Astronomy From Å to ZZ — Howard L. Cohen

A Brief Column for the Beginning Stargazer Introducing a New Astronomical Term Each Month

Astronomy is rich with terminology. This column will help beginning stargazers ease into the world of astronomy by *briefly introducing* a new but *basic astronomical term* (word, acronym or abbreviation) each month. This list, which began January 1999 with the letter ***a***, is alphabetical but uses successive letters for each month's entry. (We will return to the letter ***a*** after twenty-six months.)

(The February 2001 column ended with z so we are now in the second cycle of twenty-six terms. See the February 2001 issue for a cumulative index.)

Word of the Month for November 2001

impact crater A depression in the solid surface of an object caused by the high-speed collision or *impact* with another body such as a *meteoroid*[1], *asteroid* or *comet*. The resulting crater is typically twice the depth and ten times the diameter of the impacting object.

Although the Moon's surface shows the scars of many such collisions, impact craters are found on all inner planets including Earth. They are also common on asteroids. Most satellites throughout the solar system show craters most likely caused by impacts with other celestial bodies.

Natural planetary processes as erosion, tectonic or volcanic activity erases evidence of impact structures. Thus, impact craters are rare and difficult to discern on Earth although more than 100 are now known. And Jupiter's large satellite *Io* shows none due to extensive volcanism on this object.

Impact craters range in size from very tiny pits less than a millimeter in diameter to vast structures thousands of miles across such as the large *Imbrium Basin* on the Moon.[2] Craters with diameters larger than about 60–300 km (about 40–200 mi) are usually called *walled plains*. Small craters, barely visible from Earth telescopes (less than about 5 km or 3 mi in diameter), are called *craterlets* or *crater pits*.

Volcanic craters can resemble young impact craters. However, young impact craters typically have circular shapes with steep inner walls and shallower outer slopes. Impact craters may also show ejected material including bright rays or streaks made of crushed surface rocks. Also, secondary impact craters can form from debris expelled from the primary crater.[3] These secondary craters may form *crater chains* extending in a line with some craters overlapping or touching.

Large impact features often show flat floors, *terracing* on their inner walls, and *central peaks*. The stepped terrain (typical in craters bigger than about 20 km or 12 mi) probably occurs when the land slumps and slides down the steep, inner walls. *Central peaks* are also usually more common in large craters (diameters 15–120 km or 10–75 mi or larger) and result from rebound of the crater bottom soon after the impact.[4]

As craters age, features characteristic of the impact may disappear. Lava flows or sediments may fill old craters and some may become partially submerged. These heavily eroded and submerged *ghost craters* may only show their highest peaks protruding above the surrounding lava landscape. Such old craters may show *wrinkle ridges* tracing the location of their ancient crater rims. ☼

References. J. Mitton 1991, *Concise Dictionary of Astronomy* (Oxford Univ. Press); I. Ridpath 1997, *A Dictionary of Astronomy* (Oxford Univ. Press); M. Wagman, *Sky & Telescope*, April 1991, pp. 380–381.

---

[1]A *meteoroid* a piece of space rock or dust. Meteoroids, when entering the Earth's atmosphere, produce a glowing streak or trail of light called a *meteor*.

[2]The *Imbrium Basin* is one of the largest impact features on the Moon, a roughly circular region about 1,300 km (800 miles) across. It is thought to be nearly four billion years old. Lava that subsequently flooded the basin through fractures has partially filled in the basin and adjacent regions.

[3]The lunar craters *Tycho*, *Copernicus* and *Kepler* are typical examples or lunar rayed craters.

[4]Terracing also occurs within volcanic craters, especially those partially collapsed, and in *calderas*, large volcanic, often non-circular depressions. However, volcanic craters rarely contain central peaks.