

water, or other substance in which the two wires are plunged, be separated into two portions, provided these portions are connected by muscular or other fibres. This use of muscular fibres was, probably, a remnant of the original disposition, or accident, by which galvanism had been connected with physiology, as much as with chemistry. Davy, however, soon went on towards the conclusion, that the phenomena were altogether chemical in their nature. He had already conjectured,⁴ in 1802, that all decompositions might be *polar*; that is, that in all cases of chemical decomposition, the elements might be related to each other as electrically *positive* and *negative*; a thought which it was the peculiar glory of his school to confirm and place in a distinct light. At this period such a view was far from obvious; and it was contended by many, on the contrary, that the elements which the voltaic apparatus brought to view, were not liberated from combinations, but generated. In 1806, Davy attempted the solution of this question; he showed that the ingredients which had been supposed to be produced by electricity, were due to impurities in the water, or to the decomposition of the vessel; and thus removed all preliminary difficulties. And then he says,⁵ "referring to my experiments of 1800, 1801, and 1802, and to a number of new facts, which showed that inflammable substances and oxygen, alkalies and acids, and oxidable and noble metals, were in electrical relations of positive and negative, I drew the conclusion, *that the combinations and decompositions by electricity were referrible to the law of electrical attractions and repulsions,*" and advanced the hypothesis, "*that chemical and electrical attractions were produced by the same cause, acting in the one case on particles, in the other on masses; . . . and that the same property, under different modifications, was the cause of all the phenomena exhibited by different voltaic combinations.*"

Although this is the enunciation, in tolerably precise terms, of the great discovery of his epoch, it was, at the period of which we speak, conjectured rather than proved; and we shall find that neither Davy nor his followers, for a considerable period, apprehended it with that distinctness which makes a discovery complete. But in a very short time afterwards, Davy drew great additional notice to his researches by effecting, in pursuance, as it appeared, of his theoretical views, the decomposition of potassa into a metallic base and oxygen. This was, as he truly said, in the memorandum written in his journal at the

⁴ *Phil. Trans.* 1826.

⁵ *Ib.* 1826, p. 339