

Other Members of the Solar System :

Notes/W.S.-110

There are many other members of the solar system besides the nine planets and their moons. They are all quite small and appear mostly to be left-overs formed during the early evolution of the Solar System.

The Asteroids

The **asteroids** consist of large irregular chunks of rock which the astronomers believe are the remains of a shattered planet or the left-overs from the formation of the planets. Ceres is the largest, with a diameter of 1000 km. Some appear to be rocky, while others appear to be metallic. Thousands of asteroids lie in an orbit between Mars and Jupiter at a distance of about 2.8 times the Earth to Sun distance. This is the asteroid belt. Some asteroids escape the belt and cross the Earth's orbit.

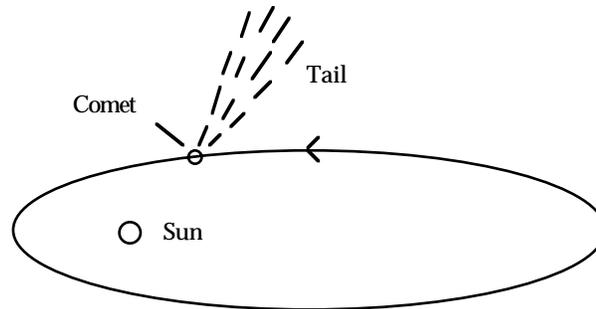
Meteors and Meteorites

A **meteor** (or shooting star) is a rock which passes through the Earth's atmosphere. It appears to be a streak of light as it burns up. A **meteorite** is a meteor which survives until it hits the ground. There are two types of meteorites; "stones" and "irons". The stony meteorites are similar to ordinary rocks. The iron meteorites are composed of iron and nickel like the Earth's core. The ratio of stones to irons is about 10:1. This ratio suggests that a small planet with an iron core and a rocky exterior (like Earth) was destroyed in a collision. It appears that many meteorites may have originated from within the asteroid belt. A large meteorite created the Barringer crater (diameter = 1200 m) near Winslow Arizona, USA.

Comets

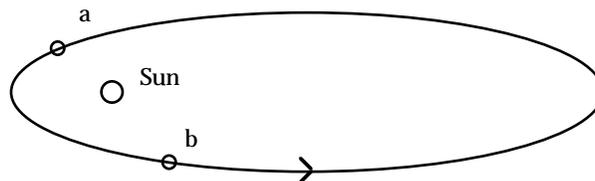
Comets are small objects composed of rock and ice which orbit the Sun. The ice is frozen water, ammonia, methane, and carbon dioxide. They are like dirty snowballs. As they approach the Sun, the heat warms up the comet and the ice vaporizes. The gases emitted, form a tail. The tail is always directed away from the Sun, because of the solar wind, which consists of particles which are emitted by the Sun. The best known comet is Halley's comet. It is several kilometers in

diameter. It orbits the Sun once every 76 years. Its highly elliptical orbit extends past the orbit of Neptune.



Questions:

- 1)a) What are the asteroids? b) Where are they located? c) What is the name of the largest asteroid?
- 2)a) What is a meteor? b) What is a meteorite? c) Name the two types of meteorites. d) How are craters formed?
- 3)a) What is a comet? b) Why do comets have a “tail” when they are close to the Sun? c) How long does it take for Halley’s comet to orbit the Sun?
- 4) Draw the tails on the comet when it is in positions a and b.



Answers: 1)a) The asteroids are large irregular chunks of rock., b) They are located between Mars and Jupiter at a distance of about 2.8 times the Earth to Sun distance., c) Ceres, 2)a) It is a rock which passes through the Earth’s atmosphere., b) A meteorite is a meteor which hits the ground., c) The two types of meteorites are stones and irons., d) A crater will form when a large meteorite hits the ground., 3)a) Comets are small objects which orbit the Sun that are composed of rock and ice., b) The ice vaporizes and is “blown” away from the Sun

by the solar wind., c) Halley's comet takes 76 years to orbit the Sun.,
4)

