PART II.

HISTORY OF THE PHYSICAL CONTEMPLATION OF THE UNIVERSE.—PRINCIPAL CAUSES OF THE GRADUAL DEVELOPMENT AND EXTENSION OF THE IDEA OF THE COSMOS AS A NATURAL UNITY.

The history of the physical contemplation of the universe is the history of the recognition of the unity of nature, the representation of the efforts made by man to comprehend the combined action of natural forces on the earth and in the regions of space, and hence it designates the epochs of advancement in the generalization of views, being a portion of the history of our world of thought, in as far as it refers to objects manifested by the senses, to the form of conglomerated matter, and the forces inherent in it.

In the section of the first portion of this work, relating to the limitation and scientific treatment of a physical description of the universe, I hope I may have succeeded in developing with clearness the relation existing between the separate natural sciences and the description of the universe (the science of the Cosmos), and the manner in which this science simply draws from these various branches of study the materials for its scientific foundation. The history of the knowledge of the universe, of which I here present the leading ideas, and which, for the sake of brevity, I name either simply the history of the Cosmos, or the *history of the physical contemplation of the universe*, must not, therefore, be confounded with the history of the natural sciences, as given in many of our leading elementary works on physics and physiology, or on the morphology of plants and animals.

In order to give some idea of what has been collected at separate epochs under this point of view, it appears most desirable to adduce separate instances illustrative of the subjects which must either be treated of or discarded in the succeeding portions of this work. The discoveries of the compound microscope, of the telescope, and of colored polarization, belong to the history of the Cosmos, since they have afforded the means of discovering that which is common to all organisms; of penetrating into the remotest regions of space; of distinguishing between reflected or borrowed light, and the light of self-luminous bodies, or, in other words, determining whether