moon again by 2024 to explore the moon and pave the way for future space flights to Mars.

For those of us who are earth-bound, "Sky and Telescope" magazine developed the Lunar 100 Challenge. It is a list of the moon's 100 most interesting features including craters, mountains, maria and other sites in order from easiest to most challenging to see. The Lunar 100 list is available at www.skyandtelescope.com/observing/the-lunar-100.

Some features can be seen with the naked eye or a modest pair of binoculars while others require a more powerful telescope. The program's objective is to increase individual and public knowledge and appreciation for our closest neighbor in space.

Ten years ago, NASA began sponsoring International Observe the Moon Night. Annually, people around the world gather to observe the moon and learn about its features and scientific study. On Oct. 4, Abilene State Park and the Big Country Chapter of Texas Master Naturalists hosted an event with several telescopes and an estimated 80 attendees to observe the moon. Learn more at moon.nasa.gov.

Other future events at Abilene State Park include:

On Nov. 16, the Abilene State Park staff will lead an Animal Tracks Program at 9 a.m. Join the Big Country Master Naturalists for more astronomy adventures at Abilene State Park on Nov. 23 at 6 p.m. We're having a Star Party complete with telescopes near the CCC Building at the park.

Check our local chapter on Facebook at BCTXMN for event details and updates.

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