

tory from material error; for no merely arbitrary division of the events could satisfy such conditions. But though I have constructed such charts to direct the course of the present history, I shall not insert them in the work, reserving them for the illustration of the philosophy of the subject; for to this they more properly belong, being a part of the *Logic of Induction*.

Stationary Periods.—By the lines of such maps the real advance of science is depicted, and nothing else. But there are several occurrences of other kinds, too interesting and too instructive to be altogether omitted. In order to understand the conditions of the progress of knowledge, we must attend, in some measure, to the failures as well as the successes by which such attempts have been attended. When we reflect during how small a portion of the whole history of human speculations, science has really been, in any marked degree, progressive, we must needs feel some curiosity to know what was doing in these *stationary* periods; what field could be found which admitted of so wide a deviation, or at least so protracted a wandering. It is highly necessary to our purpose, to describe the baffled enterprises as well as the achievements of human speculation.

Deduction.—During a great part of such stationary periods, we shall find that the process which we have spoken of as essential to the formation of real science, the conjunction of clear Ideas with distinct Facts, was interrupted; and, in such cases, men dealt with ideas alone. They employed themselves in reasoning from principles, and they arranged, and classified, and analyzed their ideas, so as to make their reasonings satisfy the requisitions of our rational faculties. This process of drawing conclusions from our principles, by rigorous and unimpeachable trains of demonstration, is termed *Deduction*. In its due place, it is a highly important part of every science; but it has no value when the fundamental principles, on which the whole of the demonstration rests, have not first been obtained by the induction of facts, so as to supply the materials of substantial truth. Without such materials, a series of demonstrations resembles physical science only as a shadow resembles a real object. To give a real significance to our propositions, Induction must provide what Deduction cannot supply. From a pictured hook we can hang only a pictured chain.

*Distinction of common Notions and Scientific Ideas.*⁶—When the

⁶ Scientific Ideas depend upon certain *Fundamental Ideas*, which are enumerated in the *Philosophy*, book i. ch. 8.