

Messier 16, the Eagle Nebula – NGC 6611

The Eagle Nebula (catalogued as Messier 16 or M16, and as NGC 6611, and also known as the Star Queen Nebula and The Spire) is a young open cluster of stars in the constellation Serpens, discovered by **Jean-Philippe de Chéseaux** in 1745–46. Both the "Eagle" and the "Star Queen" refer to visual impressions of the dark silhouette near the centre of the nebula, an area made famous as the "Pillars of Creation" photographed by the Hubble Space Telescope. The nebula contains several active star-forming gas and dust regions, including the Pillars of Creation.

CHARACTERISTICS

The Eagle Nebula is part of a diffuse emission nebula, or H II region, which is catalogued as IC 4703. This region of active current star formation is about 7000 light-years distant. A spire of gas that can be seen coming off the nebula in the northeastern part is approximately 9.5 light-years or about 90 trillion kilometres long.

The cluster associated with the nebula has approximately 8100 stars, which are mostly concentrated in a gap in the molecular cloud to the north-west of the Pillars. The brightest star (HD 168076) has an apparent magnitude of 8.24, easily visible with good binoculars. It is actually a binary star formed of an O3.5V star plus an O7.5V companion. This star has a mass of roughly 80 solar masses, and a luminosity up to 1 million times that of the Sun. The cluster's age has been estimated to be 1–2 million years. The descriptive names reflect impressions of the shape of the central pillar rising from the southeast into the central luminous area. The name "Star Queen Nebula" was introduced by **Robert Burnham, Jr.**, reflecting his characterization of the central pillar as the Star Queen shown in silhouette.

"PILLARS OF CREATION" REGION

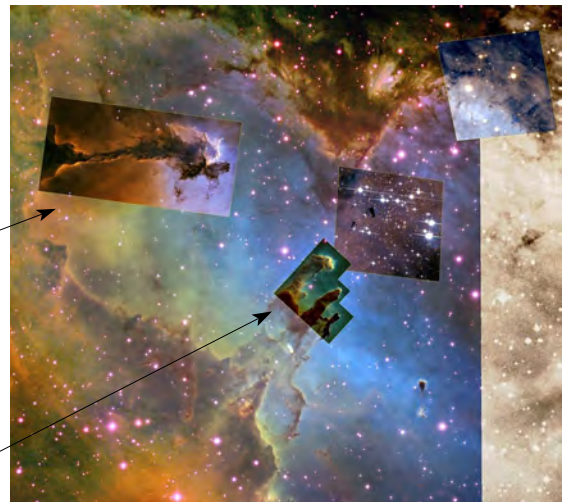
Images taken by **Jeff Hester** and **Paul Scowen** using the Hubble Space Telescope in 1995 greatly improved scientific understanding of processes inside the nebula. One of these photographs became famous as the "Pillars of Creation", depicting a large region of star formation. The small dark areas in the photograph are believed to be protostars (Bok globules).

The pillar structure of the region resembles that of a much larger star formation region in the Soul Nebula of Cassiopeia, imaged with the Spitzer Space Telescope in 2005 and characterized as "Pillars of Star Creation" or "Pillars of Star Formation".

These columns – which resemble stalagmites protruding from the floor of a cavern – are composed of interstellar hydrogen gas and dust, which act as incubators for new stars. Inside the columns and on their surface astronomers have found knots or globules of denser gas, called EGGs ("Evaporating Gaseous Globules").



Three-colour composite mosaic image of the Eagle Nebula (Messier 16, or NGC 6611), based on images obtained with the Wide-Field Imager camera on the MPG/ESO 2.2-metre telescope at the La Silla Observatory. At the centre, the so-called "Pillars of Creation" can be seen. This wide-field image shows not only the central pillars, but also several others in the same star-forming region, as well as a huge number of stars in front of, in, or behind the Eagle Nebula. The cluster of bright stars to the upper right is NGC 6611, home to the massive and hot stars that illuminate the pillars. The "Spire" is in the middle left of the image.



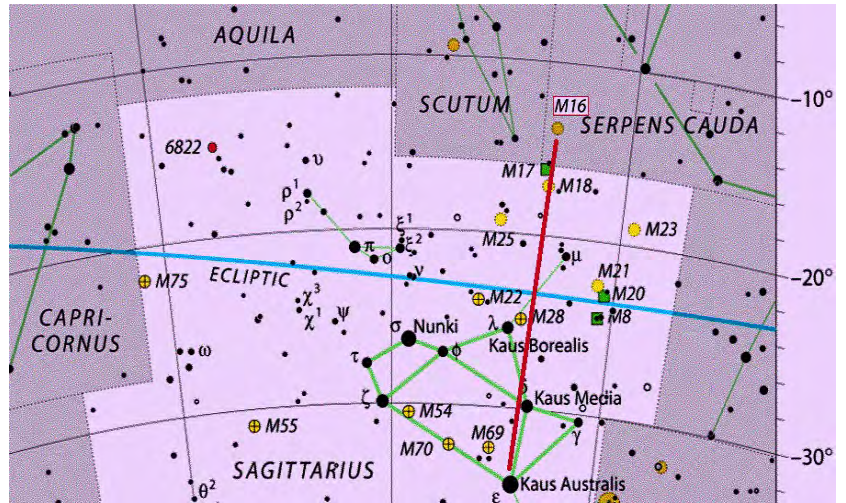
Locator picture of well-known areas in the nebula



