

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

**A**stronomy 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.)

**Word of the Month for August 2000**

**transit 1.** (also **culmination** or **meridian passage**) Passage of a celestial object across the observer's *celestial meridian* during the course of its daily apparent motion of the celestial sphere.

Note: The *celestial meridian* is an imaginary great circle passing vertically up from the north point of the horizon, through the overhead point of the sky (the *zenith*), down to the south point of the horizon, and finally through the *nadir* (the diametrically opposite point from the zenith). Thus, the celestial meridian divides the sky into east and west halves.

*Upper transit* or *culmination* occurs when the object has its maximum altitude above the horizon. *Lower transit* or *culmination* occurs when at its minimum altitude.

For *circumpolar* objects (objects that never set), maximum altitude occurs when the object is directly above the pole of rotation of the sky, minimum altitude when the object is directly below the pole of rotation. For *non-circumpolar* objects (objects that set), minimum altitude occurs below the horizon and is not visible.

For the Sun, upper transit defines local noon; lower transit defines local midnight.

Celestial objects are rising when in the eastern sky. They reach maximum altitude at upper transit. Subsequently, they begin to set in the western sky.

2. Passage of a celestial object across the visible disk of a larger appearing celestial object, as an *inferior planet* (Mercury or Venus) across the disk of the Sun, or a satellite across the disk of its parent planet.

Transits of Mercury or Venus occur only when each is at *inferior conjunction* and also close to a crossing point of its orbit and the Earth's orbit (a *node*).

With Mercury, this can occur only in early November (ascending node) or early May (descending node). With Venus, this can occur only in early December (ascending node) or early June (descending node).

Transits of Mercury are more common than Venus. *There have been only six transits of Venus across the disk of the Sun in the last four centuries.* Only four more will occur in the next two hundred years. However, fourteen transits of Mercury will occur in just the twenty-first century. (See Table 1.)

**Table 1.** Transits of the Inferior Planets

Object	Dates of Transit		
Mercury	2003 May 7	2039 Nov. 7	2078 Nov. 14
	2006 Nov. 8	2049 May 7	2085 Nov. 7
	2016 May 9	2052 Nov. 8	2095 May 8
	2019 Nov. 11	2062 May 10	2098 Nov. 10
	2032 Nov. 13	2065 Nov. 11	
Venus	2004 June 8	2117 Dec. 11	
	2012 June 6	2125 Dec. 8	

Finally, an *annular eclipse of the Sun* (when the Moon's apparent size is less than the Sun's apparent size) is actually a transit. (A ring or *annulus* of sunlight remains around the Moon during mid-eclipse.)

Transits of Jupiter's Galilean satellites are common and easily seen in small telescope, including *transits of their shadows* across the disk of Jupiter. ☼

References. J. Mitton 1991, *Concise Dictionary of Astronomy* (Oxford Univ. Press); I. Ridpath 1997, *A Dictionary of Astronomy* (Oxford Univ. Press).