

the water lies the sphere of air, while outside of all comes the sphere of fire.”¹

With regard to the surface of the planet, Aristotle had formed some sagacious conclusions, though mingled with certain of the misconceptions that were prevalent in his time. In trying to gain a general impression of the manner in which geological problems were treated by him and the succeeding naturalists and philosophers of antiquity we may find it convenient to consider them under the three sections of (1) Underground processes; (2) Surface processes; and (3) Evidence of geological changes in the past.

1. *Underground Processes.* As Greece, from its special geological structure, has from time immemorial been subject to frequent earthquakes, the attention of the more reflective men in the country must have been early drawn to these subterranean disturbances and to a consideration of their possible cause. Aristotle has devoted a portion of his treatise on *Meteors* to a discussion of earthquakes, and has quoted the opinions of some earlier philosophers in regard to them. He tells us that Anaxagoras (B.C. 480) accounted for these disturbances by the descent of the surrounding ether into the depths of the earth; that Democritus (B.C. 460-357) thought they were caused by the bursting out of the mass of liquid within the earth, especially after heavy rains; and also, after the earth had become desiccated by the great commotion arising from the fall of water from the full spaces into those that were empty; and that Anaximenes (B.C. 544) supposed

¹ *Op. cit.* II. ii. 5. The sphere of fire, the “*flammantia moenia mundi*” of Lucretius, was the region of the stars and planets.