

the decompositions so effected, the acids and oxygen become transferred to, and accumulated around, the positive,—and hydrogen, metals, and alkalies round the negative, pole of a Voltaic circuit; being transferred in an invisible, and, as it were, a latent or torpid state, by the action of the electric current, through considerable spaces, and even through large quantities of water or other liquids, again to re-appear with all their properties at their appropriate resting-places.

(375.) It was in this state of things, that the subject was taken up by Davy, who, seeing that the strongest chemical affinities were thus readily subverted by the decomposing action of the pile, conceived the happy idea of bringing to bear the intense power of the enormous batteries of the Royal Institution on those substances which, though strongly suspected to be compounds, had resisted all attempts to decompose them—the alkalies and earths. They yielded to the force applied, and a total revolution was thus effected in chemistry; not so much by the introduction of the new elements thus brought to light, as by the mode of conceiving the nature of chemical affinity, which from that time has been regarded (as Davy broadly laid it down, in a theory which was readily adopted by the most eminent chemists, and by none more readily than by Berzelius himself,) as entirely due to electric attractions and repulsions, those bodies combining most intimately whose particles are habitually in a state of the most powerful electrical antagonism, and dispossessing each other, according to the amount of their difference in this respect.

(376.) The connection of magnetism and electricity had long been suspected, and innumerable fruitless trials had been made to determine, in the affirmative or negative, the question of such connection. The phenomena of many crystallized minerals which become electric by heat, and develop opposite electric poles at their two extremities, offered an analogy so striking to the polarity of the magnet, that it seemed hardly possible to doubt a closer connection of the two powers. The development of a similar polarity in the Voltaic pile pointed