

EXPLORING OUR SOLAR SYSTEM PART II

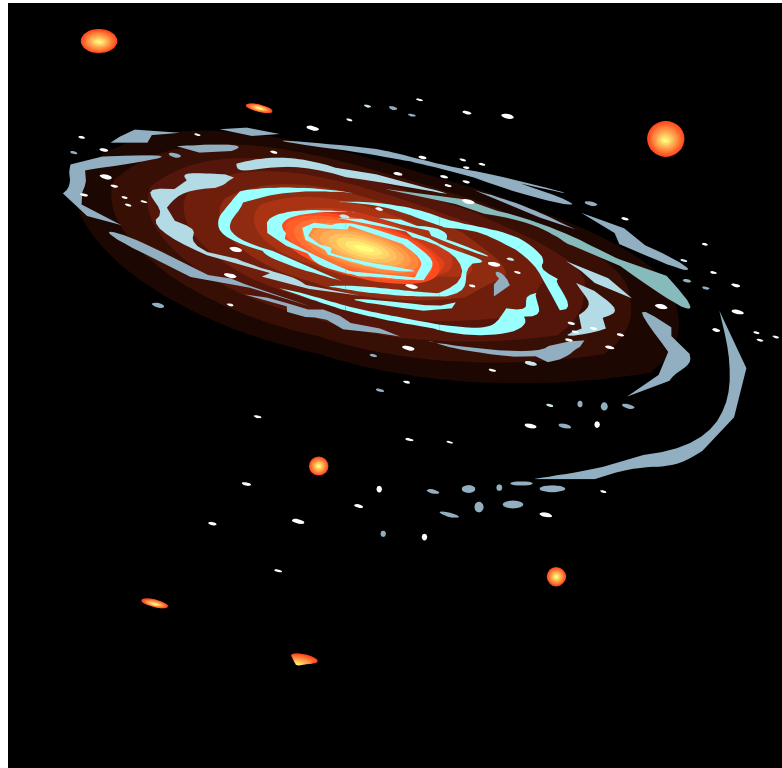
Get your lab notebooks and have a seat.

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ALIEN WORLDS

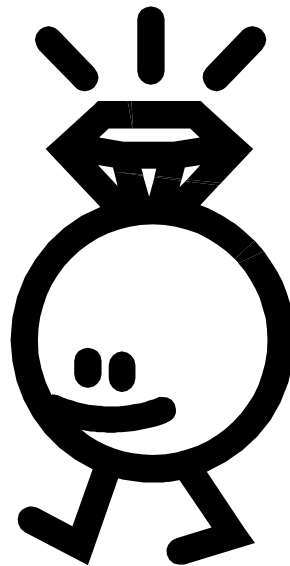
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- Milky Way



RING OR NO RING?

- Did you know that....
- ALL OF THE GAS PLANETS HAVE RINGS?
- We knew about Saturn's rings, but Jupiter, Uranus, and Neptune have very thin and dark rings.



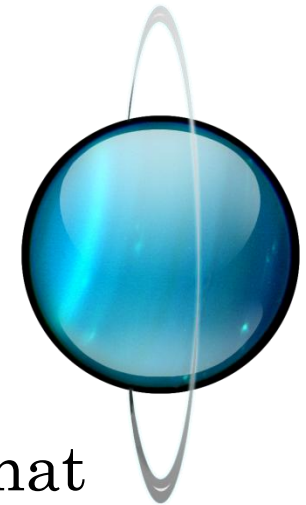
RINGS



- Galileo first spotted Saturn's rings in 1610.
- Saturn has thousands of rings made of billions of ice particles.
- Saturn's rings are around 250,000 kilometers (155,342 miles) wide.
- Traveling in a commercial jet at 550 mph, it would take almost 12 days to travel from one end of Saturn's rings to the other in a straight line, without stopping to refuel.

URANUS

- In 1977 astronomers discovered Uranus has rings.
- Nine were discovered in 1977 by scientists that noticed the light from Uranus flickered, which indicated something was blocking it.
- Two more rings were spotted by Voyager 2 which is an unmanned interplanetary science probe.
- The Hubble Space Telescope discovered one more which brings Uranus' ring total to 13.



