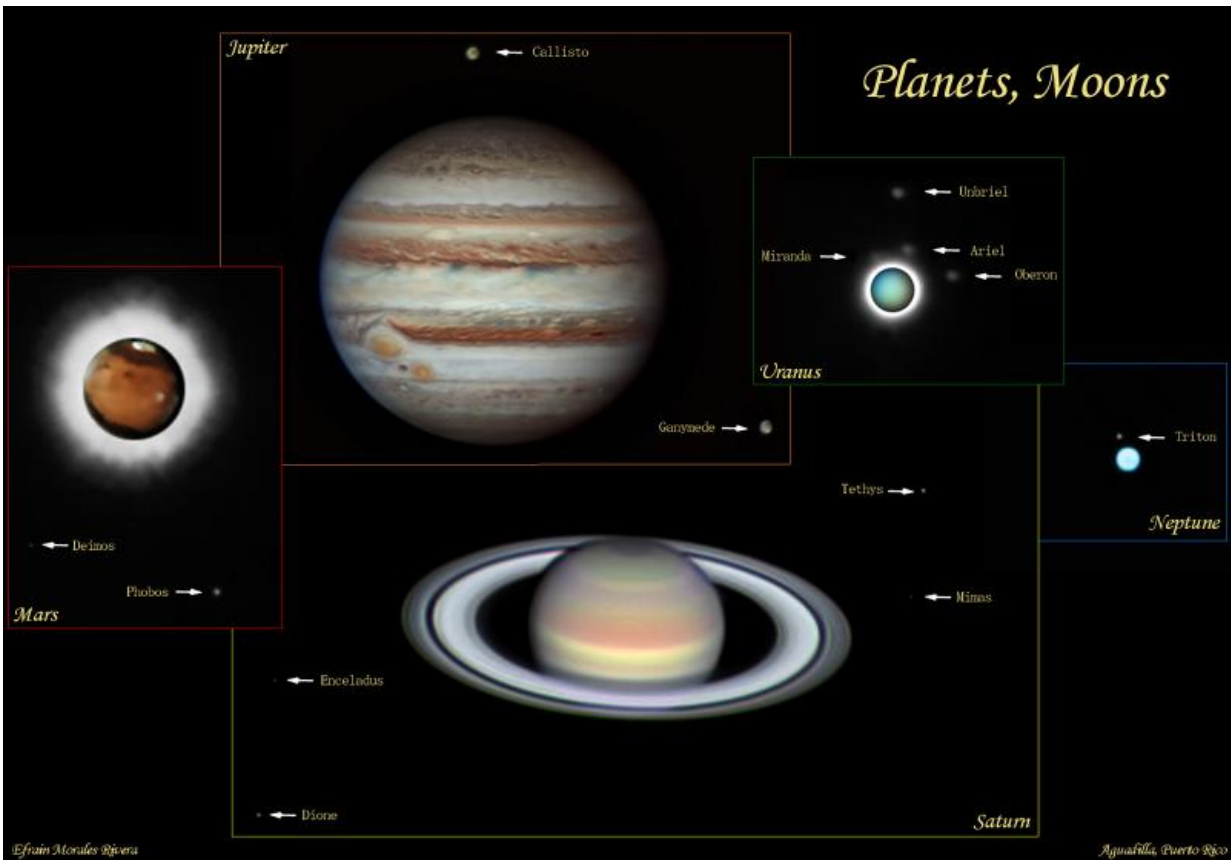


Ice giants at opposition

August 28 2015, by David Dickinson



Moons at opposition... check out the amazing captures of the moons of Uranus and Neptune! Credit: Efrain Morales

It seems as if the planets are fleeing the evening sky, just as the Fall school star party season is getting underway. Venus and Mars have entered the morning sky, and Jupiter reaches solar conjunction this

week. Even glorious Saturn has passed eastern quadrature, and will soon depart evening skies.

Enter the ice giants, Uranus and Neptune. Both reach opposition for 2015 over the next two months, and the time to cross these two out solar system planets off your life list is now.

First up, the planet Neptune reaches opposition next week in the constellation Aquarius on the night of August 31st/September 1st. Shining at magnitude +7.8, Neptune spends the remainder of 2015 about three degrees southwest of the +3.7 magnitude star Lambda Aquarii. It's possible to spot Neptune using binoculars, and about x100 magnification in a telescope eyepiece will just resolve the blue-grey 2.3 arc second disc of the planet. Though Neptune has 14 known moons, just one, Triton, is within reach of a backyard telescope. Triton shines at magnitude +13.5 (comparable to Pluto), and orbits Neptune in a retrograde path once every 6 days, getting a maximum of 15" from the disk of the planet.

