Jupiter

Size Matters

Don't argue with giant Jupiter. It could swallow puny Earth nearly 1,000 times over. In fact Jupiter is so large it could devour the rest of our solar system's planets – moons and all in one mighty gulp. Jupiter's mass is nearly 318 times that of Earth. If you could stand on Jupiter's cloudy atmosphere, a187-pound man (87 kg) would weigh in at a hefty 467 pounds (200kg).

Needless to say a planet with such regal proportions needs an appropriately royal name. So the early Greeks called it Zeus after the mightiest god in their culture.

Quick Smarts

Classification – Gas Giant
Composition – Hydrogen and Helium
Location – 5th planet out from the Sun
Distance from Sun - 778,500,000 km
Distance from Earth – 588,000,000 km
Mean diameter – 139,822 km
Rank – Largest planet in the solar system
Number of moons – 63 to 67
Average temperature – 144 °C
Wind speed – 360 km/h
Orbital Period – 11.86 years
Rotational rate – 9hr 56min

Later the Romans renamed it Jupiter after the king of their gods. So far the name Jupiter has stuck for over 2,000 years.

For you statistics buffs, light from the Sun takes 33 minutes to reach Jupiter. And the big ball of gas has a total of 67 moons according to Wikipedia. Please note, the moon count may vary according to your information source, sixty-three moons is another common figure.

The first person to see any of Jupiter's moons was Galileo Galilei in 1610. His moon count was four and they were the largest of Jupiters orbiting ornaments. Most prominent in Galileo's crude telescope would have been Ganymede because of its size. Ganymede is larger than the planets Mercury and Pluto. In fact, if Jupiter's four inner moons were orbiting the Sun instead of Jupiter they might be considered dwarf planets.

Jupiter's other prominent moons are Io, Europa and Callisto. Io is the closest to Jupiter and is considered to be the most volcanic spot in our solar system. Next out is Europa which may conceal an ocean beneath its cracked, icy crust.

Ganymede is the largest while Callisto holds the honour of being the most crater-bashed object yet to be discovered in our solar system. Callisto may also be hiding an ocean beneath its crust. Recent data hints strongly at the possibility. So Earth isn't the only watery place in our solar system capable of harbouring life.

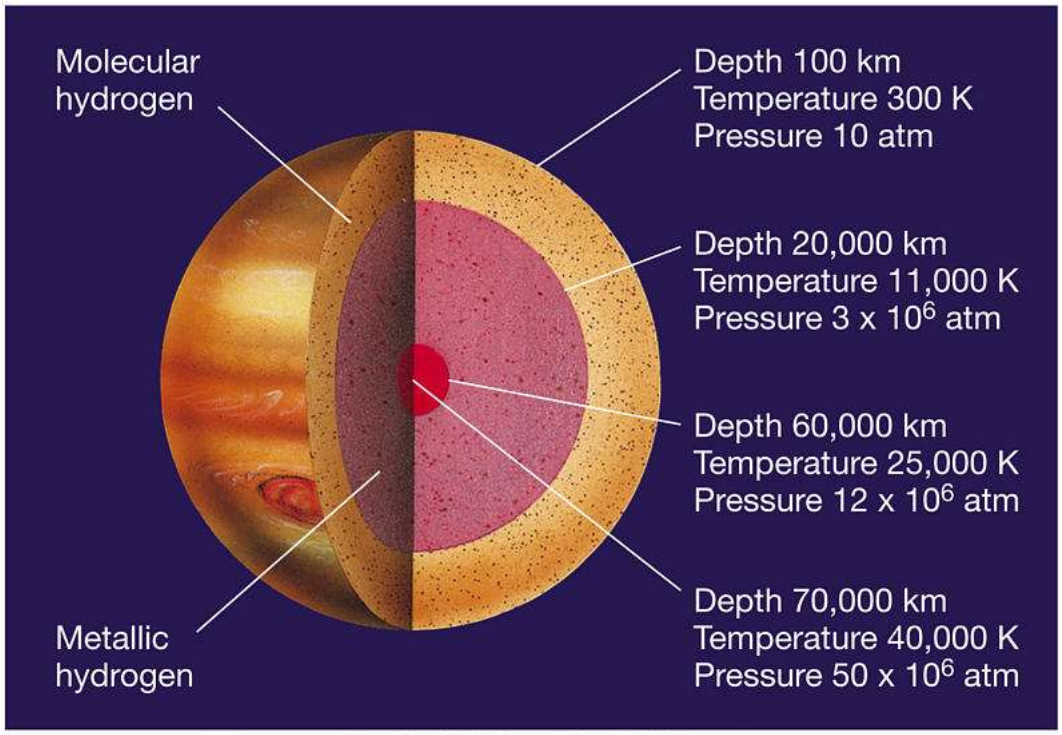
Previously I called Jupiter a big ball of gas, because that's exactly what it is. The mammoth planet is an immense series of hydrogen and helium gas layers, much like an onion. As you dive farther beneath the clouds, the gas turns to a liquid and eventually what some think is a solid core.

