

MAGS EXPLORER



Memphis Archaeological and Geological Society Youth Newsletter

November 14, 2003 • Volume 2, Number 11

Lunar and Solar Eclipses

MIKE BALDWIN-On Saturday night, November 8, 2003, Kelly, Jennifer, Sherri and I joined Kelly's science teacher, along with several students and their families for a lunar eclipse watch in the Collierville Middle School parking lot. Although it was a partly cloudy evening, the moon made several appearances between clouds, and we were able to watch it's transformation from a yellow full moon to a rusty red moon and back again . . . just like magic, except without Harry Potter. Have you ever wondered how an eclipse occurs? And what is the difference between a lunar eclipse and a solar eclipse? Here are a few details about eclipses. Some of you younger members might want to read it along with your parents or an older brother or sister . . . or ask one of the older Mini-MAGS members Friday night, if you have any questions about eclipses.

Lunar Eclipse

Since the earth and moon shine only by the reflected light of the sun, each casts a shadow into space in the direction away from the sun [just like we do on Earth . . . take a look at your shadow on the ground during the daylight]. The shadow consists of a cone-shaped area of darkness called the umbra, where all light from the sun is cut off, and a larger area of partial darkness called the penumbra, which surrounds the umbra and receives light from a part of the sun's disk. Lunar eclipses can occur only when the moon is in its full phase [full moon], that is, when the earth is between the sun and the moon. These eclipses may be total or partial, depending on whether the moon passes completely into the umbra of the earth's shadow or remains partly in the penumbra. Since the moon cuts the umbra close to the base, it can be in total eclipse for almost 2 hours. A partial eclipse [when it passes through the penumbra] can last more than 2 hours, and the entire lunar eclipse may continue for as long as 4 hours. Some light is refracted, or bent, by the earth's atmosphere into the umbra, so that the moon at totality, instead of appearing black, ranges from a dull gray to a coppery color, depending on the amount of dust in the earth's atmosphere.

continued on page two

MAGS Explorer is published monthly by and for the youth members of the Memphis Archaeological and Geological Society. Please send your comments and articles to Editor Mike Baldwin, 367 N. Main St., Collierville, TN 38017 or rockclub@earthlink.net. Youth can give articles, artwork, poems, puzzles, experiments, or stories to co-editors Jennifer Baldwin, Emily Randolph, Kelly Baldwin, or Abbey Randolph.

Except for items that are specifically copyrighted by their authors, other societies may use material published in MAGS Explorer provided that proper credit is given and the sense or meaning of the material is not changed. ©2003 Memphis Archaeological and Geological Society.

Eclipses . . . continued from page one

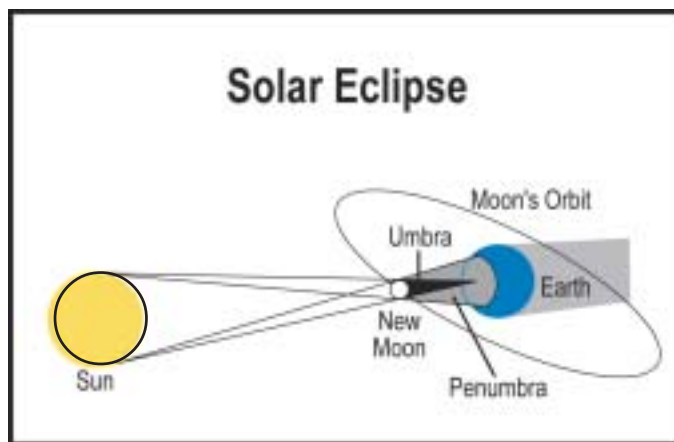
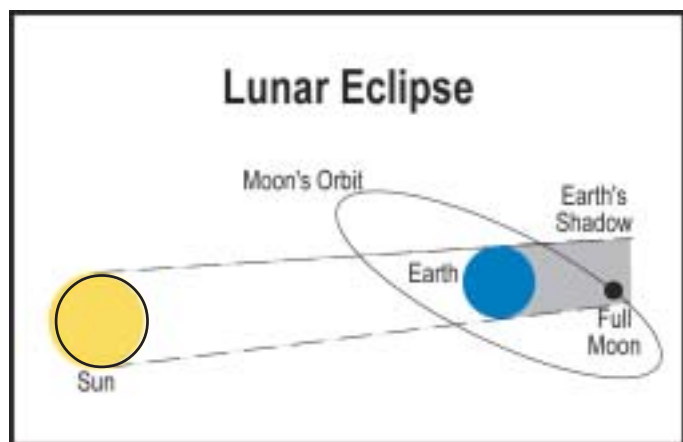
Solar Eclipse

A total solar eclipse can occur only when the moon is in its new phase [when it appears to be invisible in the sky]. At this time the moon is between the sun and the earth and cannot be seen until it moves across the sun's disk. At the onset of totality, parts of the sun may be seen shining brightly between the high points of the moon's irregular edge, a phenomenon known as Baily's beads; the disk of the moon appears black and is surrounded by the sun's corona, out of which shoot immense, flamelike spurts called prominences. The sky darkens to twilight, the brightest stars become visible, and there is a noticeable drop in temperature. Baily's beads are seen again as the sun reappears and the sky grows lighter.

At apogee [when the moon is at its farthest point from the earth] the umbra of its shadow is too short to reach the earth's surface, causing the apparent diameter of the sun's disk to be larger than that of the moon. Where the moon would otherwise block the sun entirely, now the sun is seen as a bright ring completely surrounding the moon's disk; this eclipse is known as an annular, or ring, eclipse. The longest possible duration of totality for a solar eclipse is 7 min, 40 sec at or near the equator when the sun is directly overhead; the duration decreases with increasing latitude. The eclipse of June 20, 1955, lasted 7 min, 8 sec, which was the longest duration of totality in 1,238 years. An eclipse almost as long occurred on July 11, 1991.

WARNING: Never look directly at a solar eclipse. It can cause permanent blindness. It is also dangerous to look directly at the Sun, even when it is not in eclipse. Only view a solar eclipse with the proper eclipse viewer or filter.

Reference:
Eclipses; <http://www.encyclopedia.com>; Columbia Encyclopedia; Sixth Edition; 2003. Reprinted for educational purposes under the "fair use" provision of the U.S. Copyright Act. Illustrations by Mike Baldwin.



Era: Cenozoic
 Epoch: Tertiary
 Period: Eocene
 Age: 58 myo
 Distribution: worldwide
 Location: roadcut, Somerville, TN
 Collected by: Roger Van Cleaf

Fossil Plant

Specimen of the Month

November 2003

