that, after all, the whole of our knowledge of natural phenomena and natural things may be only statistical, not historical or individual. "In dealing," he says,[1] "with masses of matter, while we do not perceive the individual molecules, we are compelled to adopt the statistical method of calculation, and to abandon the strict dynamical method in which we follow every motion by the calculus. It would be interesting to inquire how far those ideas about the nature and the methods of science which have been derived from examples of scientific investigation in which the dynamical method is followed, are applicable to our actual knowledge of concrete things, which, as we have seen, is of an essentially statistical nature, because no one has yet discovered any practical method of tracing the path of a molecule, or of identifying it at different times." And elsewhere[2] he says: "The statistical method of investigating social questions has Laplace for its most scientific and Buckle for its most popular

[1] 'Theory of Heat,' 8th ed., p. 329.

[2] 'Life of Clerk-Maxwell by Campbell and Garnett.' Chap. xiv. contains a paper with the title, "Does the progress of Physical Science tend to give any advantage to the opinion of Necessity (or Determinism) over that of the Contingency of Events and the Freedom of the Will?" In it (p. 435) there occurs the following passage: "The doctrine of the conservation of energy, when applied to living beings, leads to the conclusion that the soul of an animal is not, like the mainspring of a watch, the motive power of the body, but that its function is rather that of a steersman of a vessel — not to produce, but to regulate and direct, the animal powers." He then speaks of the "powerful effect on the world of thought" which the developments of molecular science are likely to have, considering the "most important effect on our way of thinking to be that it forces on our attention the distinction between two kinds of knowledge, which we may call for convenience the Dynamical and Statistical." The paper from which the extracts in the text are taken is dated 1873. Clerk-Maxwell was then forty-one years of age.