

**A TREATISE ON THE
PHYSIOLOGICAL
ANATOMY OF THE LUNGS**

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A Treatise on the Physiological Anatomy of the Lungs by James Newton Heale

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PHYSIOLOGICAL ANATOMY OF THE LUNGS.

INTRODUCTION.

It has been already demonstrated with more than sufficient clearness in former publications, by the author of the following pages, that every organ of the body is GALVANIZED into its vital activity, through the instrumentality of the atmospheric oxygen, acting upon the blood in the lungs. Hitherto it had been assumed by *some* writers, that the various vital combinations were attributable to an invisible fluid, *resident in the nervous system*; by *others*, it was contended, that they depended upon a vague "something," to which they gave the name of the function of "nutrition," which was supposed to be influenced by a "principle" of vitality, *resident in the various cytoblasts*, which occupy different stations or localities in the body.

The word "nutrition" was used as a kind of diminutive, implying a resemblance to that pro-

cess whereby infants are suckled; and it was supposed that the cytoblasts were bribed to do their work, by each sort of nucleated cell having its peculiar tastes gratified. This theory may be called the doctrine of "choice," or "secondary assimilation."

Each of these hypotheses has given way to, or been entertained in conjunction with, one another, or with others still more impossible and contradictory.

There has, however, prevailed among them one, and only one, consistency—viz., that they have, one and all, concurred in ignoring the function of "breathing," as possessing any physiological significance or importance whatever.

Physiological writers did not indeed deny that the organs by which respiration was performed might occasionally be useful appendages to vocalists and professional lecturers, who might have the opportunity of turning them to pecuniary profit; and they were even willing to admit that they might sometimes be employed advantageously in "aërating" some of the fluids of the body, after the fashion of the makers of soda-water: but they never took the trouble to investigate what particular purpose the aërating of the fluids was calculated to accomplish, nor whether it had *any* purpose, further than that of bottling up a certain amount of oxygen, for some future use in some undefined part of the body. When and

where it was destined to be employed was considered as constituting a question wholly distinct and apart from that relating to the function of breathing.

Practical writers were disposed to consider the lungs as capricious organs, incessantly prone to give trouble, by an over-zealous discharge of their function of "nutrition," and thereby running, and sometimes galloping, into a "consumption." And so far from viewing the lungs as constituting any essential part of the body, without the aid of which no single function could be discharged, the majority would doubtless have voted them to be a very inconvenient appendix, which it would be a great triumph of "surgery" to get rid of altogether, provided persons could afterwards do their talking by the aid of some mechanical substitute.

These views respecting the merely local nature of the respiratory operations have been already controverted by the author, and the true purposes of the lungs and the manner in which they discharge their functions have been dilated upon in former publications at sufficient length; and it has been thereby abundantly proved, and (it is believed) the facts are now universally acknowledged by the tacit, though somewhat ungenerous, acquiescence of physiologists, viz., that the respiratory changes constitute the exciting cause of all the vital operations throughout the body.

and establish the link of connexion which binds together all the functions of animal existence.

Repudiating, then, the idea that the function of respiration is a process belonging exclusively to the lungs, or that it can be fully understood by merely studying the shape and structure of those organs, it follows that the investigation of all the points comprised in that process would involve neither more nor less than an inquiry into the *modus operandi* of physiological operations of every sort and kind.

It is obvious, however, that the points contained in the few following pages do not embrace so wide a scope. The object is simply to condense, into as small a compass as possible, those observations respecting the actual anatomical structure of the lungs (as far as *that* relates to their physiological performances), wherein a series of observations, extended over a period of many years, enables the author confidently to declare that the accounts which have hitherto prevailed are inaccurate, and to bring forward fresh anatomical facts, which his own researches have enabled him to verify.

With the view of circumscribing what he has himself to communicate into the smallest possible bulk, he has omitted all the known and undisputed facts that have been advanced by others.

In following out these intentions, he has been