ISACC NEWTON'S THE PRINCIPIA ...

Mathematical Principles of Natural Philosophy (published in 3 edns: 1687, 1713, & 1726)
... in Three Books: Book 1: The Motions of Bodies
Book 2: The Motions of Bodies
Book 3: The System of the World
(A New Translation by Bernard Cohen and Anne Whitman in 1999; ISBN 0-520-08817-4)

DEFINITIONS

|**Definition 1>** Quantity of matter is a measure of matter that arises from its density and volume jointly.

|**Definition 2>** Quantity of motion is a measure of motion that arises from the velocity and the quantity of matter jointly.

|**Definition 3>** Inherent force of matter is the power of resisting by which every body, so far as it is able, perseveres in its state either of resting or of moving uniformly straight forward.

|**Definition 4>** Impressed force is the action exerted on a body to change its state either of resting or of moving uniformly straight forward.

|**Definition 5>** Centripetal force is the force by which bodies are drawn from all sides, are impelled, or in any way tend, toward some point as to a center.

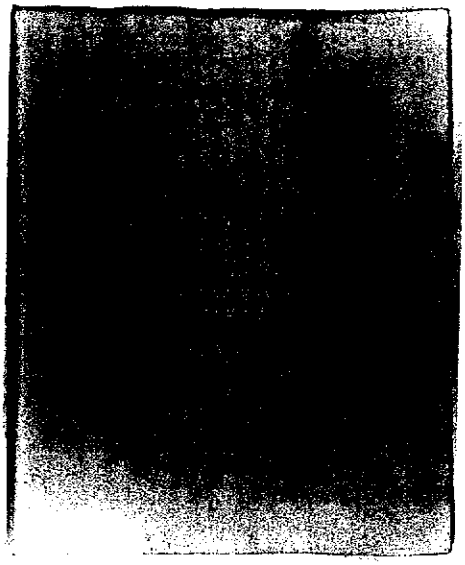
AXIOMS, or THE LAWS OF MOTION

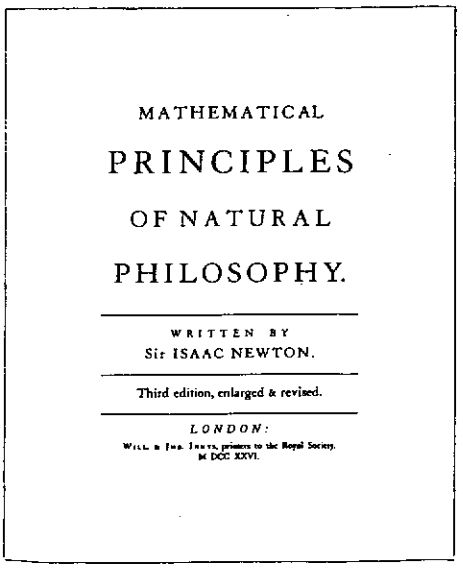
|**Law 1>** Every Body perseveres in its state of being at rest or of moving uniformly straight forward, except insofar as it is compelled to change its state by forces impressed.

|**Law 2>** A change in motion is proportional to the motive force impressed and takes place along the straight line in which that Force is impressed.

|**Law 3>** To every Action there is always an opposite and equal Reaction; in other words the actions of two bodies upon each other are always equal, and always opposite in direction.

|**Corollary 1>** A body acted on by *[two]* forces acting jointly describes the diagonal of a parallelogram in the same time in which it would describe the sides if the forces were acting separately.




MATHEMATICAL
PRINCIPLES
OF NATURAL
PHILOSOPHY.
WRITTEN BY
Sir ISAAC NEWTON.
Third edition, enlarged & revised.
LONDON:
MDCC XXVI.

Title page of the third edition of Newton's *Principia*. In the original, the words PHILOSOPHIAE and PRINCIPIA are printed in red, as are ISAACO NEWTONO and LONDINI. (Grace K. Babson Collection, Burndy Library)