

# Nights long for viewing meteors, stars

**T**HE month of December brings us the least amount of sunlight for the year, two meteor showers, and the start of winter.

The planets which are visible after sunset are Mars and Jupiter. Venus dominates the morning sky. Mercury and Saturn are too close to the sun to be seen.

The amount of sunlight we receive this month decreases by a mere 10 minutes. On Dec. 1, sunrise is at 7:42 a.m. and sunset is at 5:01 p.m., allowing for a possible nine hours and 19 minutes of sunlight. On Dec. 31, these times are 8:01 a.m. and 5:10 p.m., for a possible nine hours and nine minutes of sun.

The moon is at first quarter phase on Dec. 1. It is in the constellation of Leo the lion and will be in the south, about 45 minutes before sunrise, on the 1st. The bright star to the west (right) of the moon is Regulus (REG u lus), the "heart" of the lion.



skywatch  
**Raymond E. Bullock**

**FACE EAST** northeast on Dec. 2, 45 minutes after sunset, and you'll see the planet Jupiter.

Jupiter will look like a bright star. Above and to the left of Jupiter is the Pleiades (PLEE a dees) star cluster. The Pleiades and the "shoulder" of Taurus, both of which are in the constellation of Libra.

New moon occurs at 12:36 a.m. on Dec. 9. The moon is located between the earth and the sun and is not visible.

the moon is Spica (SPY ca). The very bright star farther to the left of Spica is Venus.

The waning crescent moon has passed Spica and is approaching Venus on the next morning. On the 6th the moon is seven degrees to the south (right) of Venus, both of which are in the constellation of Libra.

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**ONE OF THE BEST** meteor showers of the year reaches its maximum on the 12th and 13th of December. This is the Geminid (GEM in mid) meteor shower, named for Gemini, the constellation from which the meteors appear to radiate.

Meteors are more commonly known as "falling stars" because they look like little stars falling from the sky. Some American Indians thought they were stars running from danger. But they have nothing to do with stars; meteors are rocks falling out of the sky.

Out in space there are rocks, stones, grains of dust, and other rubbish tumbling around. If one of these objects falls into our atmosphere, it heats up because of friction and burns, giving off light. A patient skywatcher can expect to see a few sporadic (occasional) meteors any clear night.

Many of these meteors are orbiting around the sun in well-defined orbits. They may be trailing along as the debris of a comet, or they may be the remains of a comet that disintegrated long ago. When the earth passes through the orbit of a meteor swarm, many more meteors than usual can be seen, and we can predict precisely when that happens.

**THE GEMINID** swarm is one of the richest. A patient observer can expect to see an average of 50 meteors every hour, which is about one every minute. The best meteor display occurs between 2 a.m. and sunrise. Although Gemini is nearly overhead, the meteors can appear in any part of the sky. Their trails can be traced back to Gemini.

Meteors burn up about 20 miles above the surface of the earth, but if an exceptionally large meteor falls to burn completely, it could strike the earth and produce a crater.

Most of Earth is covered with water, so any meteor falling to burn completely is more likely to produce a big splash than a big crater. Is it possible to be hit by a meteor? The chances of that happening are "astronomical!"

First quarter moon is at 12:40 a.m. on the morning of December 18. The moon has completed one-quarter of its orbit around the earth.

The moon is approaching Mars on the evening of the 16th. Both are located in the faint constellation of Pisces. On the next night the moon has passed Mars.

Look for the Moon on the night of the 20th. It is in Taurus, above twelve degrees above Aldebaran. Above and to the south (right) of the moon is the Pleiades. The Pleiades will be difficult to see with the bright moon scattering so much light. Farther the south of the moon is Jupiter.

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