The idea of a medium of extreme rarity, pervading all space and interpenetrating all matter, capable also of the elastic reactions of a solid body, was not repugnant to physicists at the time when Maxwell wrote. Though violently opposed forty years earlier when proposed by Fresnel and Young, it had gradually, through the development of optical theories, become a well-recognised instrument of scientific thought. In such a medium a disturbance or displacement is propagated with a certain velocity dependent on its elastic nature—the so-called constants of density and rigidity. Now, looking upon a charge of electricity not as a material something—an imponderable—but as a displacement of the medium, the question arose, Does the velocity with which such a displacement travels compare at all with the known velocities of other elastic disturbances, such as light is conceived to be? It was known to electricians that an amount or charge of electricity can be either stationary (called statical electricity) or in motion (called an electric current); and Weber and Kohlrausch had in 1856 actually measured the number of units of statical electricity which must flow through an electric circuit in order to produce the known mechanical effect of a unit of electric current. The quantity which they found, and which corresponded to a velocity, was of the same order as the velocity with which the elastic disturbance which we call light is known to travel. Maxwell was the first

51. Correspondence between velocities of light and of electricity.

are only partial is proved by the divergence of the laws of the two sets of phenomena in other respects. We may chance to find, in the higher parts of physics, instances of more complete coincidence which may require much investigation to detect their ultimate divergence" (p. 188).