

in speculating about elements and qualities, they went the wrong way, assuming that the properties of Compounds must *resemble* those of the Elements which determine them; and their loose notions of Contrariety never approached the form of those ideas of Polarity, which, in modern times, regulate many parts of physics and chemistry.

If this statement should seem to any one to be technical or arbitrary, we must refer, for the justification of it, to the Philosophy of Science, of which we hope hereafter to treat. But it will appear, even from what has been here said, that there are certain Ideas or Forms of mental apprehension, which may be applied to Facts in such a manner as to bring into view fundamental principles of science; while the same Facts, however arrayed or reasoned about, so long as these appropriate ideas are not employed, cannot give rise to any exact or substantial knowledge.

[2d Ed.] This account of the cause of failure in the physical speculations of the ancient Greek philosophers has been objected to as unsatisfactory. I will offer a few words in explanation of it.

The mode of accounting for the failure of the Greeks in physics is, in substance;—that the Greeks in their physical speculations fixed their attention upon the wrong aspects and relations of the phenomena; and that the aspects and relations in which phenomena are to be viewed in order to arrive at scientific truths may be arranged under certain heads, which I have termed *Ideas*; such as Space, Time, Number, Cause, Likeness. In every case, there is an Idea to which the phenomena may be referred, so as to bring into view the Laws by which they are governed; this Idea I term the *appropriate* Idea in such case; and in order that the reference of the phenomena to the Law may be clearly seen, the Idea must be *distinctly* possessed.

Thus the reason of Aristotle's failure in his attempts at Mechanical Science is, that he did not refer the facts to the appropriate Idea, namely Force, the Cause of Motion, but to relations of Space and the like; that is, he introduces *Geometrical* instead of *Mechanical* Ideas. It may be said that we learn little by being told that Aristotle's failure in this and the like cases arose from his referring to the wrong class of Ideas; or, as I have otherwise expressed it, fixing his attention upon the wrong aspects and relations of the facts; since, it may be said, this is only to state in other words that he *did* fail. But this criticism is, I think, ill-founded. The account which I have given is not only a statement that Aristotle, and others who took a like course, did fail; but also, that they failed in one certain point out of several