Boscovich's or similar formulæ, though the idea of action at a distance between the minute particles of matter underlies the theories by which Poisson, Navier, Cauchy, Lamé, and others calculated the effect of elastic forces in solid bodies, or the phenomena of light passing through transparent and crystalline substances. A different school of physicists, starting from ideas of a different kind, with which we shall become acquainted hereafter, have shown that specific notions as to the molecular structure of bodies are not required in order to deal with the phenomena referred to. Nevertheless, the idea of action at a distance governing the movements of immeasurably small, as it seemingly does those of immeasurably large masses in nature, received a great support by the development of two other branches of science, which belong essentially to the history of the present century.

34. Coulomb's measurements.

The sciences of electricity and magnetism can be said to have originated with Coulomb's accurate measurements with the torsion-balance. With this instrument he measured the attracting and repelling forces of bodies, electrified or magnetised, by comparing them with the mechanical forces required to twist a metallic wire. In this way he fixed what have ever since his time been termed the units of electricity or magnetism, reducing these quantities to the same system of measurement with which we measure the masses or inertia of moving bodies. His methods were adopted and modified and greatly perfected by Gauss and Weber—the

35. Extended by Gauss and Weber.

prise par Coriolis et Poncelet pour base de la mécanique physique, n'est autre que celle de Newton lui-même, comme on le voit non seulement dans son grand et principal ouvrage, mais dans le scholie général de sa non moins immortelle 'Optique.'"