

BOOK XIV.

CHEMISTRY.

CHAPTER IX.

THE ELECTRO-CHEMICAL THEORY.

AMONG the consequences of the Electro-chemical Theory, must be ranged the various improvements which have been made in the voltaic battery. Daniel introduced between the two metals a partition permeable by chemical action, but such as to allow of two different acid solutions being in contact with the two metals. Mr. Grove's battery, in which the partition is of porous porcelain, and the metals are platinum and amalgamated zinc, is one of the most powerful hitherto known. Another has been constructed by Dr. Callan, in which the negative or conducting plate is a cylinder of cast iron, and the positive element a cylinder of amalgamated zinc placed in a porous cell. This also has great energy.

The Number of Elementary Substances.

There have not been, I believe, any well-established additions to the list of the simple substances recognized by chemists. Indeed the tendency at present appears to be rather to deny the separate elementary character of some already announced as such substances. Pelopium and Niobium were, as I have said, two of the new metals. But Naumann, in his *Elemente der Mineralogie* (4th ed. 1855), says, in a foot note (page 25): "*Pelopium* is happily again got rid of; for Pelopic Acid and Niobic Acid possess the same Radical. *Donarium* had a still shorter existence."

In the same way, when Hermann imagined that he had discovered a new simple metallic substance in the mineral Samarskite from Miask, the discovery was disproved by H. Rose (*Pogg. Ann. B.* 73, s. 449).