

asserting of gravitation only what was known of its nature by direct experiment at the earth's surface, he proved that the centre of each planet may be considered as a distinct centre of a force, not primarily impressed upon the centre; but derived as a secondary phenomenon from the combined action of every particle composing the planetary mass; and he also demonstrated (with a skill almost supernatural, considering the feeble instruments at that time placed within his hands,) that the irregularities of the moon's motions are necessary consequences of the universal law of material action.

Again, knowing as a matter of fact that the planets are not perfect spheres, he proved that their forms are necessary effects of his own theory: and combining these conclusions with the law of universal gravitation, he proved, by most subtle calculations, that certain irregularities in the annual motion of the earth (producing the phenomena of equinoctial precession) are the necessary consequences of the sun's action on the mass of a spheroidal body.

In tracing out the consequences of the law of gravitation, and explaining the minute secular inequalities of the heavenly bodies, much, no doubt, was left by him unfinished. But he had lighted the way for those who were to follow, had given them the key whereby the mysteries of the kingdoms of nature were to be unlocked, and had laid the foundations of every part of that superstructure which has been since reared only by the united labours of the philosophic world.

The refined geometry of Newton, however beautiful as a mode of exhibiting known truths, is now thrown aside as an implement of discovery. "It was like the bow of Ulysses, which none but its