

we can conceive force to diminish in proceeding from a certain point of space, which in attractive forces really occurs. But, it is sometimes said, the *motion* (that is the velocity) *must* continue the same from one instant to another, for there is nothing to change it. This appears to be taking refuge in words. We may call the velocity, that is the speed of a body, its motion; but we cannot, by giving it this name, make it a *thing* which has any *à priori* claim to permanence, much less any self-evident constancy. Why must the speed of a body, left to itself, continue the same, any more than its temperature? Hot bodies grow cooler of themselves, why should not quick bodies go slower of themselves? Why must a body describe one thousand feet in the next second because it has described one thousand feet in the last? Nothing but experience, under proper circumstances, can inform us whether bodies, abstracting from external agency, do move according to such a rule. We find that they do so, we learn that all diminution of their speed which ever takes place, can be traced to external causes. Contrary to all that men had guessed, motion appears to be of itself endless and unwearied. In order to account for the unalterable permanence of the length of our day, all that is requisite is to show that there is no let or hindrance in the way of the earth's rotation;—no resisting medium or alteration of size,—she “*spinning sleeps*” on her axle, as the poet expresses it, and may go on sleeping with the same regularity for ever, so far as the experimental properties of motion are concerned.

Such is the necessary consequence of the first law of motion; but the law itself has no necessary existence, so far as we can see. It was discovered only after various perplexities and false conjectures of speculators on mechanics. We have learnt that it is so, but we have not learnt, nor can any one undertake to teach us, that it must have been so. For aught we can tell, it is one among a thousand equally