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MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

*THE THEORY OF RESPIRATION.**

I ASK you to consider with me a topic which is of fundamental interest to physiologists, whether they concern themselves primarily with animals or with plants. I take it the basal identity of the living matter in all organisms and of its metabolism needs neither demonstration nor emphasis at my hands. Nor do I need to lay stress upon the importance of respiration as one of these metabolic phenomena, since it has been recognized from the earliest period as indispensable to life. The phlogiston theory of the composition of the atmosphere had scarcely disappeared below the scientific horizon, before the fact was discovered that there occurs, in animals and in plants alike, an intake of oxygen and an output of carbon dioxide which is intimately related to their existence. This became obvious to man, of course, in his own experience, a very superficial study of the composition of the air inspired and expired from the lungs showing that it had lost oxygen and gained CO_2. This much of respiration was early recognized to occur also with the larger animals, and a few years later like observations were made upon plants by Priestley, and more accurately by Lavoisier and Ingenhouss. Even this knowledge of respiration was not possible before Priestley's discovery of oxygen in 1774, and the very remarkable revolution in chemistry that followed in the closing years of the eighteenth century. Yet

* Address of the retiring president before the Botanical Society of America, Philadelphia, December 28, 1904. Published simultaneously in the *Botanical Gazette*.