Uranus reaches opposition on October 11th in the adjacent constellation Pisces. Keep an eye on Uranus, as it nears the bright +5.2 magnitude star Zeta Piscium towards the end on 2015. Shining at magnitude +5.7 with a 3.6 arc second disk, Uranus hovers just on the edge of naked eye visibility from a dark sky site.



Looking east at dusk in late August, as Uranus and Neptune rise. Credit: Stellarium

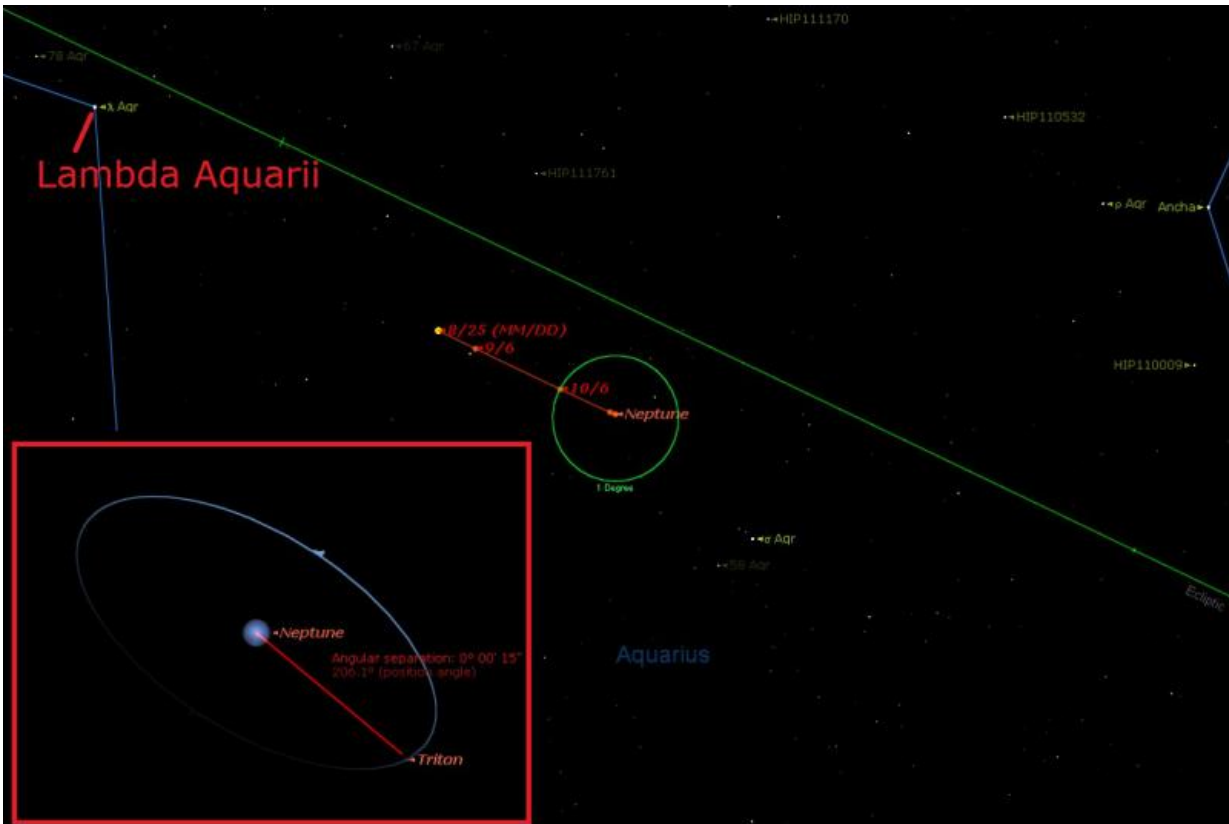
It'll be worth hunting for Uranus on the night of September 27th/28th, when it sits 15 degrees east of the eclipsed moon. Uranus turned up in many images of last Fall's [total lunar eclipse](#). This will be the final total lunar eclipse of the current tetrad, and the moon will occult Uranus the evening after for the South Atlantic. This is part of a series of 19 ongoing occultations of Uranus by the moon worldwide, which started in

August 2014, and end on December 20th, 2015. After that, the moon will move on and begin occulting Neptune next year in June through the end of 2017.

