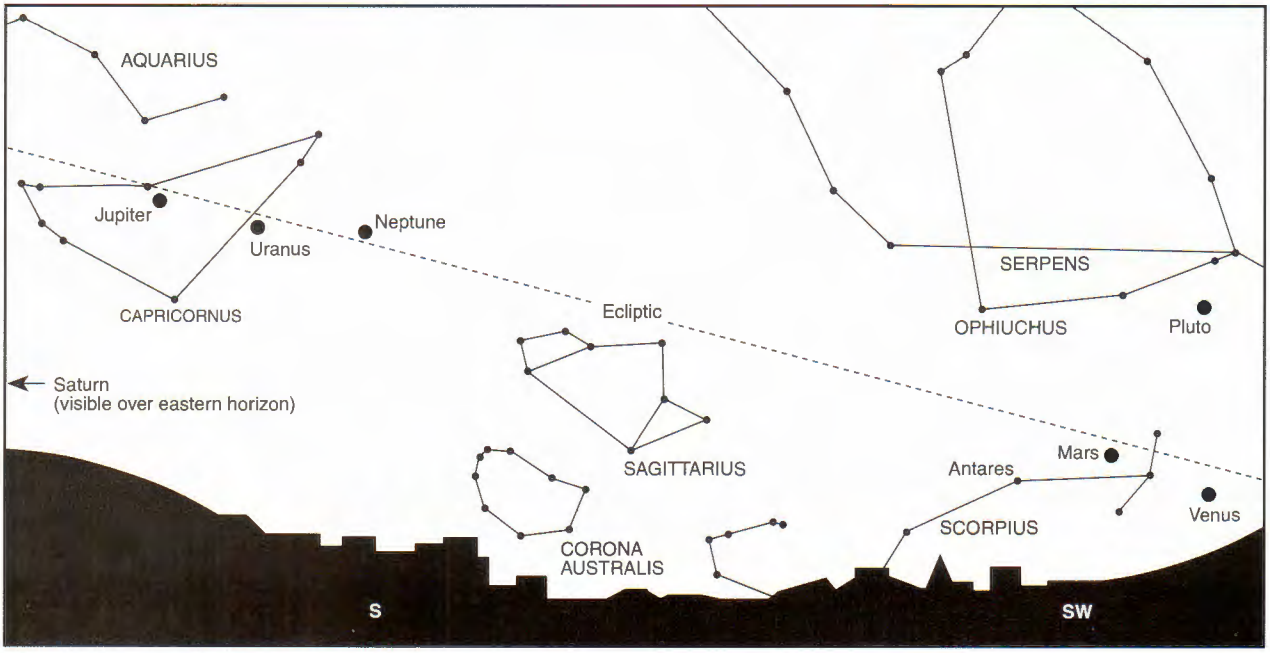
A string of seven planets



In the Northern Hemisphere, October is typically thought of as a transition month between the skies of summer and the skies of autumn, even though summer actually ends in September. This year, however, October may also be thought of as the month of planets as seven of them—Pluto, Venus, Mars, Neptune, Uranus, Jupiter, and Saturn—stretch from west to east across the night sky. Four of these planets are visible without binoculars.

Within the summer stars of Scorpius the Scorpion, low over the southwestern horizon, are the planets Venus and Mars. Above and a little to the west of Venus and Mars, within the constellation Serpens, lies Pluto. East of this area is the constellation Capricornus, the Sea-Goat, and three of the four giant planets, Neptune, Uranus, and Jupiter. Still further east is the fourth of the giants, Saturn. This ringed planet has reached opposition with the Earth (the Earth has caught up to Saturn in its orbit), so it rises as the Sun sets and is visible all night.

Mercury is the only planet that we do not see in this array of planets. During October, Mercury reaches superior conjunction with the Sun (it moves to the opposite side of the Sun from Earth) so it is hidden from view.

The planets, from our view

This array of planets provides an opportunity to visualize their arrangement in their orbits with respect to the Sun. With a little imagination, one can picture a line strung across the sky connecting or passing closely by our moon and each planet except Pluto. This line, known as the ecliptic, is the apparent path the Sun follows throughout the year. (The Earth is actually moving, but from our perspective, it appears as though the Sun is moving.)

This planetary arrangement results from a combination of factors, including size, shape, and orbital speed of each planet as well as the angle from which we view them. Generally speaking, all planets orbit the Sun in nearly the same plane because the planets are gravitationally bound to the center of the Sun's mass and orbit the Sun around its equator in the same direction. All the planets' orbits, except for Pluto's, lie within a few degrees of the ecliptic. Most of the planets, except Uranus and Pluto, rotate on an axis that is somewhat perpendicular to the plane of revolution. All planets, with the exception of Venus, rotate on their axes in the same direction as they revolve (counterclockwise when viewed from above the Sun's north pole).

Celestial worship

Thousands of years ago, sky watchers recognized that the movements of the Moon and the planets visible to the naked eye coincide with the path the Sun seems to follow

throughout the year. Many cultures placed a lot of importance on the motions of the Sun, Moon, and planets, and over time they realized these motions were regular. As these cultures evolved throughout the late Paleolithic period and especially toward the end of the last ice age (about 10,000 years ago), farming began to replace hunting as a primary food source. Therefore, the Sun's position during the different seasons received more attention. The Sun's importance contributed to the development of the zodiac constellations, time-keeping devices such as the sundial, various calendar systems, mathematical concepts associated with astronomy, and the science of astronomy itself.

Reminder

On October 26, the last Sunday of October, remember to set your clocks back as we change from Daylight Savings Time back to Standard Time.

Visible evening planets

Venus: Very low over the southwestern horizon after sunset, setting about 1.5 hours later.
Mars: Very low over southwestern horizon after sunset, setting about 1.5 hours later.
Jupiter: Rises at about midday and reaches the southern horizon at sunset.
Saturn: Rises at sunset and is visible all night.

Moon phases

October
New Moon - October 1
First Quarter - October 9
Full Moon - October 16
Last Quarter - October 23
New Moon - October 31

November
First Quarter - November 7
Full Moon - November 14
Last Quarter - November 21
New Moon - November 30

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