

# Measuring the Earth Tides In Baguio

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THE oft repeated legend of the apple falling from the tree and hitting Isaac Newton on the head may or may not be authentic history, but the tale has served to publicize Newton's formulation in 1686 of the law of universal gravitation. This has usually found its way into textbooks thus: every body in the universe attracts every other body with a force that is directly proportional to the product of the masses of the two bodies and inversely proportional to the square of the distance between their centers.<sup>1</sup>

This general law contains a wealth of information. The book on the desk is attracted by the clock on the wall. The stone hurled through the air pulls on each mango on the tree. But no one is aware of these minute forces, and even the laboratory experimenter with his refined techniques would be

<sup>1</sup> *The Philosophiæ naturalis principia mathematica* of Newton is one of the cornerstones of physical science. The principle of universal gravitation is there set out in mathematical form in Book III. Proposition VII Theorem VII states: "That there is a power of gravity tending to all bodies proportional to the several quantities of matter which they contain." After the explanation and proof Newton puts the first corollary: "Therefore the force of gravity towards any whole planet arises from, and is compounded of, the forces of gravity towards all its parts." The quotations are from the English translation by Andrew Motte, published in New York 1846 by Daniel Adee, p. 317. Newton of course wrote in Latin.