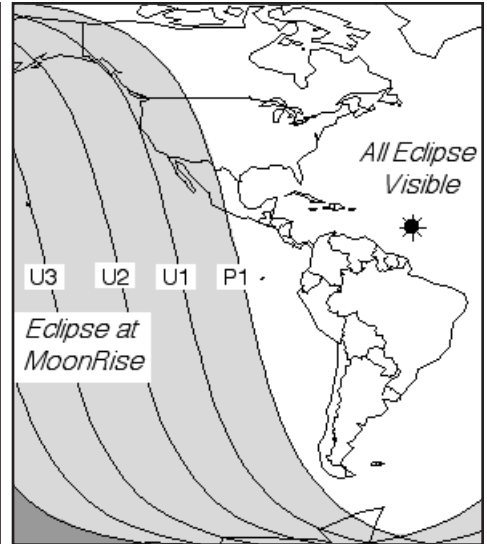




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Total Lunar Eclipse



October 27 - 28, 2004

On the evening of October 27, 2004, and lasting past midnight into the morning of October 28, astronomers in North America will be able to observe a total eclipse of the moon.

About Lunar Eclipses

Lunar eclipses occur when the full moon passes through the Earth's shadow. Usually the full moon passes either north or south of the Earth's shadow in its monthly orbit around the Earth, and no eclipse occurs. When the moon skims the Earth's shadow, a partial lunar eclipse occurs. But on October 27-28, the moon will pass completely into the shadow of the Earth, producing a striking Total Lunar Eclipse.

Observers with telescopes and binoculars can watch as the edge of the Earth's shadow crosses individual craters on the surface of the moon.

A lunar eclipse throws an eerie reddish color across the face of the moon. Earth's atmosphere acts like a prism, bending a little sunlight into the shadow and giving it a copper tint. In essence, what falls on the eclipsed moon is the

light of all the sunsets and sunrises on Earth.

Photograph the Eclipse

If you wish to photograph this eclipse, mount your 35-mm camera on a tripod and take scenic views with a red colored moon as part of your composition. Exposure times on ISO 200 film should be 1/60 second for partial phases at f/8, and 2 seconds at f/4 for the total phases. You may also photograph the eclipse through your telescope. Exposure times will depend on the exact setup of your equipment. Digital cameras allow even greater flexibility for photographing the eclipse.

Eclipse Photo Contest

The AAAA is running a contest for the best lunar eclipse photo. The photographer of the winning photograph will receive a one year subscription to their choice of either Astronomy Magazine or Sky & Telescope Magazine, and a one year individual membership to the American Association of Amateur Astronomers. See the AAAA website for details.

2004 October 28 Total Lunar Eclipse Contact Times

Penumbral Phase Begins:	0:05:35 UT
Partial Eclipse Begins:	1:14:25 UT
Total Eclipse Begins:	2:23:28 UT
Greatest Eclipse:	3:04:43 UT
Total Eclipse Ends:	3:44:43 UT
Partial Eclipse Ends:	4:53:44 UT
Penumbral Phase Ends:	6:02:44 UT

US observers from the east coast to the foot of the Rockies will be able to view the entire eclipse. For observers in the Eastern Time Zone, the penumbral, partial, and total phases begin at 8:09 pm, 9:14 pm, and 10:23 pm respectively, **on the evening of October 27**. Totality will last approximately 1 hour 21 minutes.

Observers in western states will be able to view the complete totality, but the penumbral phase of the eclipse will already be in progress at moonrise.

Note that this eclipse takes place during the evening of October 27 for Western Hemisphere observers, although, according to Universal Time, the eclipse officially takes place on October 28.

NASA Eclipse Home Page: <http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html>

Autumn All Sky Star Map

The Autumn Sky

First find north, which is marked by **Polaris**, the star which lies at the end of the handle of the Little Dipper. Only three stars from the Little Dipper are bright enough to be seen from urban locations: Polaris and the two stars at the far end of the cup. The stars in between are very faint and cannot be seen unless the sky is quite dark. Once you locate Polaris you can always count on finding it in the same place. The rest of the stars circle around the sky, but being at the pole, Polaris stays fixed.

Face west and look high in the sky to find three very bright stars forming a large south-pointing triangle. This is the **Summer Triangle**, consisting of Vega, Altair, and Deneb.

Face south to find the first magnitude star **Fomalhaut**, the only bright star in the entire region. This year, **Mars** will be found to the north of Fomalhaut.

Look to the northeast where the stars **Capella** and **Aldebaran** are starting to rise. Slightly above Aldebaran is the conspicuous cluster of stars called the **Pleiades**. This cluster is frequently mistaken for the Little Dipper.

Face a little to the east of north and look fairly high in the sky along the Milky Way to find the "W" shaped constellation **Cassiopeia**. The top of the "W" faces down and to the left toward Polaris.

