

In the second chapter of this volume, which treated of the physical view of nature, and developed the various ideas which cluster around the term "energy," I showed how, in the middle of the century, through the introduction of these ideas, a new clue was gained wherewith to penetrate the connection of natural phenomena in time and space. Before that time the conservation of matter, the rule that matter can neither be lost nor created, guided research by trying to account for the apparent loss or gain of matter whenever and wherever changes take place in the material world. The science of chemistry with its instrument the balance was built on the foundation of this axiom. When, through the labours of Mayer, Helmholtz, and Joule, the further axiom became established that, besides matter, there exists in the material universe a second quantity (or substance) termed "energy," which, like matter, can be changed, but which, like matter, can neither be created nor annihilated, the questions began to be asked, "If we

48.
Genetic view
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abroad, the merit of Mr Spencer in urging the "dynamical" aspect long before the 'Origin of Species' put forward a definite mechanical agency is so much greater, and he himself says ('Factors of Organic Evolution,' p. 5): "Of the few . . . who, espousing the belief in a continuous evolution, had to account for this evolution, it must be said that though the cause assigned (viz., the modification of structures resulting from modification of functions) was a true cause, . . . it left unexplained the greater part of the facts. Having been myself one of these few, I look back with surprise at the way in which the facts which were congruous with the espoused view monopolised con-

sciousness and kept out the facts which were incongruous with it—conspicuous though many of them were." Mr Spencer was also probably the first who defined in mechanical terms, applicable to cosmical, lifeless, and living phenomena alike, the process of development, adopting the term evolution. This fitting of the process of organic development into the general formula of evolution, and the subsequent announcement by Darwin of the mechanical agency of overcrowding and selection, has had the effect of strengthening immensely the genetic view of nature, but also of obscuring and pushing into the background the special problem of life.