

# Huygens, Christiaan Encyclopedia Article

## Huygens, Christiaan

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# Huygens, Christiaan

Christiaan Huygens developed and patented the pendulum time-keeping device. The pendulum system of modern grandfather clocks grew from his idea.

## Dutch Astronomer and Mathematical Physicist 1629-1695

Christiaan Huygens (1629-1695) was born in the Hague, Netherlands. He is remembered for his work in optics, astronomy, and timekeeping.

Huygens developed lens-shaping techniques better than those of Italian mathematician and astronomer Galileo Galilei (1564-1642) and greatly improved the telescope. This permitted the use of high magnifications, leading to Huygens's discovery of Saturn's largest moon, Titan, in 1655. Huygens was also the first to recognize a ring around Saturn, and published a thorough explanation of it in *Systema Saturnium* in 1659, resolving a longstanding mystery that began with Galileo's first observation of Saturn. This book also contained a drawing showing two dark bands on Jupiter and a dark band on Mars.

Galileo had used a pendulum for timekeeping, but Huygens invented the pendulum clock in 1656 and patented it in 1657. Huygens developed the mathematical theory of the pendulum, including a formula for its behavior. Along with his studies of the pendulum, he theorized about the motions of bodies along various curves and drew conclusions related to planetary motions governed by gravity. Oddly, though, he did not accept English physicist and mathematician Isaac Newton's explanation of gravity.

Huygens later went back to the study of optics and developed long focal length lenses used in "aerial telescopes."

Huygens is the namesake of the European Space Agency's atmospheric probe of Titan, which is being carried by the Cassini orbiter to Saturn in 2004. The Cassini Program is a joint effort of the National Aeronautics and Space Administration, European Space Agency, and the Italian Space Agency to study the Saturn system.

## See Also

Astronomy, History of (Volume 2); Galilei, Galileo (Volume 2); Government Space Programs (Volume 2); Nasa (Volume 3); Robotic Exploration of Space (Volume 2); Saturn (Volume 2).

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