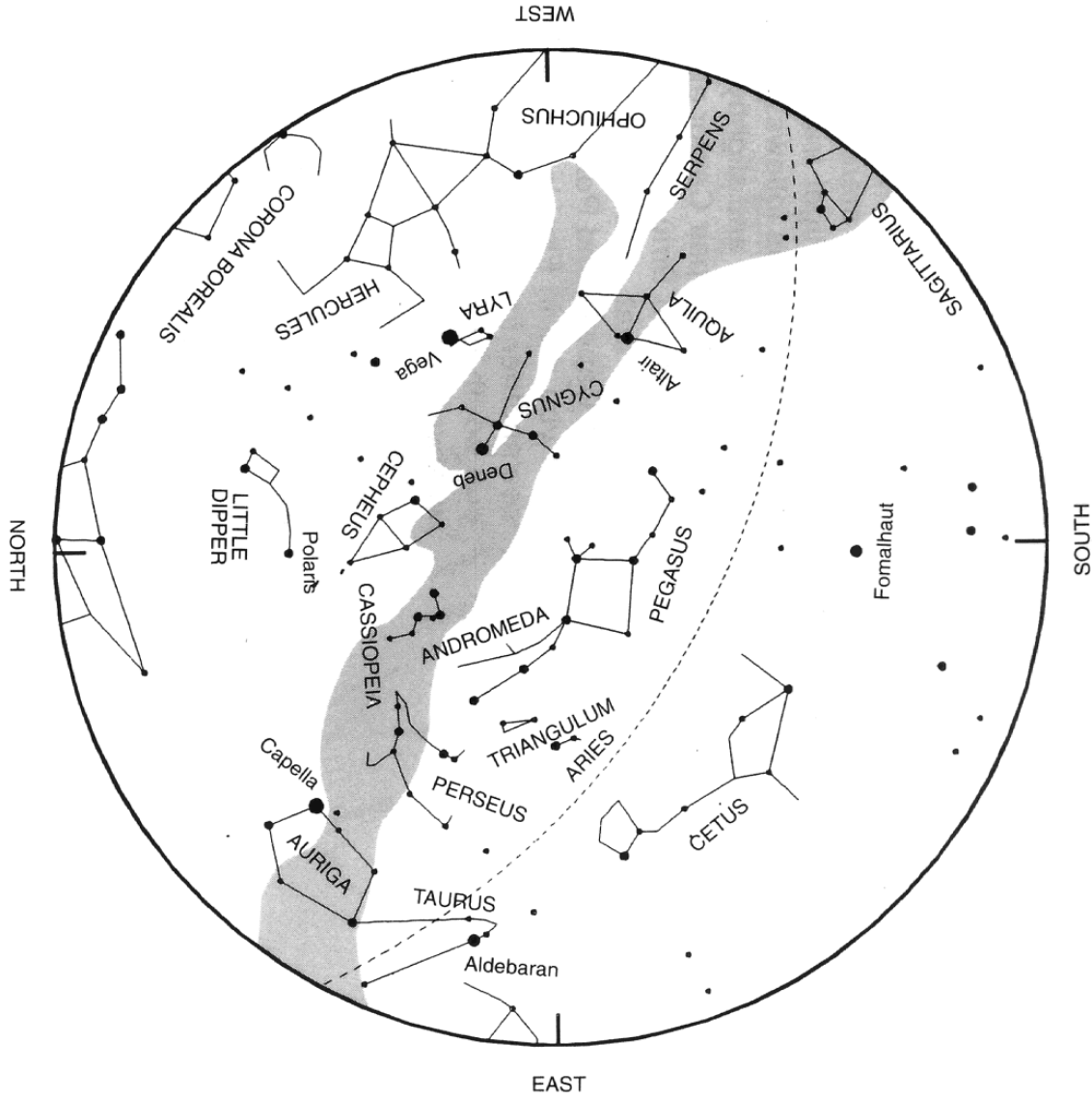
Follow the Milky Way toward the east from Cassiopeia to find **Perseus**, with its lower arm curved toward the Pleiades.

The **Great Square of Pegasus** is almost overhead. Its stars are only moderately bright, but the other stars in this part of the sky are even less so. Follow the double chain of Andromeda to the northwest from Pegasus. Don't neglect Andromeda's two small tagalong constellations, **Triangulum** and **Aries**.

Most of the constellations south of Pegasus are rather faint. To locate them, refer to a star map or a planisphere and use Fomalhaut as a reference point

- 3rd magnitude star
- 2nd magnitude star
- 1st magnitude star or brighter

Keep in mind that planets may be in the sky. The path of the planets across the sky, called the ecliptic, is indicated by a dashed line on the star map. Any really bright "stars" along the ecliptic and not shown on the charts are probably planets.



Autumn Season Star Map—This star map is drawn for 35 degrees north latitude at 9:00 PM in the middle of the season. It can be useful at any mid-northern latitude in the evening hours throughout the season, if you realize that the overhead stars shift westward with time. This map is from the booklet *Exploring the Sky with Binoculars* by David Chandler and Don Davis, available from AstroMax.com. Rotate the map so that the direction around the circle is on the bottom in the direction you are looking.



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