



Taurus is a prominent pattern of stars for observers in the northern hemisphere. It is situated to the northwest of Orion and the majority of the constellation is north of the celestial equator. In the UK Taurus is best seen during evenings from late Autumn and throughout the winter.

In Greek mythology Taurus represents the Bull form chosen by Zeus (who else?) to abduct the princess Europa. The stars of the constellation may also be represented in a cave painting from roughly 15,000 BC during the Copper Age; there is a depiction of what looks like Taurus at the Hall of the Bulls in the caves at Lascaux.

Taurus is one of Ptolemy's original 48 constellations and it occupies a section of the zodiac. The Sun passes through the constellation from May 13th until June 20th each year. Since 1990 the June Solstice (northern summer) takes place with the Sun in Taurus, close to the border with Gemini.

STARS

α Tauri (**Aldebaran**, mag. +0.9 v) is a red giant star at a distance of about 65 light-years. Aldebaran is slightly variable over irregular, long periods and historical records suggest fluctuations in brightness from mag. +0.8 to +1.0. Aldebaran appears on the same line of sight to the Hyades star cluster and to the eye appears to be the brightest member. However, the Hyades cluster is more than twice as far away as Aldebaran. Telescopes reveal Aldebaran to be an optical double with a wide, faint 11th magnitude companion.



Figure 1 (left) The Hyades open cluster. Aldebaran is the bright orange star in the picture but isn't a member of the cluster. The open cluster NGC 1647 is left of centre. (Right) The Crab Nebula (M 1) is a supernova remnant in Taurus. The supernova was reported as a new star in the year 1054.

β Tau (**Elnath**, mag. +1.7) is a blue-white giant star about 134 light-years away. The star marks the northern horn of the Bull but prior to the IAU formalising constellations in the 1920s this star was shared with the constellation Auriga (and also labelled as gamma Aurigae). Elnath is also a double star with a faint companion separated by 33 arcseconds.

ϵ Tau (mag. +3.5) is an orange giant and a member of the Hyades open cluster. The distance is about 147 light-years.

ζ Tau (**Tianguan**, mag. +3.0v) is a spectroscopic binary consisting of a blue-white giant about 10 times the mass of the Sun and a secondary companion slightly less massive than the Sun. The two orbit one another with a period of 133 days. At present it isn't known whether the secondary is a main sequence star, white dwarf or neutron star. The primary giant is slightly variable – the source of the variability is material ejected by the star as it rotates. The distance is about 440 light-years.

η Tau (**Alcyone**, mag. +2.9) is the brightest member of the Pleiades open cluster (M 45).

λ Tau (var.) is a spectroscopic triple star system located west of the Hyades. The central pair of stars form an eclipsing binary which causes the overall magnitude to vary between +3.4 and +3.9 during eclipses every 4 days. A third component orbits further away with a period of 33 days. None of the stars can be resolved in amateur telescopes.

DEEPSKY OBJECTS

Melotte 25 / Hyades (mag. +0.5) is a large open cluster near the bright star Aldebaran. It is the nearest open clusters to the Sun – just 150 light-years away. The brightest stars form a V-shape (with Aldebaran) and mark the head of the Bull in the constellation. The cluster contains several notable double stars. Of particular note are θ^1 and θ^2 Tauri – a pair of 5th magnitude stars are easily seen in binoculars.

Crab Nebula / M 1 (mag. +8.4) is located just north of the star Tianguan (zeta Tauri) and appears as an oval fuzzy patch of light to small telescopes. The Crab Nebula is a supernova remnant formed when a massive star reached the end of its life and exploded in the year 1054. The nebula is one of the most scrutinised objects in the sky especially since the discovery of a pulsar at the heart of the nebula in 1968. The Crab Pulsar, a neutron star, rotates about 30 times per second and is a strong source of emission from radio waves to x-rays.



Figure 2 The Pleiades open cluster (M 45) is arguably the most impressive star cluster in the entire sky.

M 45 (mag. +1.2) is a large, nearby open cluster of stars. The Pleiades are also known as the Seven Sisters – a name which reflects the fact that those with good eyesight can count up to seven of the brightest members. In actuality the cluster contains about 1,000 stars scattered over an area several times that of the moon. The Pleiades are easily visible to the naked eye and best views of the entire cluster are arguably with binoculars or telescopes with a wide field of view. The brightest star within the cluster is Alcyone (mag. +2.9). Long exposure images. The Pleiades happen to be passing through a dusty region of the Milky Way and this gives rise to the blue reflection nebula – especially to the south of the star Merope – which is so evident in long exposure images. The distance to the cluster is about 440 light-years and the cluster itself is about 100 million years old.

NGC 1647 (mag. +6.4) is an open cluster about 1,800 light-years away containing about 90 stars. It is located a few degrees east of the Hyades cluster and is visible with small telescopes and binoculars.

NGC 1746 (mag. +6.1) is a scattering of stars which used to be thought of as an open cluster. However, recent studies have shown the stars are unrelated – just an asterism!