

definition which has been put forth in various ways ever since Lavoisier's time, when he and Laplace tried to explain the existence of animal heat in this manner. The progress of science in the course of the century which followed Lavoisier has more and more confirmed the importance of the *rôle* which oxygen plays, but has also shown how very complex are the products of oxygenation in the living organism,—how the living processes are indeed chemical processes, but are quite different from those of the chemical laboratory. As Claude Bernard says, "The chemistry of the laboratory is carried on by means of reagents and apparatus which the chemist has prepared, and the chemistry of the living being is carried on by means of reagents and apparatus which the organism has prepared."¹ One of the great performances of living matter is the production, another is the storing up and distribution, of oxygen. But though we know that the chlorophyll-containing cells of green plants, under the influence of sunlight, are able to decompose that very inert body, carbonic acid, breathed out by both animals and plants, into free oxygen and carbon, allowing the carbon to be retained or utilised in the form of more or less complex carbohydrates, and though

¹ See especially the extensive explanations in the 'Rapport sur les progrès de la Physiol. gén.' (1867, p. 133 *sqq.*): "Les phénomènes physico-chimiques qui se passent dans les corps vivants sont exactement les mêmes, quant à leur nature, quant aux lois qui les régissent et quant à leurs produits, que ceux qui se passent dans les corps bruts; ce qui diffère, ce sont seulement les

procédés et les appareils à l'aide desquels ils sont manifestés. . . . Il est déjà prouvé qu'un grand nombre de phénomènes qui s'accomplissent dans les corps vivants peuvent être reproduits artificiellement, en dehors de l'organisme, dans le monde minéral. Mais ce que l'on ne peut pas reproduire, ce sont les procédés et les outils spéciaux de l'organisme vivant" (p. 222).