

of the mysterious and insoluble problems of origin and existence.

A cosmical history of the universe, resting upon facts as its basis, has, from the nature and limitations of its sphere, necessarily no connection with the obscure domain embraced by a *history of organisms*,* if we understand the word *history* in its broadest sense. It must, however, be remembered, that the inorganic crust of the Earth contains within it the same elements that enter into the structure of animal and vegetable organs. A physical cosmography would therefore be in

* The *history of plants*, which Endlicher and Unger have described in a most masterly manner (*Grundzüge der Botanik*, 1843, s. 449-468), I myself separated from the *geography of plants* half a century ago. In the aphorisms appended to my *Subterranean Flora*, the following passage occurs: "Geognosia naturam animantem et inanimam vel, ut vocabulo minus apto, ex antiquitate saltem haud petito, utar, corpora organica æque ac inorganica considerat. Sunt enim tria quibus absoluitur capita: Geographia oryctologica quam simpliciter Geognosiam vel Geologiam dicunt, virque acutissimus Wernerus egregie digessit; Geographia zoologica, cujus doctrinæ fundamenta Zimmermannus et Treviranus jecerunt; et Geographia plantarum quam æquales nostri diu intactam reliquerunt. Geographia plantarum vincula et cognationem tradit, quibus omnia vegetabilia inter se connexa sint, terræ tractus quos teneant, in aerem atmosphæricum quæ sit eorum vis ostendit, saxa atque rupes quibus potissimum algarum primordiis radicibusque destruantur docet, et quo pacto in telluris superficie humus nascatur, commemorat. Est itaque quod differat inter Geognosiam et Physiographiam, *historia naturalis* perperam nuncupatam quum Zoognosia, Phytognosia, et Oryctognosia, quæ quidem omnes in naturæ investigatione versantur, non nisi singulorum animalium, plantarum, rerum metallicarum vel (venia sit verbo) fossilium formas, anatomen, vires scrutantur. Historia Telluris, Geognosiæ magis quam Physiographiæ affinis, nemini adhuc tentata, plantarum animaliumque genera orbem inhabitantia primævum, migrationes eorum compluriumque interitum, ortum quem montes, valles, saxorum strata et venæ metalliferæ ducunt, aerem, mutatis temporum vicibus, modo purum, modo vitiatum, terræ superficiem humo plantisque paulatim obtectam, fluminum inundantium impetu denuo nudatam, iterumque siccitam et gramine vestitam commemorat. Igitur Historia zoologica, Historia plantarum et Historia oryctologica, quæ non nisi pristinum orbis terræ statum indicant, a Geognosia probe distinguendæ."—Humboldt, *Flora Friburgensis Subterranea, cui accedunt Aphorismi ex Physiologia Chemica Plantarum*, 1793, p. ix.-x. Respecting the "spontaneous motion," which is referred to in a subsequent part of the text, see the remarkable passage in Aristotle, *De Cælo*, ii., 2, p. 284, Bekker, where the distinction between animate and inanimate bodies is made to depend on the internal or external position of the seat of the determining motion. "No movement," says the Stagirite, "proceeds from the vegetable spirit, because plants are buried in a still sleep, from which nothing can arouse them" (Aristotle, *De Generat. Animal.*, v. i., p. 778, Bekker); and again, "because plants have no desires which incite them to spontaneous motion." (Arist., *De Somno et Vigil.*, cap. i., p. 455, Bekker.)