ERI ERIDANUS *ERIDANI*

Eridanus represents a river and is one of Ptolemy's original 48 constellations. However, the end of the river for Ptolemy was marked by the star Acamar – he was unable to see the bright star Achernar which marks the southern end of the modern constellation.

Eridanus is a long pattern: it stretches from the celestial equator to the far southern sky. Only the northern section of the constellation is visible from the UK and its brightest star is permanently below the horizon. It is best seen during the late autumn and early winter from the UK.

STARS

α Eridani (**Achernar**, mag. +0.6) is the ninth brightest star in the sky and is about 139 light-years away. Achernar marks the southern end of the constellation and is permanently below the UK horizon in the current epoch. Achernar is a blue-white main-sequence star approximately seven times the mass of the Sun. Achernar is one of the least spherical stars known in the Milky Way. The rapid rotation gives it an equatorial diameter about 56% greater than its polar diameter. This in turn affects the temperature between the hot (20,000K) polar regions and the cooler (10,000K) equator of the star. Achernar is also a spectroscopic binary system with the secondary being a smaller white main-sequence star.

β Eri (**Cursa**, mag. +2.8v) is the bright star at the northern end of the constellation. It is situated just northwest of Rigel in neighbouring Orion. Cursa is a white giant star of about two solar masses and has recently ceased being a main-sequence star. In 1985 the star was observed to flare in brightness by 3 magnitudes for a period of two hours; for a brief period rivalling the brightest stars in Orion. The cause of this variability may be linked to stellar flares and only a couple of other stars (Enif, in Pegasus and Mu Cephei) have been observed to brighten in this way. The distance is about 89 light-years.

γ Eri (**Zaurac**, mag. +2.9) is an evolved red giant star at a distance of about 200 light-years. It varies by about one-tenth of a magnitude over an irregular long period.

δ Eri (mag. +3.5v) is an orange subgiant star which is in the process of evolving into a red giant. It is slightly variable (by a few hundredths of a magnitude) and lies just 29 light-years away.

ε Eri, (**Ran,** mag. +2.9v) is an orange main-sequence star and one of the nearest stars to the Sun; the distance is just 10.5 light-years. Ran has attracted considerable interest from astronomers because it is a relatively nearby sun-like star. It has a mass of about 82% that of the Sun. The surface temperature is slightly lower and the overall luminosity is about 30% of the Sun. The IRAS satellite discovered a dust disk around the star in 1983. There is strong evidence that at least one, or possibly two, planets orbit the star.

ζ Eri (**Zibal**, mag. +4.8) is a spectroscopic binary at an estimated distance of 110 light-years. The system consists of a pair of white main-sequence stars orbiting each other with a period of 18 days.

η Eri (**Azha**, mag. +3.9) is an orange giant star about 137 light-years away.

θ Eri (**Acamar**, mag. +2.9) is appears to the eye as a white 3rd magnitude star. Small telescopes resolve the star to show a 4th magnitude secondary separated by 8 arcseconds. Acamar is about 290 light-years away.

λ Eri (mag. +4.7) is a yellow main-sequence star on the point of evolving into a subgiant. It is about 41 light-years away.

τ^4 Eri (mag. +3.7v) is an orange giant at a distance of 300 light-years. Small telescopes reveal a 9th magnitude companion separated by 6 arcseconds. The pair are form a true binary system. The primary varies in brightness by a couple of tenths of a magnitude over long, irregular periods.

55 Eri (mag. +6.0) is a double star in the northeastern part of the constellation and just under 5 degrees southwest of Cursa. It consists of a pair of 6th and 7th magnitude stars separated by 9 arcseconds – a relatively easy split at moderate magnification.

DEEPSKY OBJECTS

Figure 1 Deepsky objects in Eridanus. (Left) NGC 1300 is a barred spiral galaxy. (Right) NGC 1291 is an example of a ring galaxy. This is possibly a transition stage of two galaxies merging. Credit: STSci Digitized Sky Survey.

NGC 1232 (mag. +10.5) is a spiral galaxy about 60 million light-years away. The galaxy is visible through moderate size telescopes and is presented face-on. It is located about 2.5 degrees northwest of the star τ^4 Eridani.

NGC 1291 (mag. +9.4) is a ring galaxy about 33 million light-years away.

NGC 1300 (mag. +11.4) is a barred spiral galaxy about 61 million light-years away. It is 2.5 degrees northeast of NGC 1232 and is part of the same galaxy cluster (the Eridanus Cluster).

NGC 1535 (mag. +10.5) is a planetary nebula discovered by William Herschel in 1785. In recent years it has gained the nickname Cleopatra's Eye amongst amateur astronomers. The nebula is approximately circular with a diameter of 22 arcseconds. The central star is 12th magnitude.