



Sir Isaac Newton

Newton, Sir Isaac, 1642–1727, English mathematician and natural philosopher (physicist); considered by many the greatest scientist of all time. He was Lucasian professor of mathematics (1669–1701) at Cambridge University. Between 1664 and 1666 he discovered the law of universal gravitation, began to develop the Calculus, and discovered that white light is composed of every color in the spectrum. In his monumental *Philosophiae naturalis principia mathematica* [Mathematical Principles of Natural Philosophy] (1687), he showed how his principle of universal gravitation explained both the motions of heavenly bodies and the falling of bodies on earth. The *Principia* covers Dynamics (including Newton's three laws of motion), Fluid Mechanics, the motions of the planets and their satellites, the motions of the comets, and the phenomena of tides. Newton's theory that light is composed of particles—elaborated in his *Opticks* (1704)—dominated optics until the 19th century, when it was replaced by the wave theory of light; the two theories were combined in modern Quantum Mechanics. Newton also built (1668) the first reflecting telescope, anticipated the calculus of variations, and devoted much energy towards alchemy, theology, and history. He was president of the Royal Society from 1703 until his death.