

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.)

Word of the Month for March 2000

open cluster (or *galactic cluster*—see below) A moderately loose star cluster of several hundred to several thousand stars distributed in a region a few hundred light years across.

Most are irregular in shape and more loosely packed than *globular clusters*. (A globular cluster is a roughly spherical, moderately dense star cluster of hundreds of thousands or millions of stars often many hundreds of light years across.)

However, some open clusters may have central star densities up to 10,000 times as in the solar neighborhood. More than 1,000 are known in the Milky Way Galaxy.

galactic cluster (alternate name) No longer in common use. This term originated because open clusters often *congregate near the disk (plane) of the Milky Way Galaxy*. Thus, most open clusters appear near or within the “Milky Way band” on the sky.

The term is now obsolete since it is easy to confuse a *galactic cluster* with a *cluster of galaxies*. (A *galaxy* is typically a huge group of hundreds of thousands of stars with many groups containing hundreds of billions or more stars.)

Well known open clusters visible in small telescopes include the *Pleiades* (“Seven Sisters”), *Hyades*, Praesepe (“Beehive”), and *h & χ (chi) Persei* (“Double Cluster”). Some, like the *Pleiades* and *Hyades*, are easily visible to the naked eye. Open clusters visible in small telescopes are rarely more than 10,000 light years away.

Most open star clusters are fairly young with most ages in the millions to hundreds of millions of years, although some may be several billion years old. Open star clusters are often associated with nebulae, large gas and dust clouds from which they probably originated. Open clusters are usually easily disrupted as they move through the galactic disk.

Star cluster ages are approximated by their *main sequence stars* of earliest spectral class. (Spectral class is an indicator of temperature with type O hottest.)

O5 = 2 million years;
B0 = 8 million years; B5 = 70 million years;
A0 = 400 million years; A5 = 1,000 million years;
F0 = 3,000 million years; F5 = 10,000 million years.

Several classification schemes for open clusters exist:

Shapley (after Shapley, Harlow, 1885-1972)

- c** very loose and irregular
- d** loose and poor
- e** intermediately rich
- f** fairly rich
- g** considerably rich and concentrated

Trumpler (after Trumpler, Robert J., 1886-1956)

A more complex scheme with three parts:

Concentration

- I** Detached: strong concentration toward center
- II** Detached; weak concentration toward center
- III** Detached; no concentration toward center
- IV** Not well detached from surrounding star field

Range in Brightness

- 1** Small range in brightness
- 2** Moderate range in brightness
- 3** Large range in brightness

Richness

- p** Poor: Less than 50 stars
- m** Moderately rich: 50 to 100 stars
- r** Rich: More than 100 stars

An “**n**” following the Trumpler class indicates there is nebulosity associated with the cluster. ☼

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