which they are supported, if some allusion were not made to its influence upon matter in general, and upon the celestial bodies in particular. It is by virtue of this force that unsupported bodies near the earth fall downward; that they exert a pressure on the surface on which they rest; that the planets revolve round the sun; and the satellites round their primaries; it is, in fact, the cause of nearly all the phenomena of motion which we observe around us. The origin of this force we cannot determine; but the circumstances under which it acts, and the laws by which it is governed, are perfectly understood.

It is a law of gravitation that bodies attract each other according to their masses. Thus, if two bodies exist in space beyond the influence of all other matter, one having a mass twice as great as the other, they will exert a mutual attraction; but while the larger approaches through a space equal to one, the less will move through a space equal to two. If the greater be doubled, then the less will feel the force of its increased attraction, and advance through a space equal to four, while the larger advances one. There is no difficulty in understanding this law; for as all bodies attract each other according to their masses, then every particle in the universe attracts every other particle. This law accounts for the fall of bodies to the surface of the earth, and it is only the existence of this force of gravity that causes them to do so. Matter is in itself perfectly passive and inert; and when we perceive it to be in a condition of rest or motion, we may be certain that it is produced by some external force. It will therefore follow that, independently of the force of gravity, there is no reason why a body should fall downward, but it should rather take the direction in which it is thrown. But as different bodies fall to the earth in different times, it may perhaps be difficult to identify the law to which we have alluded. The entire attractive force of the earth is exerted upon the individual atom of every body, and consequently they ought, whether large or small, to fall in equal times. This difficulty, however, is removed by the consideration that the air acts upon the surface of bodies; and in bodies of equal weight, but of different volumes, that will fall first which presents the least resistance to the air. A stone and a feather would fall from a height in equal times in a vacuum; but when exposed to the retarding influence of the air, the stone falls