

tion of mathematical considerations on the articulation and expansion of continents; by geognostic conjectures regarding the connection of mountain chains, the action of clouds, and the former submersion of lands, which still bear all the traces of having constituted a dried portion of the sea's bottom. Favorable to the oceanic sluice-theory of Strabo of Lampsacus, the Alexandrian librarian was led, by the belief of the former swelling of the Euxine, the penetration of the Dardanelles, and the consequent opening of the Pillars of Hercules, to an important investigation of the problem of the equal level of the whole "*external sea*"* surrounding all continents." An additional proof of this philosopher's power of generalizing views is afforded by his assertions that the whole continent of Asia is traversed by a continually-connected mountain chain, running from west to east in the parallel of Rhodes (in the diaphragm of Dicæarchus).†

An animated desire to arrive at a generalization of views—the consequence of the intellectual movement of the age—gave rise to the first Greek measurement of degrees between Syene and Alexandria, and this experiment may be regarded as an attempt on the part of Eratosthenes to arrive at an approximative determination of the circumference of the Earth. In this case, it is not the result at which he arrived from the imperfect premises afforded by the *Bematists* which excites our interest, but rather the attempt to rise from the narrow limits of one circumscribed land to a knowledge of the magnitude of the whole earth.

A similar tendency toward generalization may be traced in the splendid progress made in the scientific knowledge of the heavens in the epoch of the Ptolemies. I allude here to the determination of the places of the fixed stars by the earliest Alexandrian astronomers, Aristyllus and Timochares; to Aristarchus of Samos, the cotemporary of Cleanthes, who, conversant with ancient Pythagorean views, ventured upon an in-

* On the physical and geognostical opinions of Eratosthenes, see Strabo, lib. i., p. 49-56; lib. ii., p. 108.

† Strabo, lib. xi., p. 519; Agathem, in Hudson, *Geogr. Græc. Min.*, vol. ii., p. 4. On the accuracy of the grand orographic views of Eratosthenes, see my *Asie Centrale*, t. i., p. 104-150, 198, 208-227, 413-415; t. ii., p. 367 and 414-435; and *Examen Critique de l'Hist. de la Géogr.*, t. i., p. 152-154. I have purposely called the measurement of a degree made by Eratosthenes as the first Hellenic one, since a very ancient Chaldean determination of the magnitude of a degree in camels' paces is not improbable. See Chasles, *Recherches sur l'Astronomie Indienne et Chaldéenne*, in the *Comptes Rendus de l'Acad. des Sciences*, t. xxiii., 1846, p. 851.