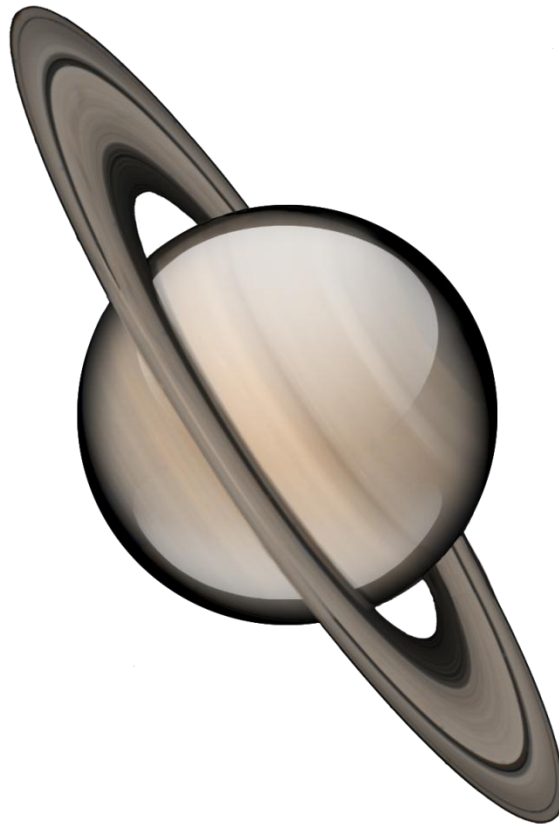
JUPITER AND NEPTUNE

- Jupiter has 3 thin rings circling its equator which were discovered in 1979.
- Neptune's rings are thin as mist, and their existence was first confirmed in 1989.
- Two of Neptune's rings have since decayed.
- Neptune's ring system is so fine and fragile that they all may eventually disappear.



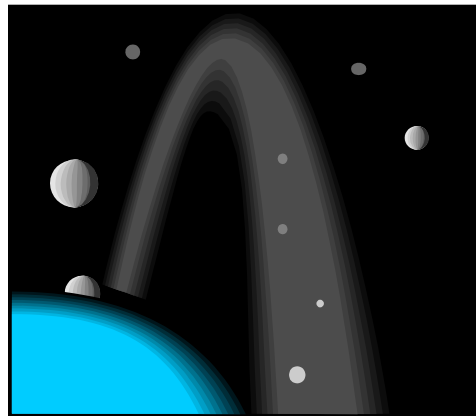
SATURN

- It is believed that Saturn's massive ring system was created by comets, asteroids, or shattered moons that broke up before they reached the planet.



OTHER INFORMATION

- Scientists do not know how Uranus' rings were formed, but speculate it may have been dust from meteoroid impacts on Uranus' moons.
- Neptune's rings are considerably younger than Neptune, meaning they formed long after Neptune was created.
- One theory suggests that Neptune's rings were formed by the remains of small colliding satellites or moons.



NATURAL SATELLITES (MOONS)

- What is a natural satellite?
 - An object or celestial body that orbits a planet or other body larger than itself which is not man-made.
 - Also known as moons.
- Do all of the planets have natural satellites?
 - No, Mercury and Venus do not have any moons.



EARTH'S NATURAL SATELLITE

- Earth's moon moderates Earth's wobble on its axis, leading to a relatively stable climate.
- Our moon is also the cause of the ocean's tides.
 - We will talk about these in more detail later.
- Our moon was most likely formed when a Mars-sized body collided with Earth and the debris formed into our moon.



MARS' NATURAL SATELLITES

- Mars has two moons named Deimos and Phobos.
- These are two of the smallest moons in our solar system.
- Phobos has a large crater called the Stickney crater, which is six miles wide (nearly half of the width of Phobos).
- Deimos and Phobos show only one face to Mars, like Earth's moon does.





JUPITER'S NATURAL SATELLITES

- Jupiter has 50 named and 12 provisional moons.
 - A provisional moon means that its existence and orbit has not been confirmed and has not been given an official name yet.
- Moons are given final names by the International Astronomical Union (IAU), which has assumed that task since 1919.

