Bernoulli, Daniel (1700-1782) Encyclopedia Article

Bernoulli, Daniel (1700-1782)

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites".

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers".

Contents

Bernoulli, Daniel (1700-1782)

Dutch-born Swiss physicist

Daniel 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 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.

See Also

Atmospheric Pressure; Atomic Theory; Hydrostatic Pressure