

reference of them to distinct ideas of causation, their interpretation as the results of mechanical force, was omitted or attempted in vain. The very notion of such Force, and of the manner in which motions were determined by it, was in the highest degree vague and vacillating; and a century was requisite, as we have seen, to give to the notion that clearness and fixity which made the Mechanics of the Heavens a possible science. In like manner, the notion of Life, and of Vital Forces, is still too obscure to be steadily held. We cannot connect it distinctly with severe inductions from facts. We can trace the motions of the animal fluids as Kepler traced the motions of the planets; but when we seek to render a reason for these motions, like him, we recur to terms of a wide and profound, but mysterious import; to Virtues, Influences, undefined Powers. Yet we are not on this account to despair. The very instance to which I am referring shows us how rich is the promise of the future. Why, says Cuvier,<sup>19</sup> may not Natural History one day have its Newton? The idea of the vital forces may gradually become so clear and definite as to be available in science; and future generations may include, in their physiology, propositions elevated as far above the circulation of the blood, as the doctrine of universal gravitation goes beyond the explanation of the heavenly motions by epicycles.

If, by what has been said, I have exemplified sufficiently the nature of those steps in physiology, which, like the discovery of the Circulation, give an explanation of the process of some of the animal functions, it is not necessary for me to dwell longer on the subject; for to write a history, or even a sketch of the history of Physiology, would suit neither my powers nor my purpose. Some further analysis of the general views which have been promulgated by the most eminent physiologists, may perhaps be attempted in treating of the Philosophy of Inductive Science; but the estimation of the value of recent speculations and investigations must be left to those who have made this vast subject the study of their lives. A few brief notices may, however, be here introduced.

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<sup>19</sup> *Ossem. Foss.* Introd.