

A first edition of Newton's magnum opus, the *Principia Mathematica*

Isaac Newton, *Philosophiæ Naturalis Principia Mathematica*. London: Joseph Streater, for the Royal Society, 1687. 9 1/2 inches x 7 7/8 inches (242 x 200 mm), 506 pages, diagrams throughout.

Sir Isaac Newton (1642–1727), a polymath and inventor, was born in the Lincolnshire hamlet of Woolsthorpe-by-Colsterworth. Three months after his father's death, he was delivered prematurely and was not expected to survive. After beginning his education in village schools, he was sent to Gratham Grammar School, where he excelled in his studies; he then enrolled at Trinity College, Cambridge, and was influenced by the writings of Galileo, Copernicus, Kepler, and Descartes. He received his degree in 1665, and during the plague-prompted closure of the university that followed he worked on the development of calculus, optics, and gravitational laws from his home. During this period he is said to have developed the theories underpinning both his *Method of Fluxions* (1671) and the *Principia*. In 1667, Newton became a fellow of Trinity College and was elected Lucasian professor of mathematics in 1669, a post that he held for more than thirty years. During the 1670s, he investigated optics, researching refraction, inventing the reflecting telescope, lecturing, and publishing his findings. Newton turned his attention back to gravitation and planetary orbits in 1679, and in 1684 he published the results of his inquiries as *De Motu Corporum in Gyrum*, which included the incipient laws of motion that Newton developed in the *Principia*.

Newton's *Mathematical Principles of Natural Philosophy* is generally considered the most important book in the history of science, for it presents a convincing mathematical explanation of the universal laws that govern the cosmos. It is a cornerstone of mathematical physics and of gravitational astronomy, demonstrating how bodies attract in proportion to their mass and in inverse ratio to the square of the distance between them. Book I contains the basic theory of the entire work with the motion of mass particles under the action of forces. Book II is a treatise on fluid mechanics and includes the motion of bodies in a resisting medium. Book III is a treatise on astronomy and shows how the known phenomena of the solar system can be predicted

using gravitation and the general theories in Book I. By providing a grand scientific perspective of the universe, it demonstrated that science could operate on a scale hitherto attempted only by theologians, ushering in the Enlightenment. It wasn't until the early twentieth century that the theories of relativity and quantum mechanics seriously challenged Newton's work.

This first edition of Newton's masterpiece from the Warnock Library is a remboîtage, with the text block replaced into a contemporary black morocco gilt binding originally from a Bible or Book of Common Prayer.

Octavo code: nwtunc