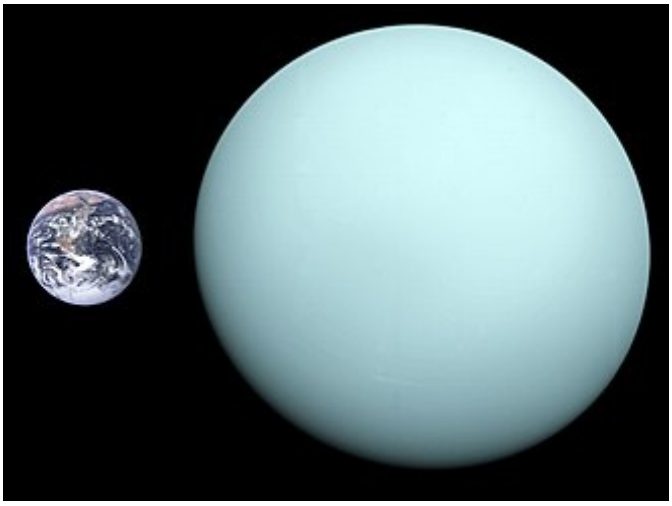
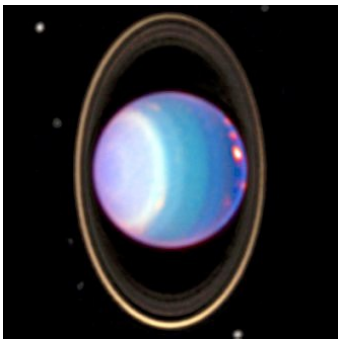
Uranus, the weirdest planet in our solar system



Planet Uranus, a featureless disc, photographed by Voyager 2 in 1986 on the right compared with the Earth (left)

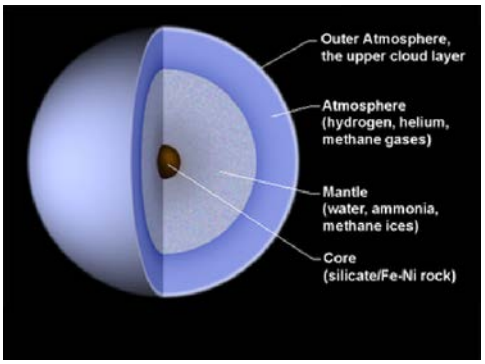
It is not just because of it's oddly phallic sounding name. What makes it so weird is it rotates completely different than anything else in our solar system, and we have no idea why. Everything else works rotating along with the rotation of the Sun. Places like Mercury are tidally locked, so it's spin makes it constantly facing the Sun, or planets like Earth have a tilt that makes our seasons because we were struck at some stage by the moon. But Uranus is a gas giant, and every 84 earth years, it's pole is facing the Sun.

It also has an elliptical orbit around the Sun, where it changes it's distance from the Sun by nearly double the distance between the Earth and the Sun every orbit. That means that when it's “summer” on Uranus, it will be about 300 million kilometres closer to the Sun than when it's winter. If that doesn't make a planet weird, I don't know what would.



The Rings of Uranus

URANUS
Discovered by **William Herschel** on March 13, 1781
Pronunciation Adjectives Uranian
Orbital characteristics Aphelion 20.11 AU, Perihelion 18.33 AU
Orbital period 84.0205 Earth years, 42,718 Uranian solar days
Average orbital speed 6.80 km/s
Inclination 0.773° to ecliptic, 6.48° to Sun's equator
Known satellites 27
Mean radius 25,362±7 km
Circumference 159,354.1 km
15.91 x Earths Volume
63.086 x Earths Mass
Mean density 1.27 g/cm3
Escape velocity 21.3 km/s
Sidereal rotation period 0.71833 d (retrograde) 17 h 14 min 24 s
Equatorial rotation velocity 9,320 km/h
Axial tilt to orbit 97.77°
Surface temp. 76 K (-197.2 °C)
Gases 83 ± 3% hydrogen, 15 ± 3% helium, 2.3% methane



Uranus is the seventh planet from the Sun. It has the third-largest planetary radius and fourth-largest planetary mass in the Solar System. Uranus is similar in composition to Neptune, and both have bulk chemical compositions which differ from that of the larger gas giants Jupiter and Saturn. For this reason, scientists often classify Uranus and Neptune as "ice giants" to distinguish them from the gas giants. Uranus's atmosphere is similar to Jupiter's and Saturn's in its primary composition of hydrogen and helium, but it contains more "ices" such as water, ammonia, and methane, along with traces of other hydrocarbons. It is the coldest planetary atmosphere in the Solar System, with a minimum temperature of 49 K (-224 °C), and has a complex, layered cloud structure with water thought to make up the lowest clouds and methane the uppermost layer of clouds. The interior of Uranus is mainly composed of ices and rock.

