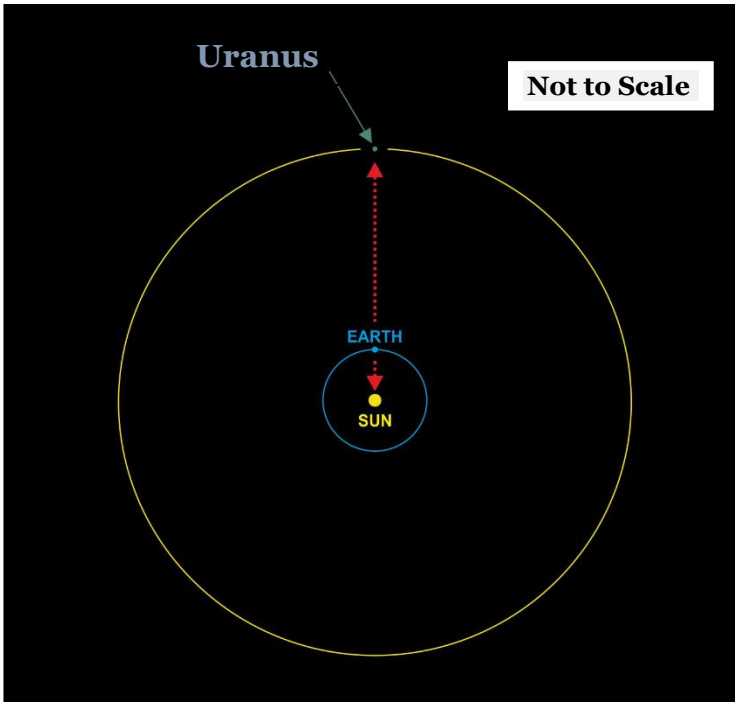
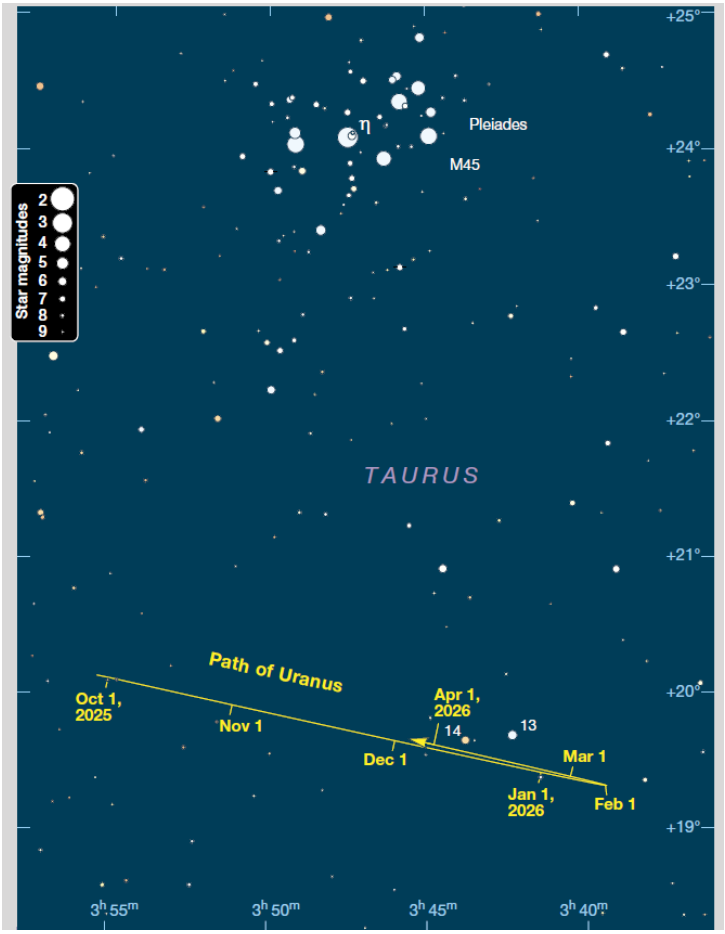
Uranus Closest to Earth for 2025

- a November 2025 Sky Event from the Astronomy Club of Asheville

Earth reaches "opposition" with the planet Uranus on **November 21st**. At opposition, speedier Earth, moving counterclockwise on its inside lane, laps Uranus, positioning the Sun directly opposite the Earth from it. This puts Uranus closest to Earth for the year and in great observing position for those using a telescope.

