this way, they defined what was *absolutely* (ἁπλῶς) heavy and light." We now know that things which rise by their lightness do so only because they are pressed upwards by heavier surrounding bodies; and this assumption of absolute levity, which is evidently gratuitous, or rather merely nominal, entirely vitiated the whole of the succeeding reasoning. The inference was, that fire must be absolutely light, since it tends to take its place above the other three elements; earth absolutely heavy, since it tends to take its place below fire, air, and water. The philosopher argued also, with great acuteness, that air, which tends to take its place below fire and above water, must do so *by its nature*, and not in virtue of any combination of heavy and light elements. "For if air were composed of the parts which give fire its levity, joined with other parts which produce gravity, we might assume a quantity of air so large, that it should be lighter than a small quantity of fire, having more of the light parts." It thus follows that each of the four elements tends to its own place, fire being the highest, air the next, water the next, and earth the lowest.

The whole of this train of errors arises from fallacies which have a verbal origin;—from considering light as opposite to heavy; and from considering levity as a quality of a body, instead of regarding it as the effect of surrounding bodies.

It is worth while to notice that a difficulty which often embarrasses persons on their entrance upon physical speculations,—the difficulty of conceiving that up and down are different directions in different places,—had been completely got over by Aristotle and the Greek philosophers. They were steadily convinced of the roundness of the earth, and saw that this truth led to the conclusion that all heavy bodies tend in converging directions to the centre. And, they added, as the heavy tends to the centre, the light tends to the exterior, "for Exterior is opposite to Centre as heavy is to light."[13]

The tendencies of bodies downwards and upwards, their weight, their fall, their floating or sinking, were thus accounted for in a manner which, however unsound, satisfied the greater part of the speculative world till the time of Galileo and Stevinus, though Archimedes in the mean time published the true theory of floating bodies, which is very different from that above stated. Other parts of the doctrines of motion were delivered by the Stagirite in the same spirit and with the same success. The motion of a body which is thrown along the

[13] De Cœlo, iv. 4.