

*A Brief Column for the Beginning Stargazer Introducing New Astronomical Terms*

**A**stronomy is rich with terminology. This column, originally begun January 1999 to help beginning stargazers ease into the world of astronomy, was intended to introduce a new basic astronomical term (word, acronym or abbreviation) each month.

However, other duties have prevented the author from contributing monthly “Å to ZZ” columns over the last few years. Consequently, this column now appears only occasionally.

“Astronomy from Å to ZZ” originally started with the letter *a* (for *apparent magnitude*) and is alphabetical using successive letters for each column’s entry. The February 2001 column ended with *z* (for *zenith*) and is now in the second cycle of twenty-six terms.

The thirty-seventh and last regular monthly “Å to ZZ” column appeared January 2002, with a subsequent column (thirty-eighth) in April 2002 with the letter *l* (for *libration*). The “Å to ZZ” word for this issue of *FirstLight*, therefore, starts with the letter *m*.

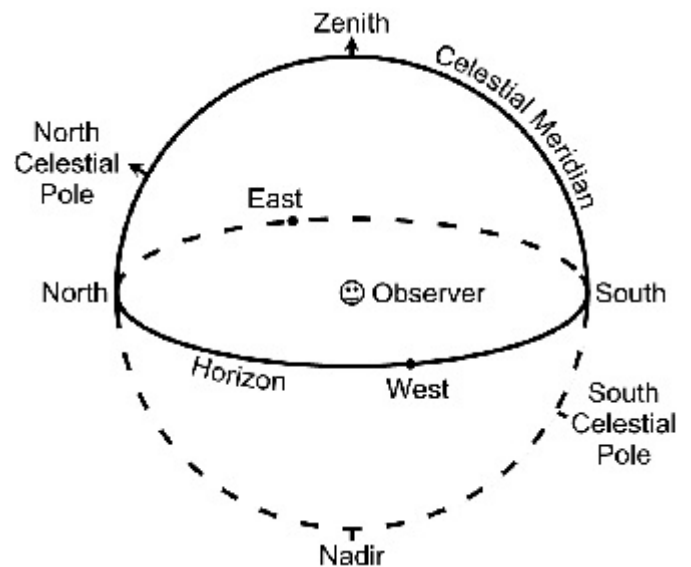
Recently, I mentioned to several AAC members that few amateur and professional astronomers know basic, practical astronomy due to increasing specialization and the advent of new technologies (e.g., computer-assisted telescope mounts).

How many readers, for example, know and understand the fundamentals of the celestial sphere including astronomical coordinate systems, how they are related, time keeping systems, and the apparent motions of the stars, Sun, Moon and planets? (Did you know that about one-half dozen astronomical coordinate systems exist?)

Therefore, I have chosen a fundamental term relating to the sky and star gazing for this issue’s column, the (celestial) *meridian*.

## Word of the Month for February–March 2005

**meridian (celestial)**<sup>1</sup> An imaginary great circle<sup>2</sup> on the *celestial sphere*<sup>3</sup> passing through the celestial north and south poles<sup>4</sup> and the *zenith* (overhead point) of the observer. (See Fig. 1.)



**Fig. 1.** The celestial sphere for an observer at 30° north latitude. The celestial meridian divides the sky into two equal halves, the eastern and western sky.

<sup>1</sup>The *celestial meridian* is different from the “terrestrial” meridian, which is more commonly known to people—an imaginary great circle (a line of *longitude*) on the Earth’s surface passing through the North and South geographic poles. However, as seen from Earth’s center, the celestial meridian coincides with the projection of the observer’s terrestrial meridian onto the celestial sphere.

<sup>2</sup>A *great circle* is a circle on the surface of a sphere dividing the sphere into two equal halves.

<sup>3</sup>The *celestial sphere* is the sky considered as the inside of an imaginary sphere of indefinite size.

<sup>4</sup>The *celestial poles* are the two points on the celestial sphere about which the sky appears to rotate.

This great circle joins the horizon<sup>5</sup> at diametrically opposite sides and defines the north and south points of the horizon.

Note: The celestial meridian is an example of a *vertical circle*, great circles that pass through the zenith and its diametrically opposite point, the *nadir* (the direction in which a plumb line points).

Thus, the celestial meridian is a vertical circle passing through the north and south points of the horizon.

**Does any reader know the name of the vertical circle that passes through the east and west points of the horizon?**

I will give away a free astronomy textbook to the first AAC member (dues paid for 2005) who sends me the correct answer! I will also announce the winner and answer at a future AAC meeting!

(Send your answer to [cohen@astro.ufl.edu](mailto:cohen@astro.ufl.edu) or mail to 1501 NW 28 St., Gainesville, FL 32605.)

The celestial meridian divides the visible half of the celestial sphere into two halves—the eastern sky and the western sky. The “upper branch” of the celestial meridian is the part of the meridian containing the two celestial poles and the zenith.

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<sup>5</sup>The (astronomical) *horizon* is the great circle everywhere 90 degrees away from the zenith and separates the observer’s visible half of the celestial sphere from the invisible half.

The “lower branch” contains the two celestial poles and the nadir. (See Fig. 1.)

A star, seen crossing the upper branch of the celestial meridian during its daily, apparent westward motion on the sky, is said to be at *upper culmination* or *upper transit*. Thus, a star at upper culmination or upper transit is at its highest point on the sky. After that, the star begins to descend into the western sky eventually reaching lower culmination or transit, its lowest point.

Stars at lower culmination may not be visible to the observer because they are below the observer’s horizon. However, if both the upper and lower culminations are visible to the observer, the star never sets and the star is said to be *circumpolar*.

When the Sun is at upper culmination or transit, the time is said to be *local apparent noon*. Nevertheless, your clock will probably not read noon because traditional clocks do not use the apparent (real) sun to measure time. Instead, conventional clocks use a mean (“average”) sun.

Why? That’s a subject for another column.

**References.** V. Illingworth & J.O.E. Clark 2000, *The Facts on File Dictionary of Astronomy*, 4th Ed. (Checkmark Books); J. Mitton 1991, *Concise Dictionary of Astronomy* (Oxford Univ. Press); I. Ridpath 1997, *A Dictionary of Astronomy* (Oxford Univ. Press).