

news

SCAN

#### ASTRONOMY

## Fat Side of the Moon

**The moon's far side** bulges at its equator, a peculiarity that has long puzzled investigators. Scientists conjectured that the bulge formed when magma oceans that covered the young moon solidified while deformed by gravity and lunar spin, but the hypothesis failed to match theories of the moon's early orbit with its precise dimensions. Researchers at the Massachusetts Institute of Technology now calculate that they could explain the bulge if the moon's orbit 100 million to 200 million years after the moon formed was about twice as close to Earth and more oval. This orbit, resembling present-day Mercury's in completing three rotations for every two revolutions, would have proved ideal to help freeze the bulge in place. The findings, appearing in the August 4 *Science*, also suggest a time on Earth when the moon cycled through its phases in just 18 hours and raised tides four times a day at up to 10 times the strength.

—Charles Q. Choi

#### PHYSICS

## Bubble Adhesion

**When two smooth, slick surfaces** are submerged in water and brought within 100 nanometers of each other, something odd happens: they adhere, even though they are too far apart for electrostatic forces to bridge them. C. Jeffrey Brinker of Sandia National Laboratories and his colleagues repeated this experiment with rougher silica surfaces that repel water more than smooth ones do. Using a special kind of atomic force microscope to control the spacing of the surfaces, they found that this strange attraction kicked in at an even longer distance of up to two microns and that it was accompanied by the formation of a vapor bubble in between. The surfaces' antagonism toward liquid water creates a partial vacuum that draws them together, the group concludes in the August 3 *Nature*.

—JR Minkel