

ERIS

IN 2005, FOR THE FIRST TIME

in seventy-five years, astronomers discovered an object as big as Pluto orbiting the Sun. Eris is a cold, ice-covered world 9 billion miles away.

In 1930, when Clyde Tombaugh found Pluto, he wondered if there were more planets. So he kept looking. He looked until 1943, but he never found any more planets. The ninth planet seemed to be the last planet.

But also in 1943, Kenneth Edgeworth, an astronomer in Ireland, predicted that a belt of icy objects existed beyond the orbit of Pluto. He wrote that “the outer region of the solar system, beyond the orbits of the planets, is occupied by a very large number of comparatively small bodies.” Edgeworth said these worlds were leftovers from the birth of the solar system. In 1951, American astronomer Gerard Kuiper suggested the same idea.

For many years, however, no one knew if the Edgeworth-Kuiper belt really existed. Then, in 1992, astronomers found an object beyond Pluto. It was just a hundred miles across, so it was not big enough to be a planet. But it did belong to the Edgeworth-Kuiper belt. Since then, astronomers have discovered more than a thousand other objects in the Edgeworth-Kuiper belt.

Some of these objects were rather large. In 2002, astronomers found an object beyond Pluto’s orbit that they named Quaoar. It was half the size of Pluto. In 2003, they discovered an even farther object, Sedna. It was two-thirds the size of Pluto.

But Quaoar and Sedna were not planets. They were smaller than Pluto.

Then, on January 5, 2005, three astronomers—Michael Brown, Chadwick Trujillo, and David Rabinowitz—discovered the farthest thing yet seen in the solar system. It was three times farther than Pluto. And it was bigger than Pluto. So they called it the tenth planet and later named it Eris. Astronomers also found a moon orbiting Eris.

Eris is strange. It is so far away that it takes 559 years to orbit the Sun. This period is more than twice as long as Pluto takes to orbit the Sun. On average, Eris is 6.3 billion (6,300,000,000) miles from the Sun—billions of miles beyond Pluto’s orbit. That’s 68 times farther than the Earth is.

But the orbit of Eris around the Sun is weird. It’s even more oval-shaped than Pluto’s orbit. When it is farthest, Eris is 97.5 times farther from the Sun than the Earth is. But at its closest, Eris is only 38.2 times farther from the Sun than the Earth is. This distance is similar to Pluto’s average distance from the Sun. At its closest, Eris is closer to the Sun than Pluto is when it’s farthest.

Right now, Eris is about as far from the Sun as it ever gets. So the astronomers actually discovered it when it was hardest to see. Eris will come closest to the Sun in the year 2257—twenty years after Pluto next comes closest to the Sun.

Eris travels far above and below the plane of the solar system, because the orbit of Eris is tilted 44 degrees to the plane of the Earth’s orbit. Due to the high tilt, the new world will not collide with Pluto, even when the two are the same distance from the Sun. Eris probably once had a normal orbit, but then it passed too close to Neptune, whose gravity flung Eris into its odd orbit.

Eris is slightly larger than Pluto. Telescopes have detected methane ice on both worlds. On Earth, methane is a gas. But Pluto and Eris are so cold that most of their methane is frozen.

Pluto and Eris are twins, like Uranus and Neptune. Both Pluto and Eris are shiny, reflecting lots of sunlight. Why? When they come close to the Sun, they get warmer, and some of their ice becomes gas. Then, when they move away from the Sun, they get colder, and the gas freezes, coating the two worlds with bright, fresh ice.

Some astronomers say Pluto and Eris are not really planets, because they are too small. Both are



Artist's Interpretation

smaller than Mercury. Both are smaller than seven moons, including our own. Instead, these astronomers say, Pluto and Eris are merely the largest members of the Edgeworth-Kuiper belt. These people think the solar system has only eight planets: those from Mercury to Neptune.

But many other people disagree. After all, Pluto is more than twice the diameter of Ceres, the largest asteroid. Furthermore, although Pluto is smaller than seven moons, Mercury is smaller than two moons, and everyone thinks Mercury is a planet. Thus, these people say, Pluto should continue to be called a planet. So that means Eris is a planet, too, because it’s bigger than Pluto. According to these people, Pluto and Eris are planets—and they are also the largest known

objects in the Edgeworth-Kuiper belt.

Moreover, Pluto and Eris look faint not because they are small but because they are far away. If they were as close to us as Mars, they would, at their brightest, outshine every star except the Sun.

In 2006, hundreds of astronomers voted that Pluto and Eris were not planets. But a week later, hundreds of other astronomers signed a petition saying they refused to recognize that vote!

That’s why Eris was named Eris. In mythology, Eris was the goddess of strife and discord. The moon of Eris was named Dysnomia—the daughter of Eris and the spirit of lawlessness.

What do you think? Are Pluto and Eris the Sun’s smallest planets? Or are they the largest non-planets going around the Sun? You decide!