

which are enumerated. They did not fail because they neglected to observe facts; they did not fail because they omitted to class facts; they did not fail because they had not ideas to reason from; but they failed because they did not take the right ideas in each case. And so long as they were in the wrong in this point, no industry in collecting facts, or ingenuity in classing them and reasoning about them, could lead them to solid truth.

Nor is this account of the nature of their mistake without its instruction for us; although we are not to expect to derive from the study of their failure any technical rule which shall necessarily guide us to scientific discovery. For their failure teaches us that, in the formation of science, an Error in the Ideas is as fatal to the discovery of Truth as an Error in the Facts; and may as completely impede the progress of knowledge. I have in Books II. to X. of the *Philosophy*, shown historically how large a portion of the progress of Science consists in the establishment of Appropriate Ideas as the basis of each science. Of the two main processes by which science is constructed, as stated in Book XI. of that work, namely the *Explication of Conceptions* and the *Colligation of Facts*, the former must precede the latter. In Book XII. chap. 5, of the *Philosophy*, I have stated the maxim concerning appropriate Ideas in this form, that *the Idea and the Facts must be homogeneous*.

When I say that the failure of the Greeks in physical science arose from their not employing *appropriate* Ideas to connect the facts, I do not use the term "appropriate" in a loose popular sense; but I employ it as a somewhat technical term, to denote *the* appropriate Idea, out of that series of Ideas which have been made (as I have shown in the *Philosophy*) the foundation of sciences; namely, Space, Time, Number, Cause, Likeness, Substance, and the rest. It appears to me just to say that Aristotle's failure in his attempts to deal with problems of equilibrium, arose from his referring to circles, velocities, notions of natural and unnatural, and the like,—conceptions depending upon Ideas of Space, of Nature, &c.—which are not appropriate to these problems, and from his missing the Idea of Mechanical Force or Pressure, which is the appropriate Idea.

I give this, not as an account of *all* failures in attempts at science, but only as the account of such radical and fundamental failures as this of Aristotle; who, with a knowledge of the facts, failed to connect them into a really scientific view. If I had to compare rival theories of a more complex kind, I should not necessarily say that one involved