

MAA FOCUS

December 2016/January 2017

Pluto and the Putnam

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Data and high-resolution photographs from NASA's New Horizons have been greatly enhancing our knowledge of Pluto since the space probe reached a distance of approximately 7,800 miles from the (dwarf) planet on July 14, 2015, a distance that is roughly the same as the diameter of Earth.

A connection between Pluto and mathematics is perhaps obvious: a significant amount of mathematics goes into predicting planetary movement. A connection between Pluto and the six-hour William Lowell Putnam Mathematical Competition held every December is less obvious, but suggested by the name of where Pluto was discovered: the Lowell Observatory.

The observatory was founded by Percival Lowell in 1894 in order to view Mars while it was relatively close to Earth. Lowell had majored in mathematics at Harvard but had a love of astronomy, and his decision to build a telescope came after Giovanni Schiaparelli saw *canali* (channels) on Mars. Lowell built the observatory in Flagstaff, Arizona, on what came to be named Mars Hill, and he was able to see markings on the planet. He insisted these were signs of intelligent, canal-constructing life, and although many scientists weren't convinced, other people believed him.

Fortunately, Percival Lowell didn't limit his astronomical interest to Martian canals. He was also interested in the possibility of a planet past Neptune, which he began looking for in 1905. The search continued even after his death one hundred years ago on November 12, 1916, because his family secured funds to build a new telescope at the observatory, which was completed in 1929. This new telescope was used by 23-year-old Clyde Tombaugh, whose job involved taking photos of the sky and comparing them with photos from a few days earlier. In February 1930, Tombaugh noticed a faint dot of light that was in slightly different places in two photographs; that light turned out to be Pluto.

What does this have to do with the mathematical competition? The examination was named by Elizabeth Lowell Putnam in honor of her husband, William Lowell Putnam II. Elizabeth was the sister of the very Percival Lowell mentioned above, making the namesake of the competition the brother-in-law of the famous astronomer.

The two families were related by blood as well as marriage, as suggested by William's middle name. There were in fact several marriages between the Lowell and Putnam families over the decades: Percival and Elizabeth Lowell's paternal grandmother was Elizabeth Cabot Putnam, while William Lowell Putnam's mother was Harriet Lowell. Percival and William, in addition to being linked through Elizabeth, were half third cousins. The common ancestor was John Lowell,

born in 1743: siblings Percival and Elizabeth Lowell were the great-great-grandchildren of John Lowell and his first wife, Sarah Higginson (John and Sarah → John Lowell → John Armory Lowell → Augustus Lowell → Percival and Elizabeth Lowell), while William Lowell Putnam was the great-great-grandson of John Lowell and his third wife, Rebecca (Russell) Tyng (John and Rebecca → Charles Russell Lowell Sr. → Charles Russell Lowell Jr. → Harriet Lowell → William Lowell Putnam).

And as a final link, the first trustee of the Lowell Observatory after Percival's death was a cousin, Guy Putnam. Shortly before the discovery of Pluto, the trustee role passed to Roger Putnam, the son of the aforementioned William and Elizabeth. The current trustee of the Lowell Observatory is Roger's grandson, William Lowell Putnam IV.

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