

Daniel Bernoulli Biography

Daniel Bernoulli

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Biography

Bernoulli's work on fluids pioneered the sciences of hydrodynamics and aerodynamics. Born in the Netherlands and spending most of his life in Switzerland, Bernoulli was one of a large family of brilliant scientists and mathematicians that included his father, Jean Bernoulli, and uncle, Jacques Bernoulli.

Ignoring his family's pleas to enter the world of business, Bernoulli pursued a degree in medicine and then, after graduation, a career as a professor of mathematics. He began teaching in 1725 at a college in St. Petersburg, Russia, eventually returning to Switzerland in 1732. While a professor at the University of Basel, he became the first scientist outside of Great Britain to fully accept Newtonian physics. It was also here that Bernoulli performed the research on fluid behavior that would make him famous.

The 1738 publication *Hydrodynamica* developed the prominent theories of hydrodynamics, or the movement of water. Paramount among these was the fact that, as the velocity of a fluid increases, the pressure surrounding it will decrease. Called Bernoulli's principle, this pressure drop was also shown to occur in moving air, and it is the reason boats and planes experience lift as water or air passes around them. This effect is easily shown by blowing between two pieces of paper; the drop in pressure will cause the papers to bend toward each other. Bernoulli's research marked the first attempt to explain the connection pressure and temperature have with the behavior of gas and fluids.

Bernoulli's experiments with fluids caused him to devise a series of hypotheses about the nature of gases. He was certainly one of the first to formulate principles dealing with gases as groups of particles, which later became the basis for atomic theories. As groundbreaking as this work was, it was paid little attention by his peers, and subsequently it was nearly a century before the atomic theory rose again.