

osophers, revealed a large array of strange and startling phenomena, which have latterly been brought somewhat into line and order by the researches of Prof. J. J. Thomson,¹ of Cambridge. A great many half-forgotten facts and experiments, which did not fit into the regular programme of electrical science or practice as it had been elaborated by the older doctrine of Coulomb and Weber on the one side, or by the more modern of Faraday and Maxwell on the other, were collected and shown to throw quite a new light on the processes of radiation and electrification, and on the relations of the atoms of ponderable matter to the vacuum, now looked upon as filled with a continuous substance, viz., the ether. The older views of the two electricities, brought before the eye by the celebrated figures of Lichtenberg;² many isolated facts connected with the electric spark and statical electricity, such as were collected by Riess seventy years ago, or demonstrated in the hydro-electric machine of Armstrong; theories, many times abandoned

¹ Impressed with the importance which attaches to the phenomena in question for a further development of the theory of electricity founded by Faraday and Maxwell, Prof. J. J. Thomson, in his 'Researches,' published in 1893 as a sequel to Maxwell's great treatise, devoted a long chapter to "The Passage of Electricity through Gases." His own celebrated contributions to this subject, after having been published in the 'Philosophical Magazine,' and brought before the Dover meeting of the British Association in 1899, are now summarised in his lectures on "The Discharge of Electricity through Gases" (1898). A very interesting earlier summary of the researches of

others as well as of their own by Elster and Geitel, will be found in the 'Annalen der Physik' (1889), vol. xxxvii. p. 315 *sqq.*

² Whilst the differences between the discharges from the positive and negative terminals, after having for a long time been looked upon as isolated curiosities of electrical science, were being taken up and studied in connection with the subject here referred to (see J. J. Thomson, 'Researches,' p. 172 *sqq.*), Lord Armstrong, during the past ten years of his long and eventful life, carried on a series of experiments on a large scale, and with very powerful specially designed apparatus, on 'Electrical Discharge in Air and Water' (1895).