Like the other giant planets, Uranus has a ring system, a magnetosphere, and numerous moons. The Uranian system has a unique configuration among those of the planets because its axis of rotation is tilted sideways, nearly into the plane of its solar orbit. Its north and south poles, therefore, lie where most other planets have their equators. In 1986, images from Voyager 2 showed Uranus as an almost featureless planet in visible light, without the cloud bands or storms associated with the other giant planets (see picture at the top).

Uranus is the only planet whose name is derived directly from a figure from Greek mythology: Uranus and Gaia were the parents of the first generation of Titans, and the ancestors of most gods.

HISTORY

William Herschel, discoverer of Uranus in 1781

Like the classical planets, Uranus is visible to the naked eye, but it was never recognised as a planet by ancient observers because of its dimness and slow orbit. Sir William Herschel announced its discovery on 13 March 1781, expanding the known boundaries of the Solar System for the first time in history and making Uranus the first planet discovered with a telescope.

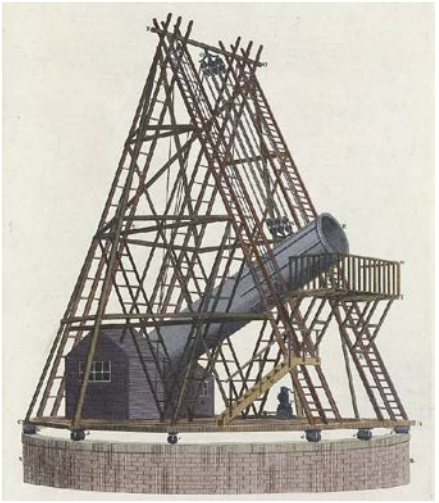
Frederick William Herschel, (German: Friedrich Wilhelm Herschel); 15 November 1738 – 25 August 1822) was a German-British astronomer, composer and brother of fellow astronomer Caroline Herschel, with whom he worked. Born in the Electorate of Hanover, Herschel followed his father into the Military Band of Hanover, before migrating to Great Britain in 1757 at the age of nineteen. His works were praised by Mozart, Haydn (who met Herschel in London) and Beethoven.

Uranus had been observed on many occasions before its recognition as a planet, but it was generally mistaken for a star or a comet. Possibly the earliest known observation was by **Hipparchos,** who in 128 BC might have recorded it as a star for his star catalogue that was later incorporated into Ptolemy's Almagest. The earliest definite sighting was in 1690, when **John Flamsteed** observed it at least six times, cataloguing it as 34 Tauri. The French astronomer **Pierre Charles Le Monnier** observed Uranus at least twelve times between 1750 and 1769, including on four consecutive nights.

Sir William Herschel observed Uranus on 13 March 1781 from the garden of his house at 19 New King Street in Bath, Somerset, England (now the Herschel Museum of Astronomy), and initially reported it (on 26 April 1781) as a comet. Herschel, using a telescope of his own design, recorded in his journal: “I looked for the Comet or Nebulous Star and found that it is a Comet, for it has changed its place." When he presented his discovery to the Royal Society, he continued to assert that he had found a comet, but also implicitly compared it to a planet. Herschel constructed his first large telescope in 1774, after which he spent nine years carrying out sky surveys to investigate double stars. The resolving power of the Herschel telescopes revealed that the nebulae in the Messier catalogue were clusters of stars. Herschel published catalogues of nebulae in 1802 (2,500 objects) and in 1820 (5,000 objects). **In the course of an observation on 13 March 1781, he realized that one celestial body he had observed was not a star, but a planet. This was the first planet to be discovered since antiquity and Herschel became famous overnight. As a result of this discovery, George III appointed him Court Astronomer. He was elected as a Fellow of the Royal Society and grants were provided for the construction of new telescopes.**

Replica of the telescope used by Herschel to discover Uranus

Herschel pioneered the use of astronomical spectrophotometry, using prisms and temperature measuring equipment to measure the wavelength distribution of stellar spectra and in the process discovered infrared radiation. He discovered that the Martian polar caps vary seasonally, the moons Titania and Oberon of Uranus and Enceladus and Mimas of Saturn. Herschel was made a Knight of the Royal Guelphic Order in 1816. He was the first President of the Royal Astronomical Society when it was founded in 1820. He died in August 1822, and his work was continued by his only son, John Herschel.



The 40ft telescope was not a success

AK, with EarthSky and Wikipedia Notes