Jupiter's innermost and largest moons stand up for a family photo.

The Galileo Probe descends to Jupiter. Its parachutes helped brake the probe's speed when it hit the planet's atmosphere.

At this point in our exploration of space, nobody has been there. The only probe that entered Jupiter's atmosphere was released by the Galileo spacecraft in 1989. It was the first man-made object to enter Jupiter's atmosphere. It lasted 78 minutes before the ever-increasing pressure from Jupiter's atmosphere crushed it. The Probe gathered data on Jupiter's internal gasses and temperatures.

The gasses it discovered were argon, krypton and xenon. These gasses form at temperatures of -240°C. They also hint to Jupiter having orbited farther from the Sun at one time during our solar system's evolution.



Fierce though Jupiter's size makes it seem, sometimes the planet acts as our big brother. In 1994 Comet Shoemaker Levy-9 broke up as it rounded the Sun. Were it not for Jupiter's huge gravitational pull, the 21 chunks of the comet could have slammed into Earth creating a Mass-Extinction Event. In other words, there would nobody left to read this article. Happily Jupiter pulled them in and I could watch it all through my telescope.

Left: Jupiter takes its lumps protecting Earth from a comet blasting that we couldn't survive.

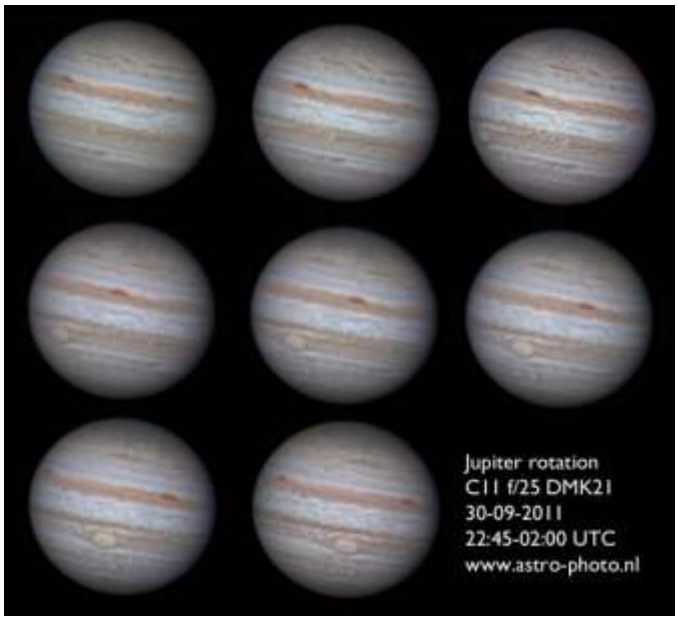
The brown impacts on the lower portion of Jupiter were huge and lasted for weeks before the winds of the planet's swirling atmosphere erased them. Thank you for saving about 7 billion lives, Jupiter!

Jupiter's most obvious feature when you view it through binoculars or a small telescope is its surface. The brownish bands are called belts. The yellowish-white bands are known as zones and are made of crystals of frozen ammonia The belts and zones circle Jupiter in opposite directions. But the most exciting sight which is visible on a very steady, clear night if your timing is right is the Great Red Spot.

It was discovered in the 17th century by Giovanni Cassini. Astronomers are certain that it formed prior to that, but telescope optics weren't up to the job of capturing a view of it.

Since Cassini's observations the Great Red Spot (GRS) has slowly shrunk from about 3 Earth diameters to two. No one can explain this, but observations continue. What is known is the fact that you don't want to go near the GRS. Its wind speeds are 640 km/h while the winds on the rest of the planet average around 300 km/h. The primary reason for this is that Jupiter's surface has no mountains to slow winds down.

While we're on the subject of speed, giant Jupiter rotates completely in just 10 hours. As a result of this, plus the fact that it is primarily a gas cloud, the planet is somewhat oblate when viewed. In fact it's about 8% bigger around the waist than it is when measured around the poles. I'm sure some of us can relate to that.



Despite its gargantuan size, Jupiter is the fastest planet in our solar system to rotate on its axis. A day on Jupiter is 9hr 56min long. In the images to the left the Great Red Spot is just visible on the left limb of Jupiter. A few hours later it is past the central point. So you have to be quick to catch it.

Jupiter may be big, but it's also beautiful – especially when you watch its moons dance around it and change positions every night.

Watching the jovial giant is definitely worth the cost of a good telescope!