

gradual development and extension, have attained a higher degree of advancement, and until we shall have gained a more extended knowledge of the two grand divisions of the Cosmos—the external world, as made perceptible to us by the senses; and the inner, reflected intellectual world.

I think I have here sufficiently indicated the reasons which determined me not to give greater extension to the general picture of nature. It remains for this third and fourth volume of my *Cosmos* to supply much that is wanting in the previous portions of the work, and to present those results of observation on which the present condition of scientific opinion is especially grounded. I shall here follow a similar mode of arrangement to that previously adopted, for the reasons which I have advanced, in the delineation of nature. But, before entering upon the individual facts on which special departments of science are based, I would fain offer a few more general explanatory observations. The unexpected indulgence with which my undertaking has been received by a large portion of the public, both at home and abroad, renders it doubly imperative that I should once more define, as distinctly as possible, the fundamental ideas on which the whole work is based, and say something in regard to those demands which I have not even attempted to satisfy, because, according to my view of empirical—*i. e.*, experimental—science, they did not admit of being satisfied. These explanatory observations involuntarily associate themselves with historical recollections of the earlier attempts made to discover the one universal idea to which all phenomena, in their causal connection, might be reduced, as to a sole principle.

The fundamental principle* of my work on the Cosmos, as enunciated by me more than twenty years ago, in the French and German lectures I gave at Paris and Berlin, comprehended the endeavor to combine all cosmical phenomena in one sole picture of nature; to show in what manner the common conditions, that is to say, the great laws, by which individual groups of these phenomena are governed, have been recognized; and what course has been pursued in ascending from these laws to the discovery of their causal connection. Such an attempt to comprehend the plan of the universe—the order of nature—must begin with a generalization of particular facts, and a knowledge of the con-

* *Cosmos*, vol. i., p. 48-50, and 68-77.