

# SCOPE On the skies

**Find out why the Tropic of Capricorn might actually be the Tropic of Sagittarius.**



This year, winter officially starts at 5:54 a.m. Eastern Standard Time on Sunday, December 22. At this time, the Sun's apparent path along the ecliptic places it within the boundaries of the constellation Sagittarius, the Archer. Figure 1 shows a portion of the celestial sphere, the region in which the Sun is positioned during the solstice. Thus, at the beginning of winter, we would say the Sun is in Sagittarius.

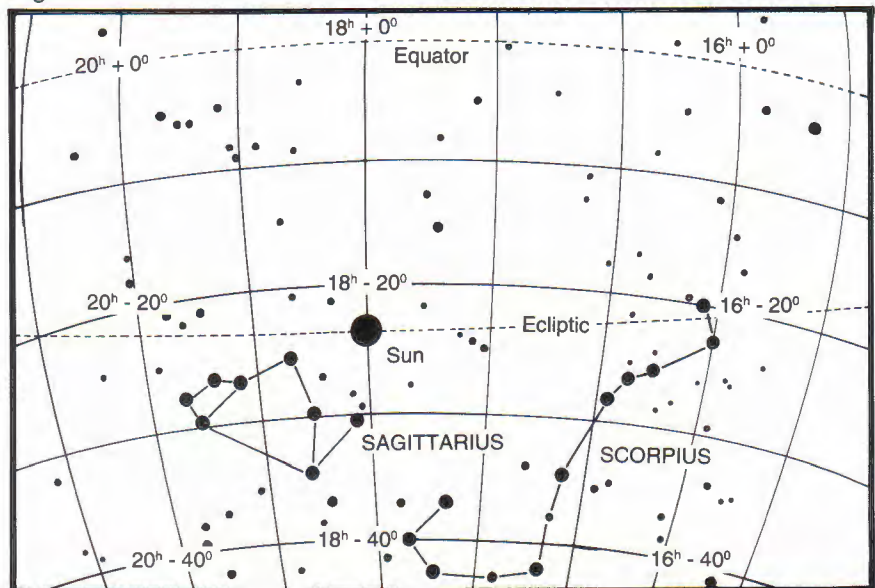
At the beginning of winter, the Sun is as far south of the Earth's equator as it will get, and lies over the parallel of latitude known as the tropic of Capricorn. At this position, the Sun has the coordinates of 18.0 hours, and 23.5 degrees south. Interestingly, the Sun actually lies within Sagittarius, the zodiac constellation to the west of Capricornus, leading one to wonder if the Tropic of Capricorn should be renamed the Tropic of Sagittarius. The Tropic of Capricorn (or, perhaps more appropriately, Sagittarius) marks the southernmost point that the Sun reaches over the Earth.

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## Along the river

During the winter months, there is a wealth of celestial objects to observe. The accompanying star chart shows a view looking south at about 9 p.m. local time during the middle of January, and at about 11 p.m. during the month of December. The star chart centers on the constellation Orion the Hunter, and includes his two hunting dogs as well as Lepus the Hare, the target of the hunt.

Figure 1.



Art by Max-Karl Winkler

distance of about 1,300 light-years, and visible to the naked eye as a fuzzy-looking star, it is located below the center belt star of Orion. M42 appears as a cloud of luminous gas spread over a full degree of sky, twice the apparent diameter of the full moon. The nebula contains numerous young, hot, blue and white-blue stars. A small telescope will reveal a group of four stars in a rectangle pattern known as the Trapezium within the Orion Nebula.

Following the belt stars upward through the face of Taurus the Bull will lead to the Pleiades, an open star cluster of several hundred stars. To the naked eye, anywhere from 6 to 11 stars can be seen. This cluster is more familiar as the Seven Sisters, the seven daughters of Atlas and Pleione. According to myth, the sisters are escaping the amorous advances of Orion. To some native Americans, the star cluster represents seven sisters who got lost wandering among the stars. They are clustered close together so as not to become separated. One sister, so overcome by their situation, cries eternally, therefore dimming the sparkle in her eyes (this is why usually only six of the sisters are discernable with the naked eye).

### Evening planets

No planets are visible during the evenings in December and January.

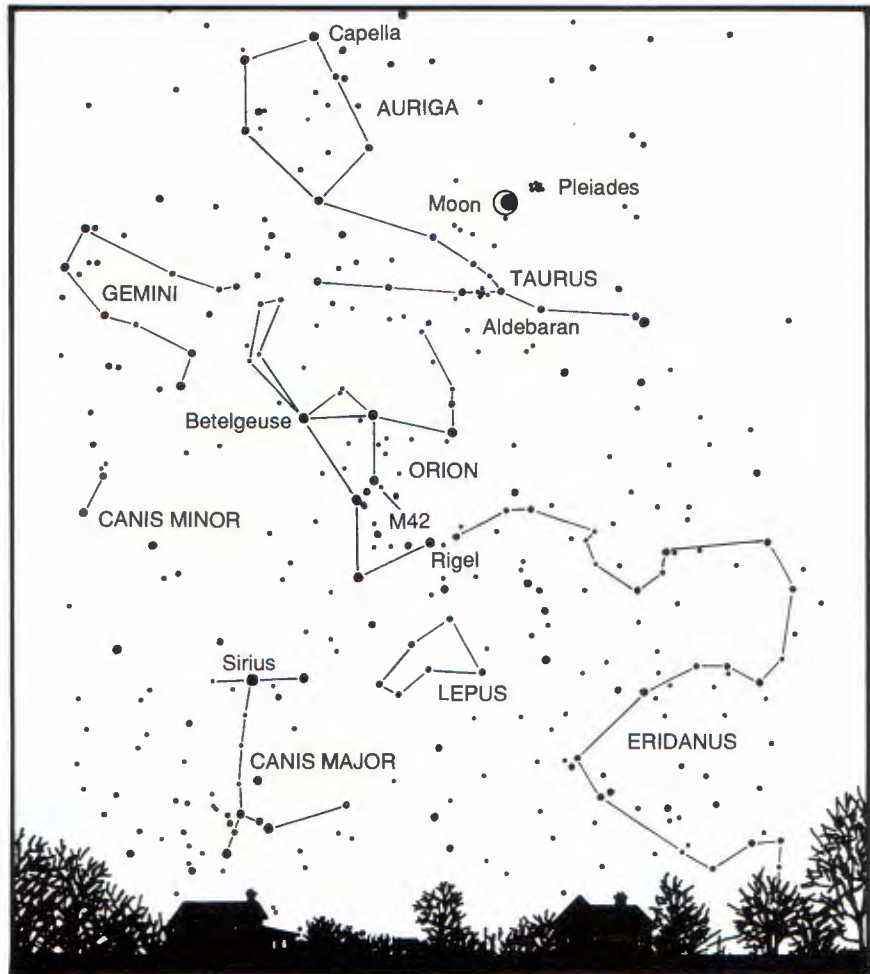
### Moon phases

#### December

- New Moon - December 5
- First Quarter - December 14
- Full Moon - December 21
- Third Quarter - December 27

#### January

- New Moon - January 4
- First Quarter - January 12
- Full Moon - January 19
- Third Quarter - January 26



LOOKING SOUTH ABOUT 9 P.M. ON JANUARY 15, 1992

## Science Games

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