Evidence from the Spitzer Telescope suggests that the pillars in M16 may already have been destroyed by a supernova explosion. Hot gas observed by Spitzer in 2007 suggests that the area was disturbed by a supernova that exploded some 8000 to 9000 years ago. Due to the distance of the nebula, the light from the supernova would have reached Earth between 1000 and 2000 years ago. The more slowly moving shock wave from the supernova would have taken a few thousand years to move through the nebula, and would blow away the delicate pillars – but the light showing us the destruction will not reach the Earth for another millennium.

Eagle Nebula – Messier 16 (NGC 6611)

Constellation: Serpens Cauda
 Coordinates: 18h18m (right ascension),
 -13°49' (declination)
 Distance: 7,000 light years
 Visual magnitude: +6.0
 Absolute magnitude: -8.21
 Apparent dimensions: 7.0 arc minutes
 Radius: 70x55 light years
 Estimated age: 5.5 million years
 Designations: Eagle Nebula, Star Queen
 Nebula, Messier 16 (M16), NGC 6611, IC
 4703, Gum 83, Sharpless 49, RCW 165



M16 can be found by first locating the Teapot asterism in Sagittarius constellation, and then by following the line from the star Kaus Australis (Epsilon Sagittarii), the brightest star in Sagittarius, to just east of Kaus Media (Delta Sagittarii). Another way to find the nebula is by extending a line from Lambda Scuti in Scutum constellation to Alpha Scuti, and then to the south to Gamma Scuti.

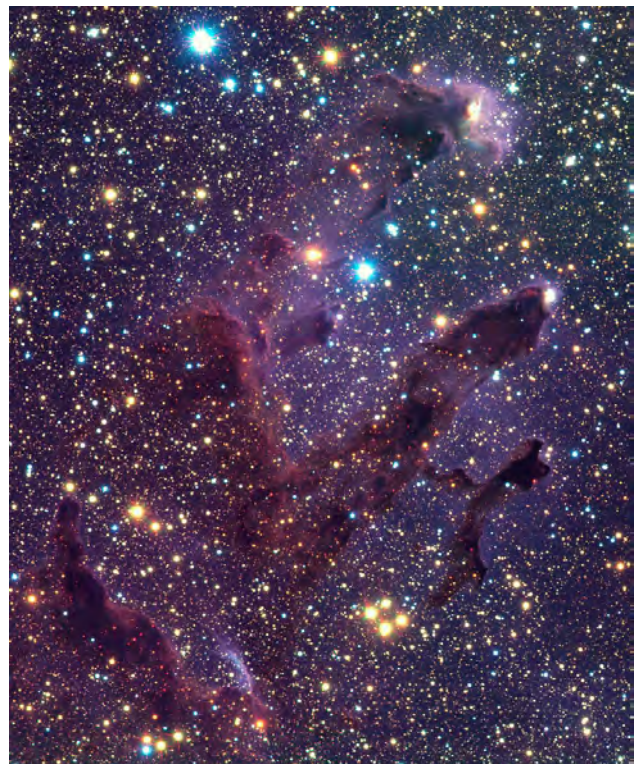
When observed through binoculars, the Eagle Nebula can be seen in the same field as the Omega Nebula (Messier 17) in Sagittarius. This region of the sky contains several other notable deep sky objects, including Messier 22 (Sagittarius Cluster), Messier 28, Messier 8 (Lagoon Nebula), Messier 20 (Trifid Nebula), Messier 21, Messier 23, the Sagittarius Star Cloud (Messier 24), Messier 25, and Messier 18.

In good viewing conditions, the open cluster in M16 is easy to find, but to see the surrounding nebulosity well, one needs a large aperture telescope.

The best time to observe the Eagle Nebula from the northern hemisphere is summer and early autumn, when the nebula can be found in the southern sky in the evening.

An infrared view of M16 and its famous 'Pillars of Creation'. The pillars or columns are numbered 1 to 3 from left to right (east to west). The pillars themselves are less prominent than on the Hubble visible-light image of this region – this because near-infrared light penetrates the thinner parts of the gas and dust clouds and only the heads remain opaque.

A number of red objects can be seen associated with the pillars: some of these are just background sources seen through the dust, but some are probably real young stars embedded in the pillars. The purple arc near the bottom of the picture is Herbig-Haro object 216, a fast-moving clump of heated gas emanating from a young star,



AK, with Wikipedia and Constellation Notes.