Uranus has 27 known moons, four of which (Oberon, Ariel, Umbriel and Titania) are visible in a large [backyard telescope](#). See our extensive article on hunting the moons of the solar system for more info, and the JPL/PDS rings node for corkscrew finder charts.

The two outermost worlds have a fascinating entwined history. William Herschel discovered Uranus on the night of March 13th, 1781. We can be thankful that the proposed name 'George' after William's benefactor King George the III didn't stick. Herschel initially thought he'd discovered a comet, until he followed the slow motion of Uranus over several nights and realized that it had to be something large orbiting at a great distance from the sun. Keep in mind, Uranus and Neptune both crept onto star charts unnoticed pre-1781. Galileo even famously sketched Neptune near Jupiter in 1612! Early astronomers simply considered the classical [solar system](#) out to Saturn as complete, end of story.

And the hunt was on. Astronomers soon realized that Uranus wasn't staying put: something farther still from the sun was tugging at its orbit. Mathematician Urbain Le Verrier predicted the position of the unseen planet, and on and on the night of September 23rd, 1846, astronomers at the Berlin observatory spied Neptune.



The path of Neptune from late August through early November 2015. Inset: the position of Neptune’s moon Triton on the evening of August 31st: Credit: Starry Night Education software

In a way, those early 19th century astronomers were lucky. Neptune and Uranus had just passed each other during a close encounter in 1821. Otherwise, Neptune might've remained hidden for several more decades. The synodic period of the two planets—that is, the time it takes the planets to return to opposition—differ by about 2-3 days. The very first documented conjunction of Neptune and Uranus occurred back in 1993, and won't occur again until 2164. Heck, In 2010, Neptune completed its first orbit since discovery!

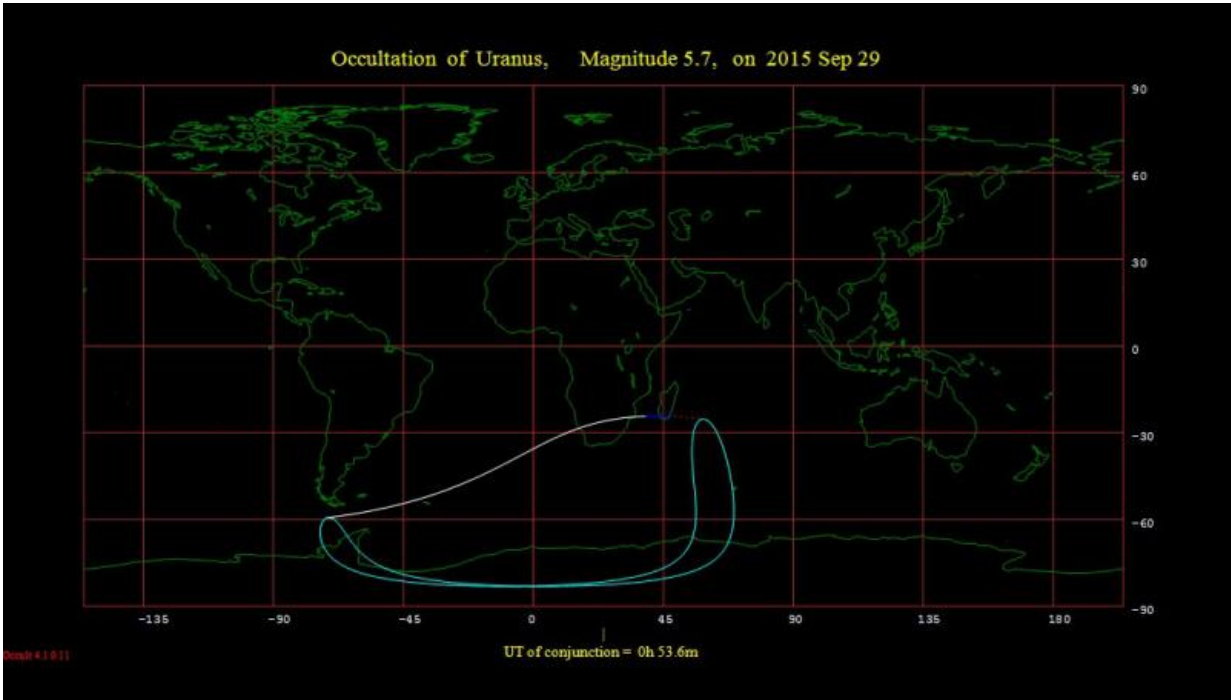
To date, only one mission, Voyager 2, has given us a close-up look at

Uranus and Neptune during brief flybys. The final planetary encounter for Voyager 2 occurred in late August in 1989, when the spacecraft passed 4,800 kilometres (3,000 miles) above the north pole of Neptune.

