in formulæ of remarkable simplicity and generality. In this Memoir, Professor Wheatstone describes an instrument which he terms *Rheostat*, because it brings to a common standard the voltaic currents which are compared by it. He generalizes the language of the subject by employing the term *rheomotor* for any apparatus which originates an electric current (whether voltaic or thermoelectric, &c.) and *rheometer* for any instrument to measure the force of such a current. It appears that the idea of constructing an instrument of the nature of the Rheostat had occurred also to Prof. Jacobi, of St. Petersburg.]

The galvanometer led to the discovery of another class of cases in which the electrodynamical action was called into play, namely, those in which a circuit, composed of two metals only, became electro-magnetic by *heating* one part of it. This discovery of *thermo-electricity* was made by Professor Seebeck of Berlin, in 1822, and prosecuted by various persons; especially by Prof. Cumming⁶ of Cambridge, who, early in 1823, extended the examination of this property to most of the metals, and determined their thermo-electric order. But as these investigations exhibited no new mechanical effects of electromotive forces, they do not now further concern us; and we pass on, at present, to a case in which such forces act in a manner different from any of those already described.

DISCOVERY OF DIAMAGNETISM.

[2nd Ed.] [By the discoveries just related, a cylindrical spiral of wire through which an electric current is passing is identified with a magnet; and the effect of such a spiral is increased by placing in it a core of soft iron. By the use of such a combination under the influence of a voltaic battery, magnets are constructed far more powerful than those which depend upon the permanent magnetism of iron. The electro-magnet employed by Dr. Faraday in some of his experiments would sustain a hundred-weight at either end.

By the use of such magnets Dr. Faraday discovered that, besides iron, nickel and cobalt, which possess magnetism in a high degree, many bodies are magnetic in a slight degree. And he made the further very important discovery, that of those substances which are not magnetic, many, perhaps all, possess an opposite property, in virtue of which he terms them *diamagnetic*. The opposition is of this kind ;—

[•] Camb. Trans. vol. ii. p. 62. On the Development of Electro-Magnetism by Heat.