

## THE CONSTELLATION CIRCINUS, THE COMPASS

Circinus is a small faint constellation in the southern sky, first defined in 1756 by French astronomer **Nicolas Louis de Lacaille**. Its name is Latin for compass, referring to the drafting tool used for drawing circles (it should not be confused with Pyxis, a constellation that represents a mariner's compass which points north).

Its brightest star is *Alpha Circini*, with an apparent magnitude of 3.19. Slightly variable, it is the brightest rapidly oscillating Ap star in the night sky (peculiar stars showing an abundance of some metals). *AX Circini* is a Cepheid variable visible with the unaided eye, and *BX Circini* is a faint star thought to have been formed from the merger of two white dwarfs. **Two sun-like stars have planetary systems: HD 134060 has two small planets, and HD 129445 has a Jupiter-like planet.** Supernova SN 185

appeared in Circinus in 185 AD and was recorded by Chinese observers. Two novae have been observed more recently, in the 20th century. The Milky Way runs through the constellation, featuring prominent objects such as



The Circinus Galaxy, a Type II Seyfert galaxy

the open cluster NGC 5823 and the planetary nebula NGC 5315. Circinus hosts one notable spiral galaxy, the Circinus Galaxy, which was discovered in 1977 and is the closest Seyfert galaxy to the Milky Way. Seyfert galaxies are named after **Carl Seyfert** (1911 - 1960), an American astronomer who first described this class in 1943, and are intensely studied objects in astronomy. They are thought to be

powered by the same phenomena that occur in quasars, but unlike quasars, their host galaxies are clearly detectable.

**Lacaille created the constellation to bridge the void between Triangulum Australe and the stars marking Centaurus' forefeet.**

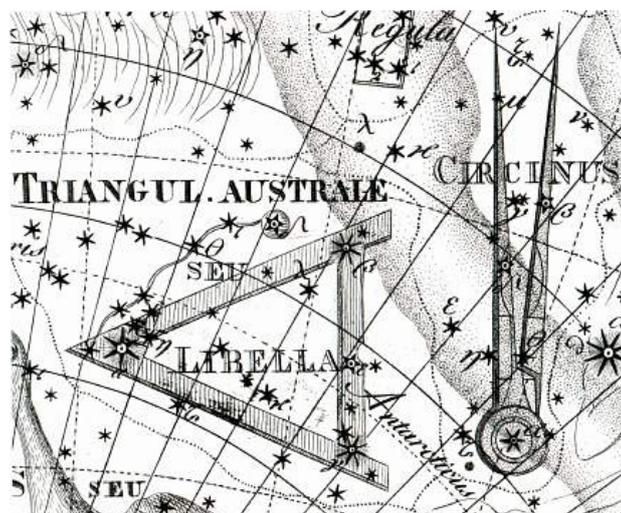
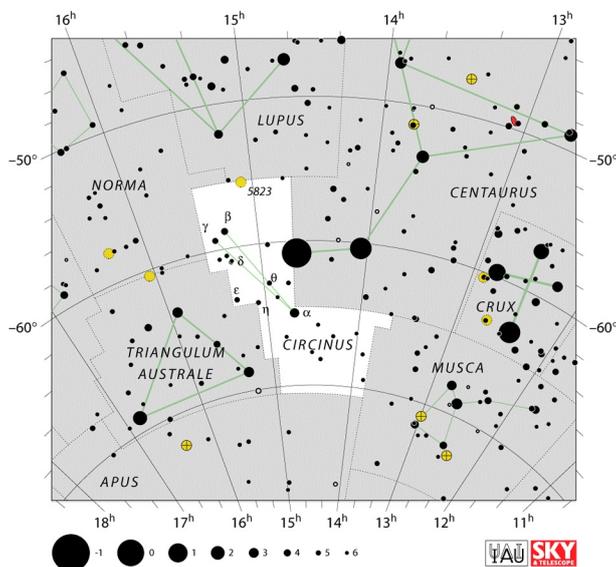
Lacaille introduced the constellation of Circinus with the French name *le Compas*, representing a pair of dividing compasses. It had first been depicted on one of Lacaille's maps in 1754 to fill the void between several existing constellations in the south, but it was unnamed. **Lacaille portrayed the constellations of Norma, Circinus and Triangulum Australe, respectively as a set square and ruler, a compass, and a surveyor's level as draughtsman instruments in 1756.**

Circinus is from Latin *circinus*, pair of compasses, from *circus*, circle (not to be confused with the Mariner's Compass of the constellation Pyxis). A compass, also called a pair of compasses, or a drafting compass, is a technical drawing instrument that can be used for inscribing circles or arcs. It can also be used as a tool to measure distances, in particular on maps, for mathematics, drafting, navigation, building, carpentry, and other purposes.

Two of the principal symbols always found in a Masonic Lodge are the square and compasses. An adjacent constellation, Norma, is the Square. **The two together are the emblems of masonry, and the symbol of Freemasonry.**

Bordered by *Centaurus*, *Musca*, *Apus*, *Triangulum Australe*, *Norma* and *Lupus*, *Circinus* lies adjacent to the *Alpha* and *Beta Centauri* stars. As it is at declination  $-50^\circ$  to  $-70^\circ$ , the whole constellation is only visible south of latitude  $30^\circ$  N. The official constellation boundaries, as set by **Eugène Delporte** in 1930, are defined by a polygon of 14 segments. Gould catalogues in it 48 stars down to the 7th magnitude; *alpha*, its *lucida*, being of only 3.5. *Circinus* culminates each year at 9 p.m. on 30 July.

