

Celestial Bodies

Stars are always fascinating to mankind. They are the most beautiful celestial bodies, about which mankind contemplates. All the bodies in the universe, including the earth, constitute the **celestial bodies**. The **moon** is the celestial body closest to us. **Phases of the moon** are the most fascinating thing for people of all ages in spite of knowing the science behind the formation of the phases. The moon is a natural satellite of the earth, and it reflects the sunlight incident on it. Due to its revolution around the earth, when it is at different positions in its path, the apparent disc of the moon changes, which gives rise to its phases. When the moon is positioned between the sun and the earth, the illuminated portion of the moon is away from the earth, and we are not able to see the moon. We call this day as the '**new moon day**'. With time, the position of the moon changes and the illuminated portion of the moon exposed to the earth gradually increases. Thus, the size of the apparent disc of the moon increases gradually from a crescent to a full round when the earth lies between the moon and the sun. We call this day the '**full moon day**'.

The duration from one new moon day to the succeeding new moon day is the **lunar** month. If the moon is observed closely, we find **craters**, depressions on the surface of the moon, which might have been formed by the collision of some heavenly body like a meteorite with the moon. Even before astronauts landed on the moon, we were able to find information about the universe by celestial objects like meteorites. **Meteors** are dust-like material, which vary from a small pebble to a big boulder of several hundred kilometre in size, from outer space that enters the earth's atmosphere. Due to friction between the meteor and the atmosphere, the meteor may get burnt while reaching the surface of the earth. If the size of the meteor is large, a lump of it may be left without getting destroyed in the course of reaching the earth. This part of the meteor is called a **meteorite**.

The huge distances between the earth and other celestial bodies are measured in light years. A **light year** is the distance covered by light in one year.

Solar System

The sun is a major source of heat and light for all the planets in the **solar system**. Planets reflect sunlight that is incident on them. They have no light of their own, so they don't twinkle like the stars. Planets have definite paths called **orbits** in which they revolve around the sun. The time taken by a planet to complete one full revolution around the sun is called its **period of revolution**. The time taken by a planet to rotate a full 360 degrees on its axis is called its **period of rotation**. A celestial body that revolves around another celestial body is called a **satellite**. **Mercury** is the smallest planet in the solar system as well as the closest to the sun. It takes about 88 days to complete one revolution around the sun. **Venus** is the second closest planet to the sun. It takes about 225 days to complete one revolution around the sun. It has no satellites or moons. Venus rotates from east to west.

Earth is the only planet on which life is known to exist. It takes 365 days for the earth to complete one revolution around the sun. **Mars** completes one revolution around the sun in about 687 days. It has two moons of its own. **Jupiter** is the largest planet in the solar system. Jupiter's four larger moons are called Io, Europa, Callisto and Ganymede. It rotates the fastest among all planets. The rings of **Saturn** are made of ice particles and dust. Saturn is the only planet that is lighter than water. The largest of Saturn's moons is Titan. **Uranus** is the coldest planet. **Neptune** was discovered through mathematical calculation. Mercury, Venus, Earth and Mars are called the **inner planets**. Jupiter,

SUMMARY

Saturn, Uranus and Neptune are called the **outer planets**. The outer planets have several moons and a system of rings.

Other Members of Solar System

Apart from the sun and the planets, the **solar system** also consists of celestial bodies such as meteors, comets and artificial satellites. A **meteor** is made up of debris. A meteor enters the Earth's atmosphere at a very high speed. The friction with the atmosphere makes the meteor hot and it burns till it disintegrates. As it falls to the ground, it glows brightly. This is why it is called a **shooting star**. Some meteors reach the ground before they burn completely and evaporate. These are called **meteorites**. **Asteroids** are made of rubble and are found in the gap between the orbits of Jupiter and Mars. This gap is called the **asteroid belt**.

An asteroid does not have a tail. However, a **comet** is made up of a bright head and a long tail. A comet consists of rock, dust, water, ice and frozen gases. Comets, too, revolve around the sun periodically, but their period of revolution is larger as compared to that of planets. One of the most famous comets is **Halley's comet**, named after the discoverer. Its period of revolution is 76 earth years. **Artificial satellites** are man-made and are launched from the earth. Artificial satellites are used for transmission of television and radio signals, **telecommunication**, **weather forecasting** and remote sensing.

Constellations

Stars are always fascinating to mankind. They are the most beautiful celestial bodies about which mankind contemplates. In ancient times, the revolution of the earth around the sun and the apparent position of many groups of stars were studied extensively to explore the universe. A group of stars that can be identified with the shape of an identifiable object like an animal or a known object is called a constellation. Major constellations are the Ursa Major, Ursa Minor and Cassiopeia.

The **Ursa Major** is shaped like a ladle and is also referred to as the Big Dipper. It consists of seven stars placed in the form of a dipper. The stars in the constellation form the shape of a bear, and hence it is also referred to as the Big Bear.

In India, it is popularly called the **Saptarshi**. Another popular constellation is the **Orion**, which is shaped in the form of a hunter. Three middle stars in the Orion lead to a brighter star in the sky, called **Sirius**. The **Cassiopeia** is another constellation, which can be located in the northern sky. As the earth rotates on its axis from west to east, the stars appear to move from east to west. But the **pole star**, which is located along the axis of the earth's rotation, does not appear to move as it lies along the earth's axis and is towards the north of the earth. It helps in identifying directions during the night.