Introduction

Away from the lights of the city, the dark night sky offers an amazing and wondrous sight: thousands of brilliant, glittering stars. In fact, the name of one type of star, a *Mira variable*, comes from the Latin word for “wonderful.” Because the ancient civilizations of Babylon, Egypt, Arabia, Greece, and Rome did not possess the scientific knowledge to understand the true nature of stars, they constructed elaborate myths and legends about the star formations they observed. We now call these star groups *constellations*. Although most of the myths are from ancient Greek lore, the names of the constellations have come down to us in the Roman language of Latin. And because of the achievements of ancient Arab astronomers, many individual star names are in Arabic.

Stars come in a variety of colors, sizes, and types. Among them are red *dwarfs*—twenty times smaller than our own Sun, and *supergiants*—100 times more massive. Stars also burn at different temperatures, indicated by their colors. Yellow-white stars like the Sun have surface temperatures of 5500 degrees centigrade, while blue-white and blue stars burn the hottest—30,000 to 60,000 degrees centigrade. Astronomers also measure stars according to their brightness. The brightness of a star is determined by two types of magnitude. Absolute magnitude refers to the brightness of a star in relation to other stars. Apparent magnitude, the scale used in this book, describes a star’s brilliance as seen from Earth (see p. 48 for a list of the twenty-five brightest stars).

In addition to individual stars, constellations include other celestial configurations: double stars orbiting in close proximity around a central gravitational point; binary *eclipsing variables*, i.e., twin stars in which a smaller companion orbits a larger main star; and groups of stars called *clusters*. *Globular clusters* are tightly packed together, while others with less density are called “open” clusters. *Nebulae*, clouds of brightly shining gas and dust, are interstellar nurseries where newborn stars come winking into existence. The largest elements of constellations are huge accumulations of stars called *galaxies*. Some, like our own Milky Way galaxy, are spiral-shaped and contain over 200 billion stars.

Observed from Earth, stars and constellations change constantly. Their positions vary as they rise and set with the Earth’s daily rotation on its own axis. The location of constellations also varies with the seasons. As the Earth moves along its yearly orbital path around the Sun, the natural tilt of the planet causes an apparent monthly change of constellation positions in the night sky. Moreover, some constellations are visible only in the Southern Hemisphere, below the equator. However, since most of the constellations in this book are visible from the Northern Hemisphere, the sky charts at the front and back show the generalized positions of major constellations in the Northern Hemisphere during summer and winter.

Wherever you live, this book will help you understand and appreciate the wonders of the heavens. Simply step outside on a clear, dark evening and discover the magnificent display of mythical animals, objects, and characters glowing brightly in the constellations of the night sky.
Hercules

Helix Nebula

Pleiades

The Beehive Cluster

The Witch Bearer

1. Aquarius

M2

Cluater

Aquarius

Gamma Aquarius

Zeta Aquarius

Eta Aquarius

Delta Aquarius

Lambda Aquarius

Beta Aquarius
2. Pisces
The Fish

The constellation Pisces is shown here as two fish bound together by a cord. This depiction is drawn from a Greek myth recounting how the goddess Aphrodite and her son Eros were driven into the sea by the monster Typhon. To rescue them, the sea god Poseidon sent two giant fish to carry them away. Zeus honored the fish by creating a new group of stars. The zodiac assigns Pisces the period from February 19 to March 20.

Although the constellation of Pisces is large, it contains no stars of great magnitude. Its brightest star, Alpha Piscium, is actually a binary star, two stars which orbit one another closely. They are located at the knot of the cord that binds the two fish and lie 140 light-years from Earth. The two stars have magnitudes of 4.2 and 5.2. Pisces also contains the spiral galaxy M74, and Van Maanen's Star, a rare white dwarf star.
3. Aries

The constellation of Aries is represented by the Ram. The original Greek legend concerns the rescue of Perseus and Medusa.

Through the golden窜 the head of Medusa. Hermes appearing in the form of a ram, Medusa was turned to stone. Medusa's head was then mounted on the ram's body to become the ram's head. The ram was then flown to the sky. The ram was named for its horoscope sign, Aries. Hades and Perseus were born under the sign of Aries. The constellation is mainly identified by the three prominent stars that symbolize the horns of the Ram. These are Alpha, Beta, and Gamma Arietis. It is 2.6 magnitudes to the left of Beta Arietis.
4. Taurus

The Bull

Containing a number of significant celestial objects, the constellation Taurus is one of the oldest star groups, its association with the bull dating back to the Chaldeans (1000 B.C.). The Greek myth tells the story of how Zem, the daughter of the King of Tyre, was changed by the bull with the help of Uranus. Hence, when seen with a powerful white light, she is the constellation Taurus, represented by the Bull.

The brightest object in Taurus is the star Aldebaran, an orange giant. With a magnitude of 0.83, it is located slightly above the Sun. Taurus is located in the constellation of Taurus, about 350 light-years from Earth. The Pleiades, the Hyades, and the Hyades are located in the constellation Taurus. The Pleiades is the Sun itself, and the Hyades is located in the constellation Taurus. The Taurus is located in the constellation Taurus, about 350 light-years from Earth. The Pleiades, the Hyades, and the Hyades are located in the constellation Taurus. The Taurus is located in the constellation Taurus, about 350 light-years from Earth. The Pleiades, the Hyades, and the Hyades are located in the constellation Taurus. The Taurus is located in the constellation Taurus, about 350 light-years from Earth. The Pleiades, the Hyades, and the Hyades are located in the constellation Taurus. The Taurus is located in the constellation Taurus, about 350 light-years from Earth. 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5. Gemini

The Twins

The constellation Gemini is based on the myth of the twin brothers, Castor and Pollux. They were athletes and warriors who were said to have had special powers. When Castor was killed by a monster, Pollux asked Zeus to let him die also so that they could ascend to the heavens together. Zeus agreed and transformed them into the constellation Gemini.

The principal stars of Gemini are Alpha (Pollux), Beta (Castor), and Gamma (Gemini). The brightest star in Gemini is Castor, also a member of the Hyades cluster. The constellation is visible in the night sky from May 15 to June 15.
6. Cancer

The Crab

The Crab is the constellation associated with the sign of Cancer. The Crab myth is based on the myth of the Greek hero Heracles. One of the twelve labors of Heracles was to capture the famous rock of Athens and carry it to the sea. Heracles' strength was a source of wonder to his contemporaries.

The constellation contains the prominent star Aldebaran, known as Beta Tauri, and the brilliant star Rigel, also known as Gamma Tauri. These two stars are located in the constellation Taurus, not Cancer as originally depicted.

The Crab is located in the northern hemisphere and is visible throughout most of the year. It is a popular target for stargazers due to its bright stars and dramatic appearance.
Leo is also associated with the Twelve Labors of Hercules. Leo was named for the Nemean Lion, a fierce and powerful animal whose thick hide was impenetrable to arrows and spears. Hercules wrestled the lion in a gladiatorial combat.