



What's So

**HOT**

About the sun

And Other Questions about...

**Outer Space**

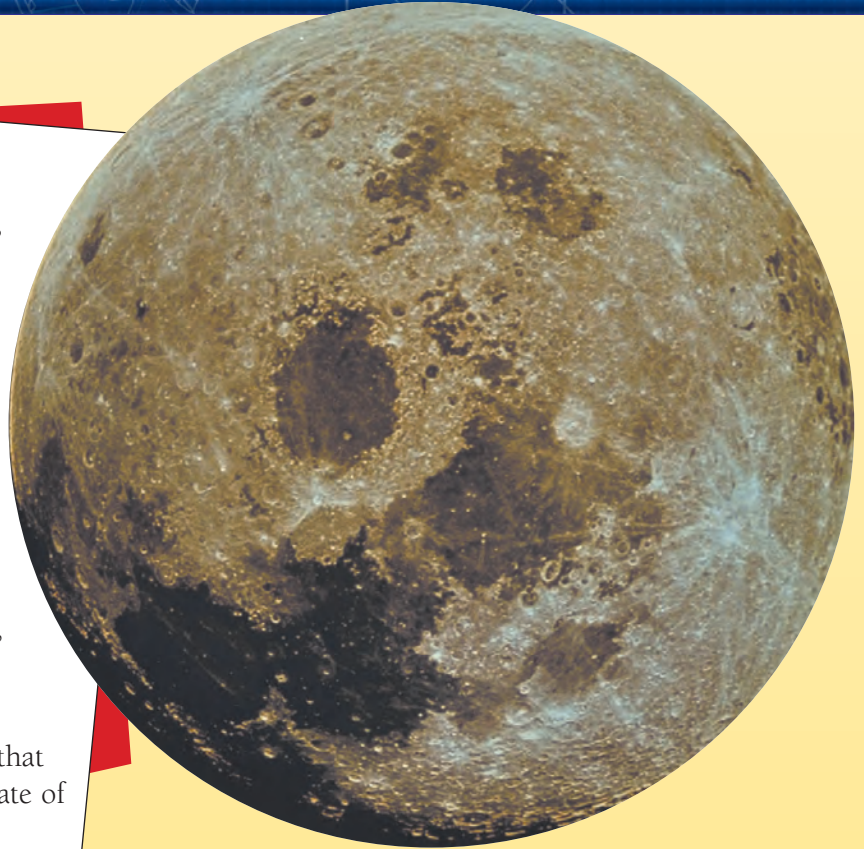
**Roger  
Howerton**

**MZ**

# How Do We Know the Moon Is Getting Farther from the Earth?

**W**hen the United States sent the first mission (Apollo 11) to the moon in 1969, several pieces of equipment were sent along for experiments. One piece of equipment was a small reflector that was left on the moon for measuring the distance from the earth to the moon. This reflector is very small, only 46 cm (18 in) square. Scientists can now send laser beams to the reflector from earth, and precisely measure the time it takes for the beam to reflect back to earth. Knowing that the laser beams travel at the speed of light (299,792.458 km/sec or 186,282mi/sec), scientists are able to calculate the precise distance from the earth to the moon.

The reflector measurements have indicated that the earth and moon are moving apart at a rate of about 3.82 cm (about 1.5 in) per year.



**Take Nothing but Pictures, Leave Nothing but Footprints:**  
Because the moon has no atmosphere, it has no wind or weather, so everything on its surface stays the same. The footprints and American flag left by the astronauts in 1969 are still there.



