

**ELEMENTS OF THE
ANATOMY, PHYSIOLOGY
AND HYGIENE OF THE
HUMAN SYSTEM**

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Elements of the Anatomy, Physiology and Hygiene of the Human System by Justin R. Loomis

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BY
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The present edition has been revised throughout, but the only important changes have been in the chapter on digestion. The section on the individual muscles has been retained, but as an appendix. No considerable difficulty will be experienced in the use of this and former editions in the same class.

JOSEPH J. LITTLE,
Stereotyper, Electrotyper, and Printer,
108 to 114 Wooster St., N. Y.

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PREFACE.

A KNOWLEDGE of human Anatomy and Physiology is not confined to the medical profession, nor to professed scholars. It has become a part of general education, and is always attainable in our advanced schools, both public and private. The study becomes professional when it is pursued to minute details, but the general structure of the body, the uses of the several parts, the conditions upon which their healthy action depends, and the circumstances by which such action may be interfered with, should be understood by all. The physical well-being of ourselves and of those with whom we stand connected, depends in a great measure upon our acquaintance with these laws of our organization.

It is the design of the following work to present these principles in a form adapted to class instruction.

The first object has been a suitable arrangement. Such an analysis of the objects and wants of the system is given as leads to an obvious classification of the organs of the body. This enables the learner to see at once what subjects are to be investigated, and in what order they naturally present themselves, and to know when his work is done. Until the facts of a science are thus arranged, upon some principle of relation, they do not constitute a science, and can serve no purpose either of practical application or of furnishing enjoyment or mental discipline.

The Physiology and Hygiene of the several classes of organs are so obviously associated with their structure, that it was thought better to introduce them in immediate connection with the anatomical descriptions. The repetition which would be almost necessary if they were treated in separate sections is thus avoided.

Many subjects of collateral interest have been presented in the form of notes. This has been done in order that the consecutiveness of arrangement in the text might not be interfered with.

The second object has been compression. It is one of the serious difficulties met with by teachers, that their text-books are not too

comprehensive, but too large. In most of the branches of study, they should be of such size that they can be completed in a single term. And in addition to this, time enough should be allowed for thorough review. A subject that is worth studying is worth re-viewing. The principles should not only be understood, but they should be repeated so many times that they cannot be forgotten. Every scholar should become so familiar with the subjects of his study as to be able to take up any of the parts, and give a ready and intelligible account of it.

Whenever conclusions rest upon reasoning which is complex and difficult, special effort has been made to render the expression of the reasoning as clear and little involved as possible. But to simplify and popularize it in any other way has not been attempted, nor would such a course be likely to secure for it additional favor. Hence, technical terms have not been discarded. In entering upon a new subject of study, the learner will necessarily meet with new terms, and it is best to employ those which express the ideas that are peculiar to the study with the greatest precision, and the least circumlocution. Science has a language in some respects peculiar to itself, and so has the counting-room and the farm. Each claims its own language, its technical terms, because the ideas to be expressed are peculiar and require such terms.

A glossary of technical terms has been combined with the index, and, as a matter of convenience to pupils, the pronunciation has also been marked.

The several subjects are so fully illustrated by figures, that teachers, it is believed, will not find it necessary to avail themselves of anatomical plates to facilitate instruction.

The author has endeavored to bring the important principles of extended treatises on these subjects into a sufficiently narrow compass, to divest them somewhat of the professional cast which they there assume, and put them into a form in which they will be intelligible to pupils, and to give them an arrangement that will show their connection with each other, as parts of a single branch of science. In attempting to do this he has been guided by his experience as a teacher for many years. He now offers the work to the public in the hope that it will meet the approval of those to whom the instruction of youth is committed.

ANATOMY, PHYSIOLOGY, AND HYGIENE.

INTRODUCTION.

1. It is the *object* of Anatomy to describe the human body, the structure, form, and position of its several organs. It is the object of Physiology to describe the uses and relations of these organs. It is the object of Hygiene to develop the principles upon which the healthy action of these organs depends. The three may be kept distinct as departments of professional study; but, as branches of general education, they are more conveniently studied together.

2. In order to arrive at a convenient classification of these organs, it is necessary to consider the object for which the body is furnished. We, that is our minds, can exert no *direct control*¹ over the material objects around

¹ This statement can scarcely need illustration. We cannot, for instance, by a mere exertion of the will, cause a book which lies before us to change its place. Such change can be made only by the application of physical force. Perhaps we might have been so constituted that we could have controlled directly other matter, as we do our bodies; but such power has not been given us, and those who pretend to possess it either deceive, in reference to the effect itself, or the effect is produced by the application of ordinary physical force, exerted in such a way as to elude our observation. The most successful efforts of jugglery are of this last kind. The skill consists mainly in the power which performers acquire of moving the

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1. What is the object of Anatomy? Of Physiology? Of Hygiene?
 2. Why is a physical system necessary?