nished a foundation, there remained in physics mainly the investigation of the laws of interaction of bodies; for without interaction bodies would for ever remain in that state of rest or motion in which they happened to be.

these actions of ponderable matter, in which electricity was flowing, could be reduced to an action at a distance proportional to the inverse square of the elements of the electric circuits. When Faraday showed that a current of electricity under certain conditions induced in conductors in its neighbourhood other currents, this was explained by saying that the electric fluid exerted not only pondero-motoric but also electro-motoric action at a distance. Not only did electrified matter act on other electrified matter, but electricity as a fluid acted on electricity itself. Weber adopted, for the purpose of putting these apparent actions into mathematical language, and for finding an elementary law of the ultimate particles of electric matter out of which by summation the observable data might be calculated, the hypothesis of Fechner, according to which in an electric current the two electric fluids were moving with equal velocity in opposite directions. It then became evident —looking at the phenomena discovered by Oersted, Ampère, and Faraday — that the electro-static formula of Coulomb required to be supplemented by an additional term, if the mutual action was to be determined not only for the case of equilibrium and rest, but also for that of relative motion. The additional term, depending on this relative motion, had to be found. (See 'Electrodynamische Maasbestimmungen,' vol. i. p. 102). From this starting-point, and with this definite problem in view, Weber undertook a series of most valuable measurements. No doubt can exist as to the lasting importance of these measurements. Any theoretical conception which produces in its application such results must hold a prominent place in the history of scientific thought. And the very fact that, unlike Boscovich and other purely metaphysical theorists, Weber undertook to fix by experiment the actual constants or numerical quantities which his abstract formula contained, led to much enlargement of actual knowledge. I will mention only one of the most interesting points in his elaborate researches. I stated above that it took a whole century after the discovery of the law of gravitation before the gravitation constant was approximately fixed, but that for the progress of physical astronomy this was of little importance, gravity being a universal property of matter. Still such a constant exists, because we possess another definition of matter —*viz.*, inertia or mass. The constant in Coulomb's law cannot be determined in a similar manner, as the property of attraction or repulsion defines for us ultimately the numerical quantity of electricity. We have—so far—no other ultimate absolute measure of electricity. But in Weber's law it was the quantities of electrical matter which acted on each other not only according to their distances, but also according to their relative motion or their velocities. A second constant thus entered into his formula, and this constant established a relation between electricity at rest and electricity in motion. This constant was a velocity, and, if determinable, it revealed a constant of nature in