

Planetary Wonderings
November 2005 Topic: Saturn (Voyager and Cassini)
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When I tried to decide on a topic for this month's column I accessed NASA's Solar System Exploration calendars at <http://sse.jpl.nasa.gov/news/calendars.cfm> to see if there was anything of note coming up this month. As I perused it I saw that November 12th is the 25th Anniversary of the Voyager 1 flyby of Saturn. I was in college at the time and remember watching the pictures come in on the student center television. To this day I remain a Voyager fan.

Voyager 1 was the second spacecraft, Pioneer 11 being the first, to visit this "Lord of the Rings."

It flew 77,000 miles above the planet's cloud tops in 1980, and swung by Saturn's large moon Titan which was found to be so heavily shrouded by a thick, nitrogen-rich atmosphere that Voyager's cameras could not image the moon's surface. Still, other instruments gathered Titan data. Voyager 1 returned stunning images of Saturn and its rings, showing that the rings are far more complex than ever imagined. Unusual ring features called "spokes," as well as elliptical, discontinuous, and multi-stranded rings were detected. Several small satellites were even found guiding ring material between them. With the completion of its Saturn observations, Voyager 1's prime mission was fulfilled, and the spacecraft became a solar physics laboratory, monitoring fields and particles in the interplanetary medium. In February 1990, from a vantage point 3.7 billion miles from the Sun and 32 degrees above the plane of the ecliptic, Voyager 1 returned an historic "family portrait" of nearly all the planets in our solar system. It may be viewed at <http://www.planetary.org/voyager25/final-view.html>. The spacecraft carries a copper "LP" with pictures and sounds from Earth. It continues its journey toward interstellar space, and is now farther from Earth than any other spacecraft.

Today Cassini-Huygens is exploring Saturn and its moons. Cassini is the first spacecraft to orbit Saturn as well as fly *through* its rings. The NASA orbiter carries on Voyager's study of the intriguing features of Saturn's system of rings and moons. It also delivered the European Space Agency's Huygens Probe into the atmosphere of Saturn's moon Titan. It is in the middle of its 4-year primary mission.

The Cassini kids website at <http://saturn.jpl.nasa.gov/kids/index.cfm> has lots of fun activities for children of all ages. For those with patience, there are plans to build a scale model of the spacecraft. NASA's Spaceplace website at http://spaceplace.jpl.nasa.gov/en/kids/cassini_make2.shtml has plans on building a model of Saturn out of an old CD, styrofoam ball, glue, toothpicks paintbrush, glitter, yarn, paper clip and thread. This might make a unique holiday decoration.

Observing Saturn this month is a little difficult, but not impossible. The planet is just coming out of the glare of the sun and should rise by about 10:00 PM. Although the rings' tilt with respect to earth is decreasing, they should still be quite visible this month. Larger than Mercury and Pluto, Saturn's moon Titan can be seen with a small telescope and dark skies. Saturn shines with a magnitude 0.7 (quite a bit dimmer than Mars is now, but easily visible with the naked eye, even near a city) in the constellation of Cancer (eastern sky).

While researching for this article I came upon an appropriate mnemonic to remember the order of the planets - **My Very Educated Mother Just Showed Us Nine Planets.** Keep looking up!!