Rising at dusk and setting at dawn, the planet Uranus is visible all night during the end of November. Located in the constellation Taurus, Uranus is positioned some 1.72 billion miles (or 154 light-minutes) away from Earth at "opposition" this month.



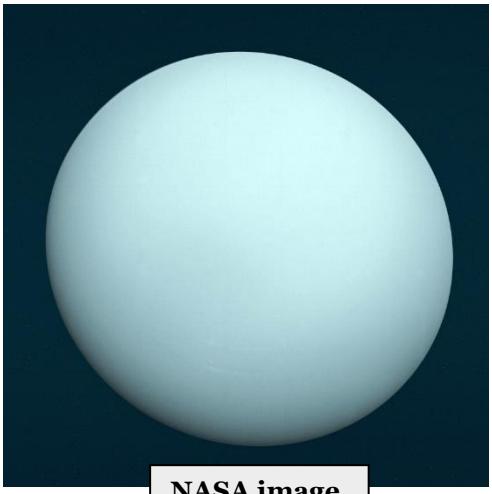


The solar system's seventh planet arrives at opposition on November 21st, just 4½° south of the Pleiades star cluster in Taurus. Shining at magnitude 5.6 with a disk 3.8″ across, Uranus is faintly visible without optical aid under dark, moonless skies. It inches westward in retrograde motion, and as December begins it lines up with similarly bright stars 14 and 13 Tauri. The fortunate alignment will aid in spotting the distant ice giant with binoculars. Even a small telescope will reveal the planet's tiny disk, and its brightest moons (Titania and Oberon) are visible in 8-inch and larger instruments used at high magnification. To find out when and where to look, visit the Tools page of skyandtelescope.org for the "Moons of Uranus" interactive observing aid.

Chart and above text box courtesy of SKY & TELESCOPE

Like Neptune, Uranus has an upper atmosphere with significant methane gas (CH_4). Methane strongly absorbs red light; thus, the blue end of the light spectrum, from the reflected sunlight, is what primarily passes through to our eyes, when observing this distant planet.

Uranus' Discovery



NASA image

Uranus was the 1st solar system planet to be discovered! British astronomer William Herschel, using a telescope, observed its bluish disk in 1781, quite by accident. He was surveying all stars of magnitude 8 or brighter, when this small blue dot appeared in his eyepiece. During follow-up observations, its position changed against the background stars. This movement made it a candidate to join the ranks of the "planets"!

The name "Uranus" wasn't universally in use until 1850 when Her Majesty's Nautical Almanac Office in Britain finally switched from calling it Georgium Sidus, or George's Star. Its discoverer, William Herschel, named it for his patron, King George III. Unsurprisingly, the name didn't gain traction outside of England. German astronomer Johann Bode proposed Uranus, the father of Saturn, which ultimately proved a better fit.

Uranus' orbit had an unexplained problem – a deviation that astronomers called a "perturbation" – that led to the discovery of Neptune.

Johannes Kepler's laws of planetary motion and Isaac Newton's laws of motion and gravity could not adequately explain this perturbation in Uranus' orbit. They suspected that a massive object, out beyond Uranus, was "pulling" on the planet. Mathematicians John Adams and Urbain Le Verrier each independently calculated the approximate celestial position of a solution. Subsequently, using a 9-inch refractor telescope at the Berlin Observatory, Johann Galle, by moving the telescope to the mathematically calculated coordinates, discovered Neptune in 1846 – problem solved!

Although Neptune was "discovered" by Johann Galle in 1846, he was not the first person to lay eyes on the planet's blue disk! On two different occasions, in 1612 and 1613, Galileo recorded Neptune's position while he was observing much brighter Jupiter. However, using his modest telescope, Galileo did not recognize it as a planet. He likely thought it was a faint background star.

Find out more about the planet Uranus at this NASA link.