

experiments to be instituted, the precautions to be used in investigating evidence and guarding against prejudice, and the rules to be adopted in eliciting from a number of well authenticated facts the general laws which they establish.

Regarded as an *a priori* sketch of a new and complete method, this part of the *Novum Organum* is a remarkable specimen of acuteness; but it contains such errors as were to be expected in an *a priori* sketch—errors which were only to be corrected by the application of the method to practice. Bacon was little more than a theoriser in the subject of physical science—he had not himself conducted any series of experimental researches, when he laid down his rules describing how such researches were to be conducted; and though he saw enough to enable him to show the feasibility of the experimental method, it was inevitable that he should commit some errors, from his inexperience of the subject of which he was treating.

Perhaps the best existing work on the philosophy of experimental investigation, is Sir John Herschel's Introduction to the Study of Natural Philosophy, forming the first volume of Lardner's Cabinet Cyclopædia, being the work of a man who to a philosophical mind has joined ample experience of the practical details of his subject.

Bacon imagined that one effect of his method would be to place all intellects on a level, as regards their power of investigating natural phenomena. He thought he had described so plainly the course to be pursued, in following nature to her inmost recesses and tracing out her secrets, that the wayfaring man, though a fool, could not err therein. Ingenuity and sagacity were to be at a discount. Common sense was to carry the day. The idea of framing theories and putting them to the test of experiment was scouted. Experiment was to be everything—only observe all the facts, and the true theory would become so plain that the observer could not miss it. But no such result has happened. Ingenuity and sagacity are more than ever required in investigating nature's secrets. No levelling of capacities has resulted. On the contrary, the truly sagacious man is more clearly distinguished than ever from the mere visionary, inasmuch as truth regarding natural phenomena has ceased to be mere matter of argument, and is brought to the certain test of experiment. Under the old regime if a man could frame a plausible theory, and devise ingenious answers to meet objectors, no one could prove him to be wrong. Modern science is not content with plausibilities, but demands proof. Formerly, a fine command of language and versatility in argument might make a man famous in Physics. Now everything is brought to the test of fact, and errors can no longer be palmed off by rhetoric.

In one respect indeed plain and unskilful men may do good service to Physical Science, viz: by observing and recording facts, a duty which may be efficiently performed by those who have no talent for reasoning upon the facts thus collected. Indeed a plain man may often be a better