

## Pierre Simon Laplace, Marquis de

French Astronomer and Mathematician

**Born: Beaumont-en-Auge, Calvados, Mar 28, 1749. Died: Paris, Mar 5, 1827**

Laplace's early life is not really known. Some think he was from a poor family, others think it was a middle class family. At 18 he was sent to Paris with a letter of introduction to D'Alembert, who refused to see him. Laplace sent him a paper on mechanics that so impressed him that he not only saw him, but became his sponsor and obtained a Professorship in Mathematics for him. Not bad, eh?

Laplace did some early work with Lavoisier on heat and thermo-chemistry. He also made his chief occupation the study of perturbations of the members of the solar system. In 1787 he explained some anomalies in the moon's orbit as well as the orbits of Jupiter and Saturn. His work on the gravitational pull of the sun, moon and the planets led people to dub him the "French Newton". He summed up his work in a five volume work titled "*Celestial Mechanics*" that was written in the years from 1799 to 1825.

During the French "troubles" of revolution and Napoleon wars, Laplace kept on working seemingly able to slalom through the various sides to suit himself. The fact that he could do great work in the mathematics of artillery fire was not lost on Napoleon. Napoleon made him minister of the interior, but was incompetent for that position, so was elevated to a decorative position of senator. After Napoleon's fall, Louis XVIII mad him a marquis. He was elected to the Academy of Science in 1785 and in 1816 was elected to the more prestigious position in the French Academy. He became its president in 1817.

Laplace's contributions to Mathematics was in the Theory of Probability between 1812 and 1820.

The above was obtained from Isaac Asimov's *Biographical Encyclopedia of Science and Technology*. The work below comes from *God Created the Integers*, by Stephen Hawking.

Hawking says that Laplace came from a middle-class family, his father was a successful cider trader, and his mother was from a prosperous farming family.

Laplace was involved with determining the metre as 1/10,000 the distance from the equator to the North Pole. He also had a 16 year old Napoleon Bonaparte in one of his classes!

Laplace was involved in the refounding of the great French Schools, Ecole Normale, Polytechnique, and Centrale des Travaus Publics.

Laplace's book on probability published in 1812 was called *Analytic Theory of Probabilities*. This was followed two years later with *A Philosophical Essay on Probabilities*.

In his later years Laplace did work in mathematical physics: capillary action, double refraction, the velocity of sound, the shape and heat of the earth and elastic fluids.

Laplace died after two years of bad health in 1827. Fourier, who we discussed last week, said that Laplace kept his powers of memory and critical thinking almost to the end.