

the descriptive natural history of all organized beings, are the fruitful sources whence we draw the materials necessary to give a solid basis to the study of the mutual relations and connection of phenomena.

We will here subjoin one important observation by way of elucidating the connection of which we have spoken. The first general glance over the vegetation of a vast extent of a continent shows us forms the most dissimilar—Gramineæ and Orchideæ, Coniferæ and oaks, in local approximation to one another; while natural families and genera, instead of being locally associated, are dispersed as if by chance. This dispersion is, however, only apparent. The physical description of the globe teaches us that vegetation every where presents numerically constant relations in the development of its forms and types; that in the same climates, the species which are wanting in one country are replaced in a neighboring one by other species of the same family; and that this *law of substitution*, which seems to depend upon some inherent mysteries of the organism, considered with reference to its origin, maintains in contiguous regions a numerical relation between the species of various great families and the general mass of the phanerogamic plants constituting the two floras. We thus find a principle of unity and a primitive plan of distribution revealed in the multiplicity of the distinct organizations by which these regions are occupied; and we also discover in each zone, and diversified according to the families of plants, a slow but continuous action on the aerial ocean, depending upon the influence of light—the primary condition of all organic vitality—on the solid and liquid surface of our planet. It might be said, in accordance with a beautiful expression of Lavoisier, that the ancient marvel of the myth of Prometheus was incessantly renewed before our eyes.

If we extend the course which we have proposed, following in the exposition of the physical description of the earth to the sidereal part of the science of the Cosmos, the delineation of the regions of space and the bodies by which they are occupied, we shall find our task simplified in no common degree. If, according to ancient but unphilosophical forms of nomenclature, we would distinguish between *physics*, that is to say, general considerations on the essence of matter, and the forces by which it is actuated, and *chemistry*, which treats of the nature of substances, their elementary composition, and those attractions that are not determined solely by the relations of mass, we must admit that the description of the earth comprises at