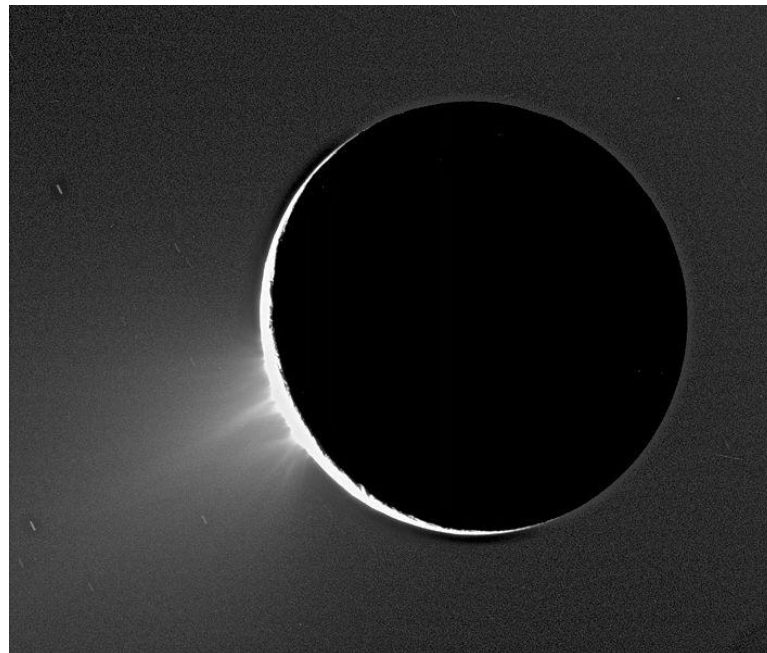


JUPITER'S NATURAL SATELLITES

- Jupiter's four largest moons are called the Galilean satellites, after Galileo who first observed them in 1610.
- These four moons are as large or larger than Earth's moon.
- Jupiter's moon called Io is the most volcanically active body in the solar system.
- Europa is suspected to possibly support life because it has twice as much water as Earth and could provide a habitable zone for life forms that live in extreme conditions.

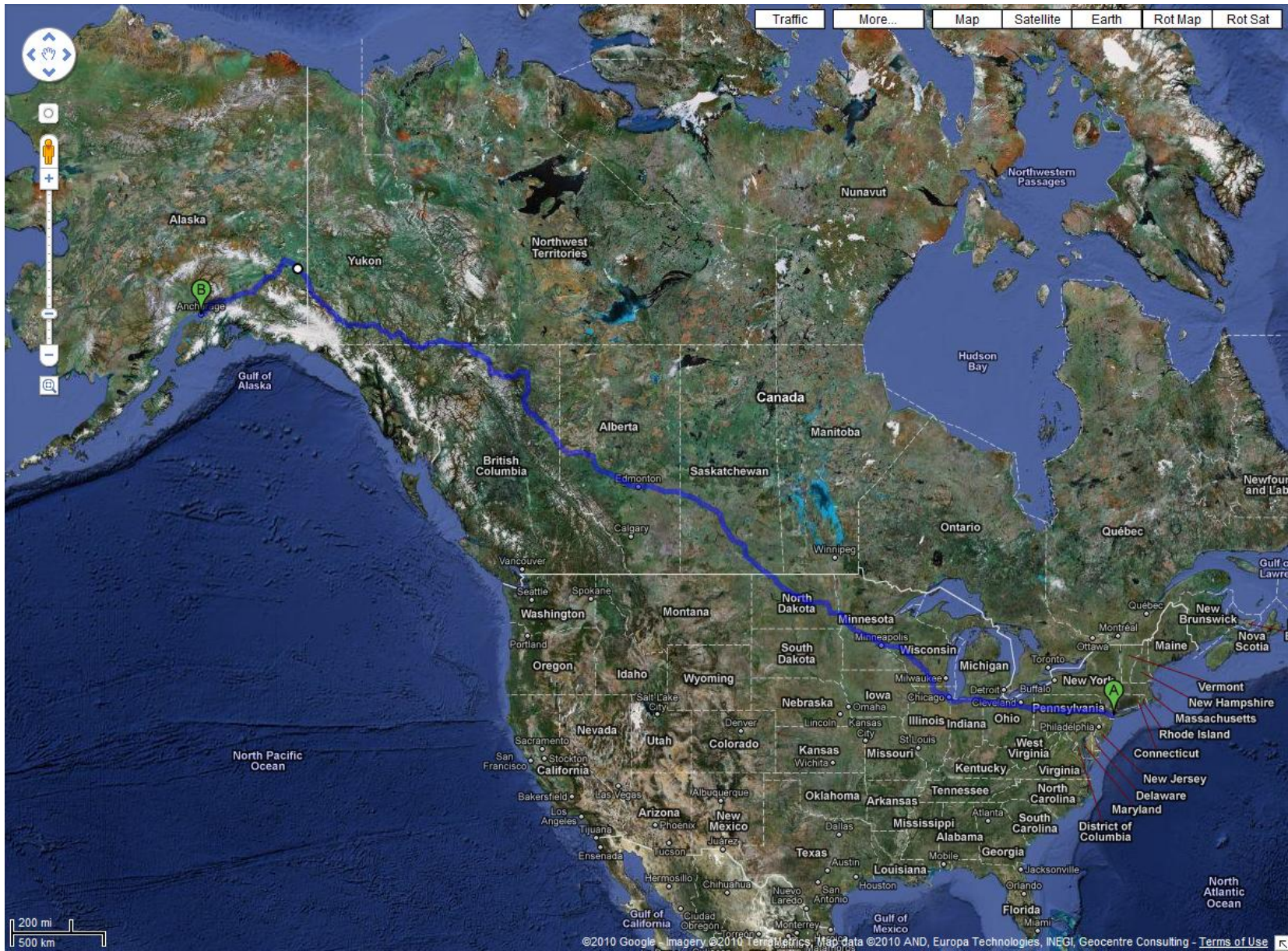
SATURN'S NATURAL SATELLITES

- Saturn has 53 named and 9 provisional moons.
- Two of Saturn's moons, Titan and Enceladus, have the potential for life.
- Enceladus' temperature is -201°C (-330°F), and exhibits ice volcanism.



