whose reasonings respecting the lever much resemble those of Leonardo.—Da Vinci also anticipated Galileo in *asserting* that the time of descent of a body down an inclined plane is to the time of descent down its vertical length in the proportion of the length of the plane to the height. But this cannot, I think, have been more than a guess: there is no vestige of a proof given.]

The contemporaneous progress of the other branch of mechanics, the Doctrine of Motion, interfered with this independent advance of Statics; and to that we must now turn. We may observe, however, that true propositions respecting the composition of forces appear to have rapidly diffused themselves. The *Tractatus de Motu* of Michael Varro of Geneva, already noticed, printed in 1584, had asserted, that the forces which balance each other, acting on the sides of a right-angled triangular wedge, are in the proportion of the sides of the triangle; and although this assertion does not appear to have been derived from a distinct idea of pressure, the author had hence rightly deduced the properties of the wedge and the screw. And shortly after this time, Galileo also established the same results on different principles. In his Treatise *Delle Scienze Mecaniche* (1592), he refers the Inclined Plane to the Lever, in a sound and nearly satisfactory manner; imagining a lever so placed, that the motion of a body at the extremity of one of its arms should be in the same direction as it is upon the plane. A slight modification makes this an unexceptionable proof.

Sect. 3.—*Prelude to the Science of Dynamics.—Attempts at the First Law of Motion.*

WE have already seen, that Aristotle divided Motions into Natural and Violent. Cardan endeavored to improve this division by making three classes: *Voluntary* Motion, which is circular and uniform, and which is intended to include the celestial motions; *Natural* Motion, which is stronger towards the end, as the motion of a falling body,—this is in a straight line, because it is motion to an end, and nature seeks her ends by the shortest road; and thirdly, *Violent* Motion, including in this term all kinds different from the former two. Cardan was aware that such Violent Motion might be produced by a very small force; thus he asserts, that a spherical body resting on a horizontal plane may be put in motion by any force which is sufficient to cleave the air; for which, however, he erroneously assigns as a reason,