

Heavenly News

URANUS AND NEPTUNE

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Cameron Park Rotary Club Community Observatory

Astronomers had observed the skies for thousands of years before the first "new" planet was discovered in 1781. William Herschel, a musician and amateur astronomer, was carefully examining every part of the sky visible from his home in Bath, England. Others had plotted Uranus on star charts without realizing what it was, but the keen-eyed Herschel, using a powerful homemade telescope, saw a tiny disk. He thought at first that it might be a comet, but it soon was shown to be a planet.

Because of its great distance, knowledge about Uranus remained limited, but observations of its orbit revealed a mystery. Its orbit did not fit Newton's law of gravity. A more distant planet's gravitational pull seemed a possible cause. An Englishman named Adams and a Frenchman named Leverrier calculated where such a planet might be located. Leverrier succeeded in finding an astronomer to conduct the search first, and appears to have produced better calculations. In 1846 the German astronomer Galle located the new planet with the help of new and detailed star charts.

In an era of extreme nationalism, a prolonged dispute over the discovery followed. Naming the planets also produced some amusing moments. Herschel wished to name it *Georgium Sidus* (George's Star) after his King, George III of Revolutionary War fame. Leverrier wished to name his planet after himself, proposing to call the previously discovered Uranus *Herschel* to help sell the idea to the English. Fortunately the names Uranus and Neptune soon became accepted, although the pronunciation of Uranus is always a bit of a problem.

Having found one planet by its gravitational effects on a known planet, astronomers tried to use that trick again. Oddities in the orbit of Mercury were thought to reveal a planet called Vulcan inside Mercury's orbit. Instead they resulted from an effect of Einstein's theory of general relativity. For a time it appeared that the 1930 discovery of Pluto was a repeat of Leverrier's discovery of Neptune. Now that we know that Pluto is too tiny account for such gravitational effects, it seems that it was just a lucky coincidence.

In searching for planets orbiting other stars the trick has become important again. When planets are detected by the tiny dip in brightness when they pass in front of a star, tiny variations in the time between passes could reveal other moons and planets from their gravitational influences.

Because Neptune orbits in roughly the same plane as Jupiter does, it sometimes appears very close to the giant planet. In 1612 and 1613 Galileo drew Neptune next to Jupiter and its moons. He even thought he had seen it move, but could not locate it after it moved away from Jupiter. If Galileo's positions are as accurate as some

astronomers think, they may show the effects of some as yet undiscovered distant object.

This fall Uranus and Neptune are well placed for observing at the Community Observatory. A wide variety of celestial sights can be seen in regular observing sessions on Friday, Saturday, and Sunday. Special sessions for classes and community groups may also be arranged. Please go to www.communityobservatory.com for more information, driving directions and weather closure notices.