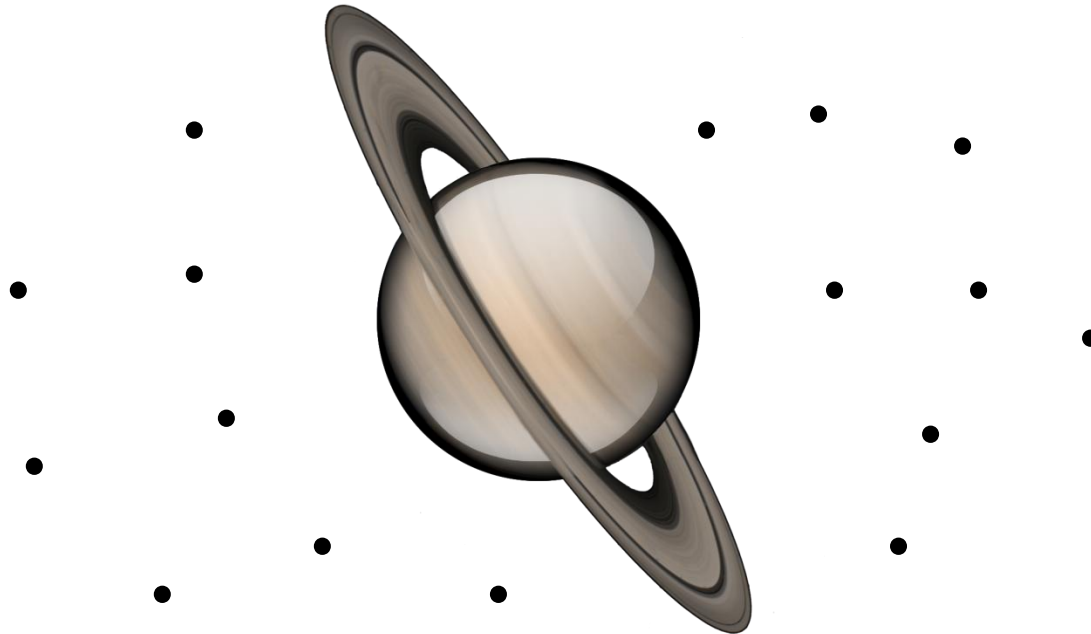
SATURN'S NATURAL SATELLITES

- Titan was the first known moon of Saturn and was discovered in 1655 by Christian Huygens.
- Titan is 3,200 miles wide, which is almost as far as driving from New York, New York to Anchorage, Alaska.
- Titan is so large it affects the orbits of nearby moons.
- Titan's atmosphere is similar to the atmosphere Earth had long ago.



SATURN'S NATURAL SATELLITES

- Sixteen of Saturn's moons keep the same face toward the planet as they orbit.
- This is referred to as “tidal locking”.
- This is the same phenomenon that keeps our moon facing us the same way.



URANUS' NATURAL SATELLITES



- Uranus has 27 moons.
- Uranus' moons were named after Shakespearean characters, with a couple named after Alexander Pope, who was an 18th century poet.
- Most of Uranus' moons are very tiny, as small as 8 – 10 miles across, and are black colored.
- The discovery of Uranus' moons ranges from 1787 to the present, and there may be more moons out there.

NEPTUNE'S NATURAL SATELLITES



- Neptune has 13 moons.
- Triton is the largest of Neptune's moons, and is the only large moon to circle its planet in the opposite direction the planet circles.
- Triton is the coldest object in the solar system, about -240°C (-400°F).
- It is expected that the gravitational pull of Neptune will pull Triton in and break it apart millions of years from now.

ALIEN WORLDS

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- Jovian Moons

VOCABULARY REVIEW

- Asteroid
 - Any number of numerous small planetary bodies that revolve around the sun.
- Comet
 - Icy body that releases gas or dust.
- Meteor
 - A bright streak of light that appears briefly in the sky, caused by a particle or chunk of metallic or stony matter called a meteoroid.



VOCABULARY REVIEW

○ Meteorite

- Stony or metallic mass of matter that has fallen to the Earth's surface from outer space. Three types: stony, iron, and stony-iron.

○ Natural Satellite

- An object or celestial body that orbits a planet or other body larger than itself which is not man-made.
- Also known as moons.



Stay classy Mustangs!



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