

# THE STORY OF THE GREAT SCIENTIST SIR ISAAC NEWTON

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Born in 1642, the year of Galileo's death, Newton made the crucial advances needed to complete our understanding of motion. He also made major contributions to optics and mathematics.

Newton was a thin frail baby and was raised by his grandmother after his widow mother remarried when he was 2 years old. His difficult childhood may have contributed to his later psychotic tendencies. Throughout his brilliant career, he was extremely anxious when his work was published and irrationally violent whenever his ideas were challenged. He suffered at least two nervous breakdowns.

As an undergraduate at Cambridge, Newton soon mastered the literature of science and mathematics and begun to enter unexplored regions. He formulated the binomial theorem and basic concept of calculus. During this period and years immediately following, he also began to do research on optics and on planetary motion. He deduced that the force on a planet due to the sun must vary as  $1/r^2$ . Some after 20 years later, he would extend this idea to the universal law of gravitation.

Although Newton's work was known only to a limited circle because of his reluctance to publish his research, he was appointed a professor Cambridge in 1669. He developed the first reflecting telescope in order to circumvent the distortions inherent in lenses. When this telescope received an enthusiastic reception from Royal Society of London, he was encouraged to present his other research in optics to the society in 1672. Robert Hook, the leading authority on optics, disagreed with some of Newton's ideas. This led to bitter disputes, with Newton finally withdrawing into isolation for some years.

Newton's greatest achievements were his advances in mechanics. Although many of his results were obtained quite early in his career, he did not present his theory of planetary motion until he was urged to do so in 1684 by Edmond Halley, as astronomer who had heard of Newton's work.

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Newton's classic work, *Principia Mathematica*, appeared in 1687. Written in Latin, it contained the three laws of motion and universal law of gravitation. This treatise constituted one of the foundations of modern science and made Newton internationally famous. It also effectively marked the end of Newton's active research, with his attention gradually turning to politics, theology, and scientific priority disputes.

Newton became master of the mint, a well-paying and normally undemanding job. However, he took the position seriously and was especially zealous in sending counterfeiters to the gallows. He also assumed the role of leader of English science, becoming president of the Royal Society in 1703; in 1705, he became the first scientist to be knighted. Unfortunately, he repeatedly used his position to carry on bitter arguments with various scientists. The most prolonged of these was a 25-year battle with Leibniz over credit for the development of calculus. It is now agreed the Leibniz independently developed the calculus after Newton had, but before Newton published his results.