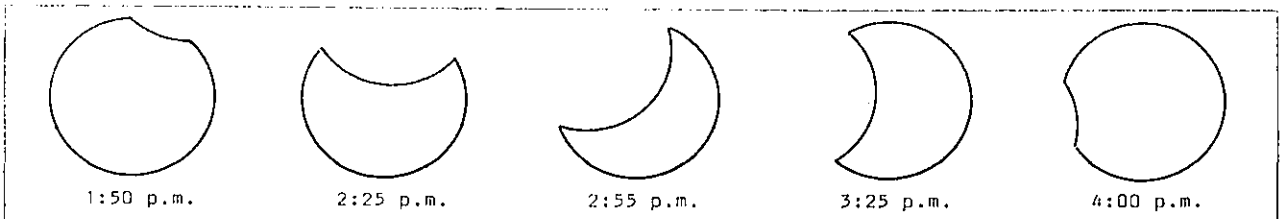

The above diagram shows the approximate appearance of the sun in the sky at these times. The orientation of the sun and moon is different when viewed by the various means described in the article. When using the pinhole camera turn this chart upside down and view in a mirror. When using the pinhole mirror method, simply turn this chart upside down.

Partial eclipse of sun to be fall event

By BOB MOLER
Special to the Record-Eagle

During the afternoon hours of Friday, Oct. 3, a partial eclipse of the sun will be visible from most of the United States. From Michigan the moon will block nearly half the sun's face at mid eclipse.

The eclipse will be total for a small stretch of the Atlantic Ocean between Greenland and Iceland.

There are three types of solar eclipse: partial, total, and annular. This eclipse, depending on location, will be all three. Most eclipses we see are partial, meaning the moon covers only part of the sun's face. This usually is because we aren't at that narrow band on the earth where the moon completely blocks the face of the sun to produce a total eclipse.

Sometimes the core of the moon's shadow doesn't touch the earth at all, so the most that can be seen is a partial eclipse. An annular or ring eclipse results when the moon is farther than average from the earth and appears too small to completely cover the face of the sun.

The path where the maximum eclipse occurs is at the northern edge of the earth as seen from the sun and moon. Due to the great distance of the moon the eclipse is annular when the core of the moon's shadow touches the earth. As the shadow climbs the curve of the spherical earth the moon-earth's surface distance lessens enough so the eclipse is total for a maximum of three seconds. Even at noon that far north the noontime sun is very low in the sky. As the core of the shadow moves toward the edge of the earth the eclipse becomes annular again.

The ancients took a while to realize that eclipses of the sun only happened at new moon. They blamed the eclipse on some monster or dragon who was trying to devour their sun god. To that end they made sacrifices to the dragon or shot arrows into the air and banged on drums to frighten it off. These practices always worked for the monster soon fled.

The Babylonians knew that the moon was the culprit, and by studying the path of the moon with respect to the sun and keeping accurate records of eclipses they discovered that eclipses could be predicted. They found that eclipses repeated at intervals called the Saros of 18 years, 10⅓ days.

The prior eclipse of this Saros was on Sept. 22, 1968, an eclipse that was total in Siberia. The one third of a day in the Saros interval means that an eclipse repeats a third of the earth's rotation farther west each time. Besides the westward movement of each eclipse, members of a Saros also creep north or south. In this Saros the eclipses are moving northward.

This is the last eclipse in this series that will be total; the next eclipse on Oct. 14, 2004, will only be partial since the central core of the moon's shadow will just miss the north edge of the earth. There are about 40 Saros series in progress at any one time which means there's at least two solar eclipses visible from somewhere on the earth each year.

The accompanying table gives the times for the important events of the eclipse for selected locations in lower Michigan. These times should be within a minute of the actual events. One thing should be stressed aobut viewing the eclipse of the sun; that is . . . DO NOT LOOK AT THE SUN. Just because the sun is partially covered by the moon doesn't make it safer to look at. The exposed parts of the sun are just as bright and dangerous as ever. Eye damage may not always be apparent right away. Thee are plenty of safe ways to see the eclipse safely without actually looking at the sun.

How to View The Eclipse

The simplest way to view the sun safely is by making a pinhole camera which is a box with a pinhole in one side to act as a lens. The longer the distance from the pinhole to the opposite side the larger the sun's image. A box 18 to 24 inches long does nicely. Aim the pinhole side toward the sun and the spot of light that is the sun's image will appear on the opposite side. The image will be upside down as with any camera.

Nature can also provide a pinhole viewing can be accomplished with a small mirror. Mask off the face of a regular mirror except for a quarter of an inch hole. This can be done with a paper punch in paper or thin cardboard. Set up the mirror about 30 feet from the north wall of a building and aim the miror so the sun's image falls on it or through a window to an interior wall. The sun's image can be as large as six inches by using this method. The mirror will need to be repositioned occasionally because of the earth's rotation which makes the sun move its own diameter every two minutes.

Other Eclipse Effects

For someone not aware that an eclipse is taking place there will be little to show that anything out of the ordinary is happening. At mid eclipse the amount of sunlight will be cut nearly in half, but may go unnoticed unless one is expecting it. Also, the sunlight may also have a yellowish tinge since more of its light is coming from the darker outer edge of the sun's disk.

The temperature will fall a few degrees during the eclipse. This can easily be measured by a thermometer placed in the shade. The fall will begin after the start of the eclipse and continue to fall till after mid eclipse before rising again. There is a lag between the time of minimum light and heat coming from the sun and the time the tempeature bottoms out. This is because it takes air time to cool down and warm up. This is the same reason there is a lag between noon and the hottest part of the day in the afternoon.

If it's cloudy the drop in light levels may be more evident, but there will be little if any drop in temperature due to the clouds' insulating properties.

The next comparable solar eclipse will occur July 11, 1991. Three years later will be a spectacular eclipse as seen from Michigan on May 10, 1994 in which all but a low percentage of the sun will be eclipsed by the moon. Save your eyes for those eclipses, view this one safely.

Eclipse Events For Selected Cities In Lower Michigan

LOCATION	START	PEAK	END
Detroit	1:48 p.m.	3:03 p.m.	4:14 p.m.
Flint	1:46 p.m.	3:00 p.m.	4:12 p.m.
Grand Rapids	1:44 p.m.	2:58 p.m.	4:09 p.m.
Lansing	1:46 p.m.	3:00 p.m.	4:11 p.m.
Midland	1:45 p.m.	2:59 p.m.	4:10 p.m.
Traverse City	1:41 p.m.	2:55 p.m.	4:06 p.m.