

is only of late years that we may be said to have obtained any accurate knowledge as to the real nature of this important function; and there is perhaps no branch of physiology which exhibits in its history a more humiliating picture of the wide sea of error in which the human intellect is prone to lose itself, when the path of philosophical induction is abandoned, than the multitude of wild and visionary hypotheses, devoid of all solid foundation, and perplexed by the most inconsistent reasonings, which formerly prevailed with regard to the objects and the processes of respiration. To give an account, or even a brief enumeration of these theories, now sufficiently exploded, would be incompatible with the purpose to which I must confine myself in this treatise.* I shall content myself, therefore, with a concise statement of such of the leading facts relating to this function, as have now, by the labours of modern physiologists, been satisfactorily established, and which serve to elucidate the beneficent intentions of nature in the economy of the animal system.

Atmospheric air acts without difficulty upon the blood while it is circulating through the vessels which are ramified over the membranes lining the air cells of the lungs; for neither these membranes, nor the thin coats of the vessels themselves, present any obstacle to the transmission of chemical elements from the one to the other. The blood being a highly compound fluid, it is exceedingly difficult to obtain an accurate analysis of it, and still more to ascertain with precision the different modifications which occur in its chemical condition at different times: on this account, it is scarcely possible to determine, by direct observation, what are the exact chemical changes, which that fluid undergoes

* For an account of the history of the various chemical theories which have prevailed on this interesting department of Physiology, I must refer to the "Essay on Respiration," by Dr. Bostock, and also to the "Elementary System of Physiology," by the same author, which latter work comprises the most comprehensive and accurate compendium of the science that has yet appeared.