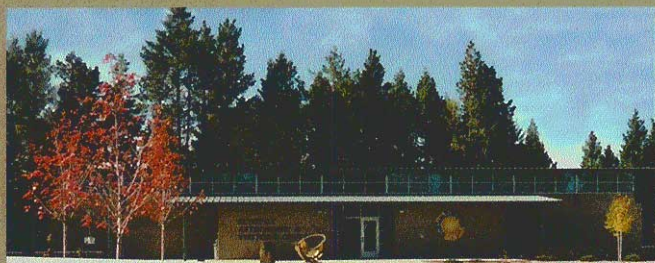


Armillary Sphere and Sundial



Time and Direction Visualized

*Located at the Sunspot, New Mexico
Astronomy and Visitors Center*



The Armillary Sphere and Sundial is a 5-foot diameter bronze and brass structure built by staff members Donald Neidig, Scott Gregory and Mitchell Davis. The Sphere reads the Time and Date by a shadow cast onto the precisely engraved curved projection screen. It displays the horizon, zenith and the compass directions, north, south, east and west, and also shows the direction to the north star and verifies the observer's latitude.

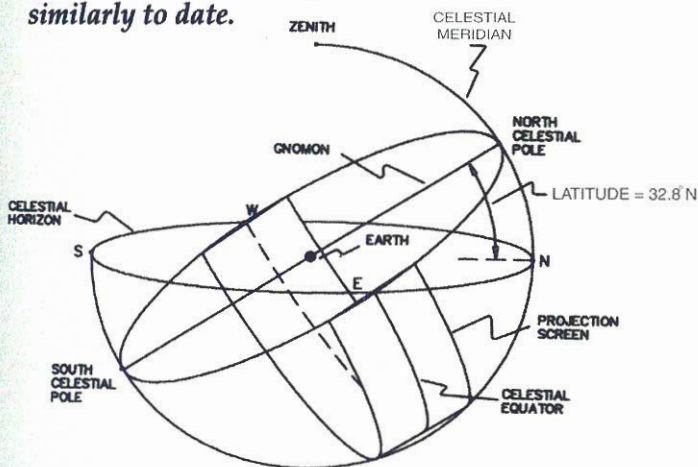
The Armillary Sphere was invented in ancient times as a means of showing the geometric relationship between the Earth and sky. It usually consists of an outer sphere representing the realm of the celestial objects and an inner sphere located in the center representing the Earth.

Directions for using the Armillary Sphere

TIME OF DAY: First read the apparent solar time from the shadow cast by the inclined rod (gnomon). Make a correction for the equation of time (see below) corresponding to the current date, using the analemma at the center. Tick marks are 5 minutes apart. Note that the sundial reads standard time, not daylight time.

DATE: Read directly from the ball's shadow north or south of the equator.

DECLINATION OF THE SUN: Angular distance of the sun north or south of the celestial equator. Read similarly to date.



EQUATION OF TIME: Apparent solar time, as read directly by the sundial, differs from civil time by an amount that varies throughout the year. This difference, known as the equation of time, is caused by the ellipticity of the Earth's orbit and the 23.4 degree tilt of the Earth's axis of rotation. To correct for the equation, read the displacement in minutes between 12 noon and the point on the analemma corresponding to the current date, and add or subtract accordingly.

LONGITUDE CORRECTION: Sunspot is located 0.82 degrees west of the 105 degree West longitude reference from which Mountain Time is reckoned. Normally, this would cause the apparent solar time to read 3 min. 15 sec. earlier at Sunspot than at the reference longitude. A correction for this offset is built into the sundial.