

to ultimate principles (the elements, as it were, of the elements), Plato exclaims, with modest diffidence, "God alone, and those whom he loves among men, know what they are." Such a mathematical mode of treating physical phenomena, together with the development of the atomic theory, and the philosophy of measure and harmony, have long obstructed the development of the physical sciences, and misled fanciful inquirers into devious tracks, as is shown in the history of the physical contemplation of the universe. "There dwells a captivating charm, celebrated by all antiquity, in the simple relations of time and space, as manifested in tones, numbers, and lines."\*

The idea of the harmonious government of the universe reveals itself in a distinct and exalted tone throughout the writings of Aristotle. All the phenomena of nature are depicted in the *Physical Lectures* (*Auscultationes Physicæ*) as moving, vital agents of one general cosmical force. Heaven and nature (the telluric sphere of phenomena) depend upon the "unmoved motus of the universe."† The "ordainer" and the ultimate cause of all sensuous changes must be regarded as something non-sensuous and distinct from all matter.‡ Unity in the different expressions of material force is raised to the rank of a main principle, and these expressions of force are themselves always reduced to motions. Thus we find already in "the book of the soul"§ the germ of the undulatory theory of light. The sensation of sight is occasioned by a vibration

\* *Cosmos*, vol. ii., p. 351, note. Compare also Gruppe, *Ueber die Fragmente des Archytas*, 1840, s. 33.

† Aristot., *Polit.*, vii., 4, p. 1326, and *Metaph.*, xii., 7, p. 1072, 10, Bekk., and xii., 10, p. 1074-5. The pseudo-Aristotelian work, *De Mundo*, which Osann ascribed to Chrysippus (see *Cosmos*, vol. ii., p. 28, 29), also contains (cap. 6, p. 397) a very eloquent passage on the *world-orderer* and *world-sustainer*.

‡ The proofs are collected in Ritter, *History of Philosophy* (Bohn, 1838-46), vol. iii., p. 180, *et seq.*

§ Compare Aristot., *De Anima*, ii., 7, p. 419. In this passage the analogy with sound is most distinctly expressed, although in other portions of his writings Aristotle has greatly modified his theory of vision. Thus, in *De Insomniis*, cap. 2, p. 459, Bekker, we find the following words: "It is evident that sight is no less an active than a passive agent, and that vision not only experiences some action from the air (the medium), but itself also acts upon the medium." He adduces in evidence of the truth of this proposition, that a new and very pure metallic mirror will, under certain conditions, when looked at by a woman, retain on its surface cloudy specks that can not be removed without difficulty. Compare also Martin, *Etudes sur le Timée de Platon*, tom ii. p. 159-163.