

with great zeal, and after various conjectures was able to announce¹⁸ that the electricity was excited at the point where the steam is subject to friction in its emission. He found too that he could produce a like effect by the emission of condensed air. Following out his views, he was able to construct, for the Polytechnic Institution in London, a "Hydro-electric Machine," of greater power than any electrical machine previously made. Dr. Faraday took up the investigation as the subject of the Eighteenth Series of his *Researches*, sent to the Royal Society, Jan. 26, 1842; and in this he illustrated, with his usual command of copious and luminous experiments, a like view;—that the electricity is produced by the friction of the particles of the water carried along by the stream. And thus this is a new manifestation of that electricity, which, to distinguish it from voltaic electricity, is sometimes called *Friction Electricity* or *Machine Electricity*. Dr. Faraday has, however, in the course of this investigation, brought to light several new electrical relations of bodies.]

CHAPTER II.

THE PROGRESS OF ELECTRICAL THEORY.

THE cause of electrical phenomena, and the mode of its operation, were naturally at first spoken of in an indistinct and wavering manner. It was called the electric *fire*, the electric *fluid*; its effects were attributed to *virtues*, *effluvia*, *atmospheres*. When men's mechanical ideas became somewhat more distinct, the motions and tendencies to motion were ascribed to *currents*, in the same manner as the cosmical motions had been in the Cartesian system. This doctrine of currents was maintained by Nollet, who ascribed all the phenomena of electrized bodies to the contemporaneous afflux and efflux of electrical matter. It was an important step towards sound theory, to get rid of this notion of moving fluids, and to consider attraction and repulsion as statical forces; and this appears to have been done by others about the same time. Dufay¹ considered that he had proved the existence of two electricities, the vitreous and the resinous, and conceived each

¹⁸ *Phil. Mag.* Jan. 1842, dated Dec. 9, 1841.

¹ *Ac. Par.* 1733, p. 467.