of physical inquiry. In such a case, when we reason upwards till we reach an ultimate fact, we regard a phenomenon as fully explained; as we consider the branch of a tree to terminate when traced to its insertion in the trunk, or a twig to its junction with the branch; or, rather, as a rivulet retains its importance and its name till lost in some larger tributary, or in the main river which delivers it into the ocean. This, however, always supposes that, on a reconsideration of the case, we see clearly how the admission of such a fact, with all its attendant laws, will perfectly account for *every particular*—as well those which, in the different stages of the induction, have led us to a knowledge of it, as those which we had neglected, or considered less minutely than the rest. But, had we no previous knowledge of the radiation of heat, this same induction would have made it known to us, and, duly considered, might have led to the knowledge of many of its laws.

(170.) In the study of nature, we must not, therefore, be scrupulous as to *how* we reach to a knowledge of such general facts: provided only we verify them carefully when once detected, we must be content to seize them wherever they are to be found. And this brings us to consider the *verification* of inductions.

(171.) If, in our induction, every individual case has actually been present to our minds, we are sure that it will find itself duly *represented* in our final conclusion: but this is impossible for such cases as were *unknown* to us, and hardly ever happens even with all the known cases; for such is the tendency of the human mind to speculation, that on the least idea of an analogy between a few phenomena, it leaps forward, as it were, to a cause or law, to the temporary neglect of all the rest; so that, in fact, almost all our principal inductions must be regarded as a series of ascents and descents, and of conclusions from a few cases, verified by trial on many.

(172.) Whenever, therefore, we think we have been led by induction to the knowledge of the proximate cause of a phenomenon or of a law of nature, our next business is to examine deliberately and *scriatim* all the