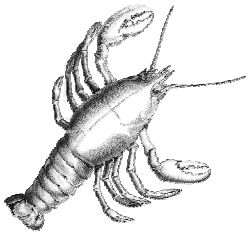


CANCER

The Crab

by Teoh Hui Chieh

"Since it failed to defeat Hercules and was just only a minor character in the battle, Cancer was not given any bright stars to mark its constellation..."

Cancer is a very inconspicuous constellation in the sky despite the fact that it is one of the well-known zodiac constellations – constellations that lie along the ecliptic or the Sun's path in the sky. It can be found between Leo to the east and Gemini to the west, Lynx to the north and Hydra to the south.

The word Cancer means Crab in Latin – but in the sky, it does not resemble a crab at all... In addition to that, all its stars are dimmer than third magnitude, making it difficult to see. To find it, we usually look for its brighter neighbours Leo and Gemini first and Cancer can be found sandwiched in between these two constellations.

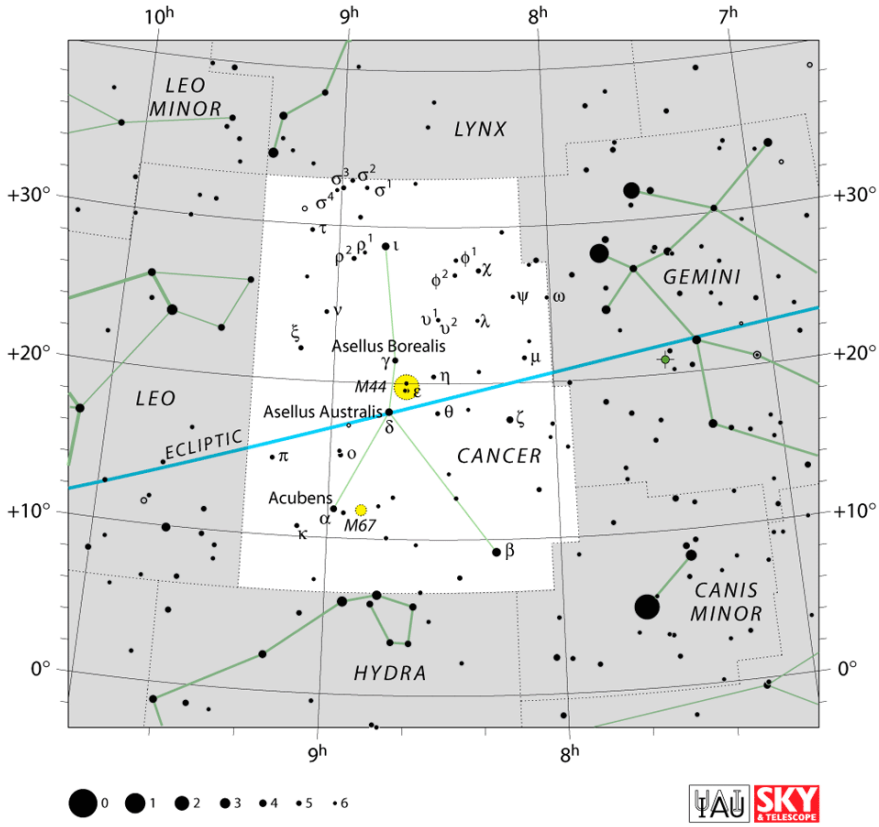
The brightest star in Cancer is Altarf or *beta (β) Cancri*, which only shines at magnitude 3.5. However, it is not this star that we normally used to find Cancer; it is the open cluster M44 – or commonly known as the Beehive cluster or the Praesepe – that usually acts as a guide to find this dim constellation.

Praesepe means manger and Asellus Borealis (γ*Cancri*) and Asellus Australis (δ*Cancri*) – the two stars north and south of Praesepe – means northern donkey and southern donkey in Latin. According to the legend, during the battle between the Gods and the Giants, the braying of the donkeys rode by the gods Dionysus and Hephaestus frightened the giants. The giants, who had never heard the braying of donkey, thought that some dreadful monster was about to be unleashed upon them, and therefore flee for their lives. As a reward for helping to win the battle, both the donkeys were put in the sky as Asellus Borealis and Asellus Australis, on either side of their manger (Praesepe) from which they seem to be feeding.