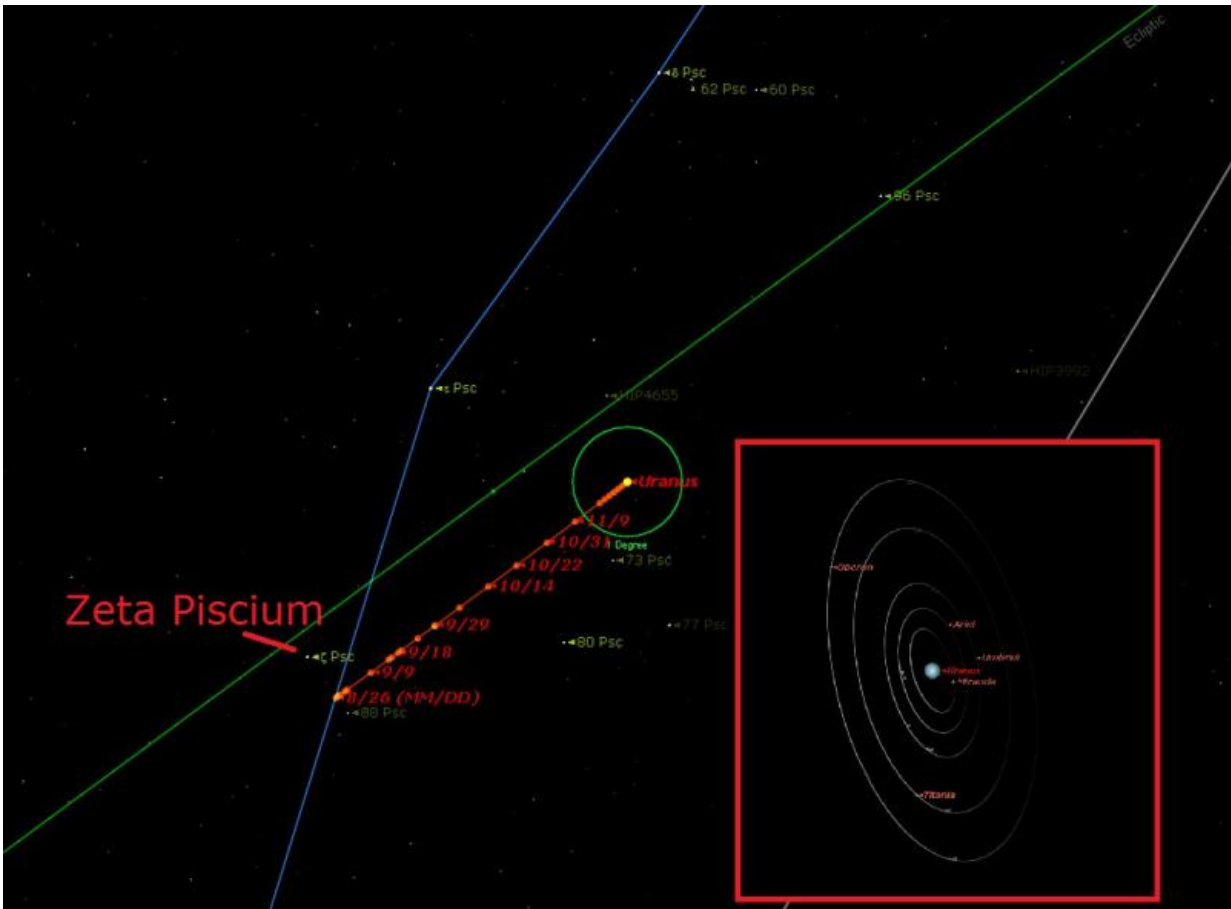
All thoughts to ponder as you hunt for the outer ice giants. Sure, they're tiny dots, but as with many nighttime treats, the 'wow' factor comes with just what you're seeing, and the amazing story behind it.



Uranus, left of the eclipsed Moon last October. Credit: A Nartist



The visibility footprint of the September 29th occultation of Uranus by the Moon. Credit: Occult 4.0



The path of Uranus, from late August through early December 2015. Inset: the position of the moons of Uranus on the evening of October 12th. Credit: Starry Night Education software

Source: [Universe Today](#)

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