The recommended three-letter abbreviation for the constellation, as adopted by the International Astronomical Union in 1922, is 'Cir'.



Circinus from the Uranographia of Johann Bode, with Triangulum Australe to its left and Norma et Regula (the set square and ruler) just off the top of the picture.



**There are no myths associated with Circinus.** But medieval illustrations show God as an architect, tracing out the world with a geometer's compass. The circle was symbolized in art by God holding a pair of compasses, a common motif in the Middle Ages. The art historian **Ernst Gombrich** credits a passage from the Old Testament as the inspiration for these portrayals. In Proverbs, Chapter 8 par. 27, Wisdom put forth her voice: "I was there when he established the heavens; I was there when he set a compass upon the face of the deep..."

The compass (*circinus*) is named so because it makes a circle (*circulus*) when it is turned. This technique can also be carried out with a doubled string, which when single has been stretched across the width of the desired circle. The point in the middle of the compass is called the center by the Greeks - everything converges on this middle point. In Greek mythology Perdix was the inventor of the *circinus*:

"And he was first to make two arms of iron, smooth hinged upon the center, so that one would make a pivot while the other, turned, described a circle." Perdix was a nephew and student of the skilful Greek craftsman **Daedalus**, who made the wings for his son **Icarus** who flew to close to the Sun.

Daedalus was so envious of his nephew's accomplishments that he pushed him off the top of a high tower. But the goddess Athena, who favours ingenuity, saw him falling and arrested his fate by changing him into a partridge bird. This bird does not build its nest in the trees, nor take lofty flights, but nestles in the hedges, and mindful of his fall, avoids high places.

**In colloquial terms a "Circus" is something that goes round and round without getting anywhere, like the horses in a circus tent.**

#### METEOR SHOWER

Circinus is the radiant of an annual meteor shower, the *Alpha Circinids*. First observed in Queensland in 1977, the meteors have an average velocity of 27.1 km/s and are thought to be associated with a long-period comet. In 2011, **Peter Jenniskens** proposed that the debris trail of comet C/1969 T1 could intersect with the Earth's orbit and generate a meteor outburst coming from a radiant close to *Beta Circini*. The shower peaks on 4 June, the day it was first observed.

#### FACTS, LOCATION & MAP

Circinus contains two well-known deep sky objects, the Circinus Galaxy and the x-ray source Circinus X-1.

Circinus is the fourth smallest constellation in the sky, 85th in size, occupying an area of only 93 square degrees.

It lies in the third quadrant of the southern hemisphere (SQ3) and can be seen at latitudes between +30° and -90°.

Circinus belongs to the Lacaille family of constellations, along with Antlia, Caelum, Fornax, Horologium, Mensa, Microscopium, Norma, Octans, Pictor, Reticulum, Sculptor, and Telescopium.

#### MAJOR STARS AND DEEP SKY OBJECTS

*Alpha Circini* is the brightest star in the constellation, with an apparent visual magnitude of 3.19. It is a visual binary, with a faint companion. It lies about 53.5 light years from Earth.

*Beta Circini* is the second brightest star in Circinus, with an apparent magnitude of 4.069. It is a main sequence star belonging to the spectral class A3Va. It is approximately 97 light years distant.

*Gamma Circini* is another binary star in the constellation. It is composed of a pair of blue and yellow stars.

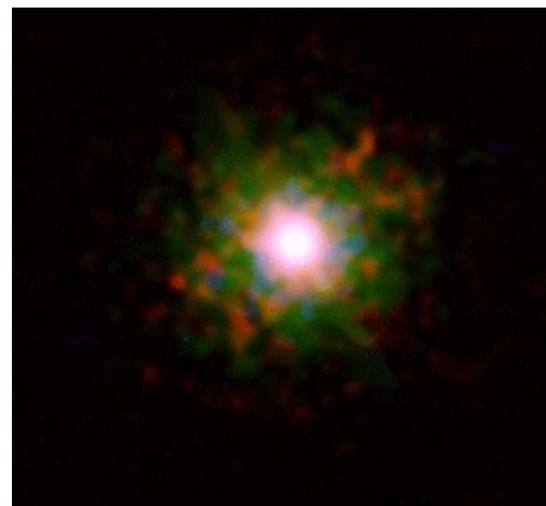
HD 129445 is a star belonging to the spectral class G6V, notable for having a planet in its orbit. The planet was named HD 129445 b. Its existence was confirmed by 17 Doppler velocity tests conducted as part of the Magellan Planet Search Program. The star has an apparent magnitude of 8.8 and is 220 light years distant.



God as the Geometer



Circinus Galaxy is a spiral galaxy 13 million light years distant. The galaxy is notable for the motions of gas that form two rings inside it. One of the rings is a site of massive star forming activity. The galaxy was discovered in 1975. It is an active galaxy with a black hole-powered core.



Circinus X-1 is an X-ray double star composed of a neutron star and a main sequence star 20,000 light years away. It was found on June 14, 1969..

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