described in the *Philosophical Transactions* for 1800, completely satisfies this aspiration; and was, in fact, a more important step in the history of electricity than the Leyden jar had been. It has since undergone various modifications, of which the most important was that introduced by Cruikshanks, who[4] substituted a trough for a pile. But in all cases the principle of the instrument was the same;—a continued repetition of the triple combination of two metals and a fluid in contact, so as to form a circuit which returns into itself.

Such an instrument is capable of causing effects of great intensity; as seen both in the production of light and heat, and in chemical changes. But the discovery with which we are here concerned, is not the details and consequences of the effects, (which belong to chemistry,) but the analysis of the conditions under which such effects take place; and this we may consider as completed by Volta at the epoch of which we speak.

CHAPTER II.

Reception and Confirmation of the Discovery of Voltaic Electricity.

GALVANI'S experiments excited a great interest all over Europe, in consequence partly of a circumstance which, as we have seen, was unessential, the muscular contractions and various sensations which they occasioned. Galvani himself had not only considered the animal element of the circuit as the origin of the electricity, but had framed a theory,[1] in which he compared the muscles to charged jars, and the nerves to the discharging wires; and a controversy was, for some time, carried on, in Italy, between the adherents of Galvani and those of Volta.[2]

The galvanic experiments, and especially those which appeared to have a physiological bearing, were verified and extended by a number of the most active philosophers of Europe, and especially William von Humboldt. A commission of the Institute of France, appointed in 1797, repeated many of the known experiments, but does not seem to have decided any disputed points. The researches of this commis-

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[4] Fischer, viii. p. 683. [1] Ib. viii. 618. [2] Ib. viii. 619.