SOLAR AND LUNAR ECLIPSES.

Human beings have always wondered about nature and tried to find explanations for the things that they see. One thing that people tried to find an explanation for was an eclipse-when the light of the sun or the moon is hidden.

ECLIPSES.

The sun is very important-it gives heat and light. In ancient times, when people saw that the light of the sun was partly or completely hidden, they were frightened by it. People thought of various different explanations for a solar eclipse. None of these explanations was scientific.

Reasons for eclipses.

Eclipses happen for the following reasons:

1) The orbit of the moon around the earth.
2) The orbit of the earth around the sun.
3) The shadow that is formed when sunlight falls on an opaque object (opaque=something through which light cannot pass).

Go out into the sunlight in the morning or the evening. You will notice that you have a long shadow. This is because sunlight cannot pass through your opaque body. You will also see that the shadow will be on the opposite side to the sun.

SOLAR ECLIPSE.

'Sol' means the sun. A solar eclipse is when the sun is partly or completely hidden. This is how it happens. While moving along its orbit, the moon comes between the sun and the earth. It blocks the light of the sun from reaching the earth (see diagram) and its shadow falls on the earth. This is a solar eclipse. During a solar eclipse, there are two shadows. The first shadow is the umbra. It is the dark centre of the moon's shadow and gets smaller as it reaches the earth. The second shadow is the penumbra, which gets bigger as it reaches the earth.

People standing in the umbra see a total solar eclipse. The sky becomes very dark, as though it is night, and birds stop singing. For a total solar eclipse, the sun, the moon and the earth should be in a perfect, straight line. A total solar eclipse can only be seen from a small part of the earth. People standing in the penumbra see a partial Solar eclipse. This happens when the sun, the moon and the earth are not in exactly a straight line. Solar eclipses last for only a few minutes. They are exciting, but we should never look at an eclipse of the sun directly, even with dark glasses, as it can damage the eyes permanently. There is special equipment that should be used for seeing a solar eclipse.

LUNAR ECLIPSE.

'Luna' means the moon, so a lunar eclipse is when the moon is hidden from view. This happens when the earth, while moving along its orbit around the sun, comes between the sun and the moon. The earth blocks the sunlight from falling on the moon, and the shadow of the earth falls upon the moon instead. This is a lunar eclipse. A lunar eclipse can be seen at night.

In a total lunar eclipse, the moon and earth are on opposite sides of the earth in a straight line. The moon does not appear totally dark but looks slightly reddish during a total lunar eclipse. In a partial lunar eclipse, only a part of the moon moves into the earth's shadow. The earth's shadow appears very dark. Unlike a solar eclipse, a lunar eclipse usually lasts for a few hours. It is safe to look at a lunar eclipse, so we do not need special equipment to look at it.

Eclipses are beautiful natural phenomena. Unfortunately, sometimes, because of cloudy weather or because of pollution, we are not able to see an eclipse. Because of the work of astronomers and scientists, we now understand how they happen. They are not frightening in any way. The only harm that can happen is if we look at a solar eclipse without the special equipment.

SUMMARY.

1) The orbits of the moon and the earth and their shadows are the reason for eclipses.
2) Solar eclipses happen when the moon moves between the sun and the earth.
3) It is dangerous to look at a solar eclipse without special equipment.
4) Lunar eclipses happen when the earth moves between the sun and the moon.
5) Eclipses may be complete or partial.