# Ask Max!

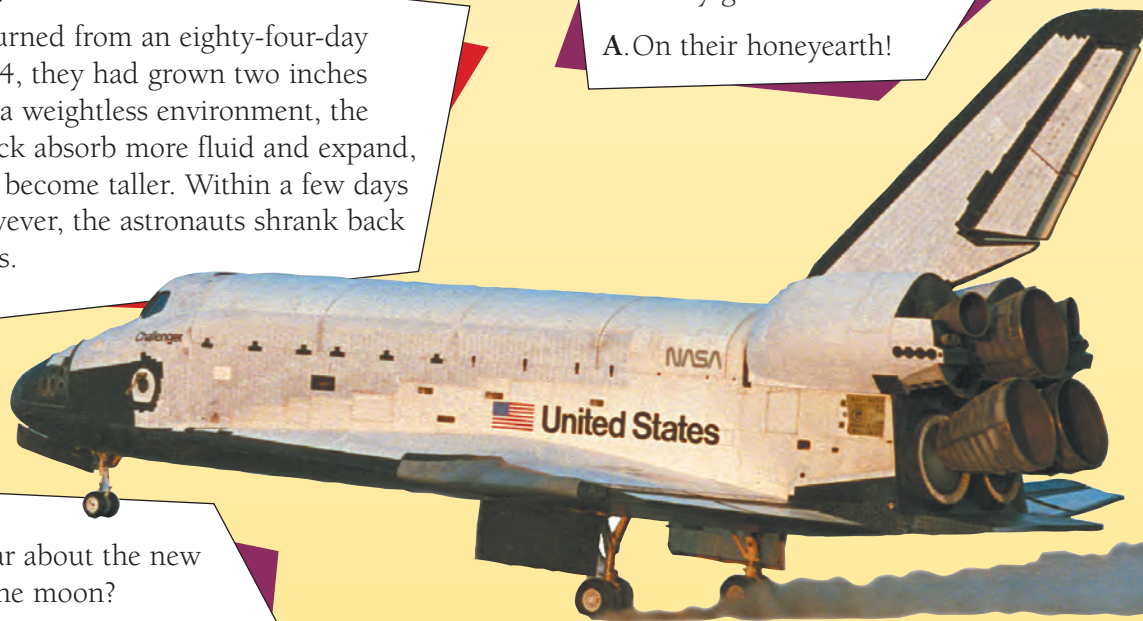


## **Way to Grow!**

When astronauts returned from an eighty-four-day space mission in 1974, they had grown two inches taller! Here's why: In a weightless environment, the spinal disks in the back absorb more fluid and expand, causing the person to become taller. Within a few days of reaching earth, however, the astronauts shrank back to their normal heights.

**Q.** Where do moon people go after they get married?

**A.** On their honeymoon!



**Q.** Did you hear about the new restaurant on the moon?

**A.** Yeah, great food, but no atmosphere.

## **Beware of the Full Moooooon:**

The words "lunacy" and "lunatic" come from the Latin word luna, meaning "moon." It was once believed that sleeping in moonlight would cause madness. This may also be where the phrase, "moonlight madness" comes from.



# How Did the Ancient Greeks Know That the Earth Is Round?

**S**imple. Aristotle, a noted scientist and philosopher, pointed out that a lunar eclipse was caused when the earth moved between the sun and the moon, casting its shadow on the moon. In a partial eclipse of the moon, the shadow of the earth is round, and therefore, the earth is round.

The Greeks also noticed the curvature of the earth because as ships would sail out of sight, the last part of the ship that was visible was the sail. A disappearing vessel seemed to be going over a hill.

Lunar Eclipse



# Ask Max!



**Q.** Where did Columbus first land in America?

**A.** On his feet!

## **Genoa 'Bout Columbus, Right?**

When Columbus sought financing for his voyage from the crowned heads of Europe, all of the courts (except Spain) rejected him — but not because they thought the earth was flat. They rejected him because they believed Asia was too far to be reached by ship — and they were right. Columbus had greatly misjudged the circumference of the earth. He thought the earth was much smaller than it is and he was not prepared for the very long voyage it would have taken to reach Asia. If Columbus had not accidentally discovered the Americas, he and his crew would have perished in the vast ocean before reaching the East.

## **Flat as a Pancake:**

Many leaders in the church of the fourth through the eighth centuries held that the ancient scientific theories of a round earth were false. One church leader in Alexandria, Egypt could not figure out how anyone or anything could be on the underside of the earth. He envisioned people upside down, rain falling upward, and he completely denounced the anti-biblical idea of the heavens being lower than the earth.

Thankfully, the flat-earth theory persisted only through the Dark Ages. By the ninth century — long before the voyages of Columbus — the ancient Greek and Roman teachings of a round earth became popular once more in Europe, and thoughts of a round earth were again believable.

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