In former times, the Sun used to lie in this constellation during the Summer Solstice – the time when the Sun reaches its farthest point (23.5 degrees) north from the celestial equator. Thus, at latitude 23.5°N on Earth, the Sun will appear overhead at noon on this time. And because the Sun is in Cancer, this latitude is called the Tropic of Cancer. However, precession (wobble of the Earth on its axis) has since moved the Summer Solstice from Cancer through neighbouring Gemini and into Taurus. But that name stuck – until today 23.5°N latitude is still referred to as the Tropic of Cancer.

In mythology, Hercules (or Heracles) was drove temporary insane by goddess Hera and killed his wife and sons. To expiate the sin of murdering his family, Hercules was assigned twelve nearly impossible tasks – the so-called Twelve Labours.

In his second labour, Hercules went to a swamp near Lerna to kill a nine-head creature called the Hydra. While fighting this creature, Hera sent a crab to distract him. The crab emerged from the swamp and bit Hercules on the foot. During the struggle, the crab was stamped by Hercules and crushed beneath his foot.



The crab was later awarded a place in the heaven, as Cancer, for following its master's order and sacrificing its life. Since it failed to defeat Hercules and was just only a minor character in the battle, Cancer was not given any bright stars to mark its constellation, making it the faintest zodiac constellation. ✪

Abbreviation	Genitive	Area	Order of Size	Brightest Star	Magnitude
Cnc	Cancri	506 degree^2	31	Altarf *(β Cancri)*	3.5

Notable Objects:

M44 (NGC2632) – Beehive Cluster / Praesepe

M44 is known since ancient time as nebulous because it is not readily resolved with the naked eye. Galileo Galilei is the first person to resolve this cluster with a telescope and counted over 40 stars, introducing the idea of star clusters. M44 contains about 200 members.

- M44 is located between the two 4th-magitude stars *gamma (γ) Cancri* and *delta (δ) Cancri*. Ironically, M44 is brighter than these two stars and it is easier to locate M44 than them.
- Another way to locate M44 is to look somewhere midway between the stars Regulus in Leo and Pollux in Gemini.
- M44 is an easy target for the naked eye as a faint misty patch in a barren section of the sky. It is not easy to resolve the individual stars with the unaided eye unless under exceptionally good observing condition.
- Binoculars work best to observe this cluster due to its large size. If using a telescope, low-powers and wide-field eyepieces is necessary to fit the entire cluster into one field. With slight magnification, the whole cluster seems to be sparkling with stars - just like a beehive!

Type	Magnitude	Size	Distance	Location
Open Cluster	3.1	70′	~ 515 light-years	RA 8h 40.1m Dec +19° 59′

M67 (NGC2682)

M67 is a fairly rich open cluster with an estimation of 500 to 1000 stars. It is one of the oldest known open clusters with an estimated age of 4 to 5 billion years old. It is rare for an open cluster to be that old because most of the open cluster orbit the galaxy close to the galactic disk, and it is quite difficult for them to survive the intense gravitational interaction there, which tends to disrupt the cluster. M67 seems to survived maybe due to the inclination of its orbit that takes it well away from the galaxy's plane most of the time.

- M67 lies 2 degrees west of *alpha (α) Cancri* and 9 degree south of M44.
- It is not visible to the naked eye, unless under exceptionally good sky condition, but appears as a faint misty patch through binoculars.
- Viewing through a small aperture telescope will resolve its brighter stars. An 8-inches aperture telescope will clearly resolved its members, shining against a background of fainter stars.

Type	Magnitude	Size	Distance	Location
Open Cluster	6.9	25′	~ 2,600 light-years	RA 8h 50.4m Dec +11° 49′