

CHAPTER V.

CHEMISTRY OF GASES.—BLACK. CAVENDISH.

THE study of the properties of aëriform substances, or Pneumatic Chemistry, as it was called, occupied the chemists of the eighteenth century, and was the main occasion of the great advances which the science made at that period. The most material general truths which came into view in the course of these researches, were, that gases were to be numbered among the constituent elements of solid and fluid bodies; and that, in these, as in all other cases of composition, the compound was equal to the sum of its elements. The latter proposition, indeed, cannot be looked upon as a discovery, for it had been frequently acknowledged, though little applied; in fact, it could not be referred to with any advantage, till the aëriform elements, as well as others, were taken into the account. As soon as this was done, it produced a revolution in chemistry.

[2nd Ed.] [Though the view of the mode in which gaseous elements become fixed in bodies and determine their properties, had great additional light thrown upon it by Dr. Black's discoveries, as we shall see, the notion that solid bodies involve such gaseous elements was not new at that period. Mr. Vernon Harcourt has shown¹ that Newton and Boyle admitted into their speculations airs of various kinds, capable of fixation in bodies. I have, in the succeeding chapter (chap. vi.), spoken of the views of Rey, Hooke, and Mayow, connected with the function of airs in chemistry, and forming a prelude to the Oxygen Theory.]

Notwithstanding these preludes, the credit of the first great step in pneumatic chemistry is, with justice, assigned to Dr. Black, afterwards professor at Edinburgh, but a young man of the age of twenty-four at the time when he made his discovery.² He found that the difference between caustic lime and common limestone arose from this, that the latter substance consists of the former, combined with a certain air, which, being thus fixed in the solid body, he called *fixed air* (carbonic

¹ *Phil. Mag.* 1846.

² Thomson's *Hist. Chem.* i. 317.