essential, but it was found to be convenient—mainly for didactic purposes—to elaborate such analogies, explaining or describing the less known by that which is more familiar. Regarding the value of such attempts there have always existed two opinions. I have had occasion to refer to them when explaining the atomic theory. There were those who looked upon that theory merely as a convenient symbolism, and there were those who looked upon atoms and molecules as really existing things. The latter view has gained force and importance through the necessity of more and more elaborating the atomic hypothesis in order to represent not merely the chemical constitution of compounds, but likewise their manifold physical differences, some of which, in fact, could only be described by geometrical conceptions. I need only refer to what I said above on the kinetic theory of gases, and on the property termed chirality manifested by some chemical substances in solution, as well as on the phenomena of isomerism. In the last

state of motion of a hot body, and that he had arrived at a conception which he had already before his first publication (in 1850) used for various investigations and calculations." He further states that hearing through William Siemens that Joule had expressed a similar idea (Manchester Phil. Soc., 1848 and 1857), and more especially after the publication of Krönig (1856), he resolved to publish his views. It is interesting for our present purpose to see how Clausius, like Maxwell in a different domain of research, was originally guided by definite mechanical representations. It is equally noteworthy that Lord Kelvin's original researches on the subject of heat were quite free from this element, though we owe to him in other departments some of the most suggestive kinetic illustrations; and that he has quite recently offered valuable criticisms on the attempted mechanical interpretation of the second law of thermo-dynamics (see p. 112 of Bryan's Report, quoted above, p. 176, note). Also the first English treatise on thermodynamics written for didactic purposes (Tait's Sketch, 1868) contains no reference to molecular theory, and Hirn, one of the most active workers in the region of experimental proofs, kept clear of it.