

**APPLIED PHYSIOLOGY:
INCLUDING THE
EFFECTS OF ALCOHOL
AND NARCOTICS**

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Applied Physiology: Including the Effects of Alcohol and Narcotics by Frank Overton

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THE EFFECTS OF ALCOHOL
AND NARCOTICS

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INTERMEDIATE GRADE

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PREFACE

THE author of this intermediate grade of *Applied Physiology* has designed the work to be not merely an introduction to the study of anatomy and physiology, but a complete elementary work in itself, giving a clear picture of how each organ of the body performs its work.

In presenting hygienic facts to pupils before they have an elementary knowledge of anatomy and physiology, there is a violation of pedagogical principles. The laws of healthful living cannot be grasped without this elementary knowledge of the human machine to which the laws apply. Advice to a pupil will have an effect in direct proportion to the confidence reposed in the teacher. New environments and duties demand new applications of laws. Every business man is often compelled to break common hygienic laws in regard to eating, exposure, and overwork. Thus mere advising conduces but little toward intelligent living. On the other hand, prohibition arouses in children a desire to do the forbidden thing, especially if it be a rule insisted upon at school. Moreover, the unavoidable inconsistencies of teachers themselves will upset the pupil's confidence in all laws. For these reasons dogmatic hygienic advice is avoided, but anatomical and physiological facts are simply stated and developed.

By way of example, however, it has seemed wise to indicate detailed hygienic applications of physiology and anatomy along a single line, leaving it to teachers to apply the same principles to other abuses of the body in answer to

the numerous questions which every class will undoubtedly ask. For this purpose the subject of alcohol and tobacco has been selected, both because of their wide-spread abuse, and also because of their universal effect upon all parts of the body. In this way the pupil will be made to realize the wide-spread results of abusing even a single part of the body. Great care has been exercised to make the discussion of stimulants and narcotics correct in every particular, and to bring it fully into conformity with the most recent temperance legislation.

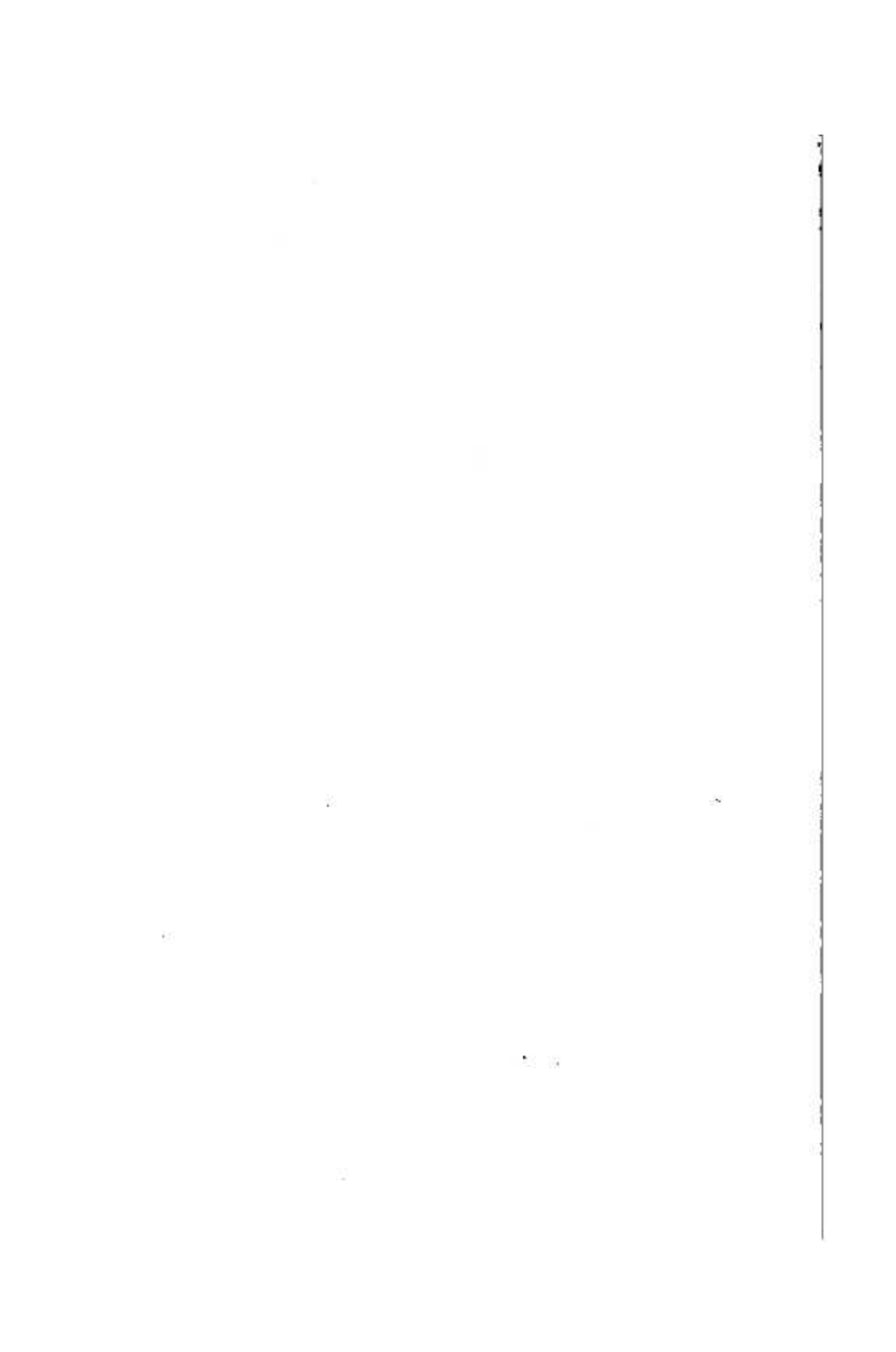
The cuts are mostly selected from the author's advanced work, but a few original ones have been added. The microscopic appearances of tissues have been especially emphasized.

Practical demonstrations have been omitted; for, without explanations, they are meaningless to pupils of the intermediate grades. Yet, without demonstrations the intelligent study of unfamiliar parts is impossible. Teachers will find an outline of a complete, yet simple, series of experiments in the author's advanced work.

With the desire to supply a long-felt want, the author presents these results of experience and thought to teachers and pupils.

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APPLIED PHYSIOLOGY



CHAPTER I

CELLS

1. The *ameba*. — In moist earth there lives a little animal called the *ameba*. It is so small that you cannot see it without a magnifying glass many times as strong as the best spectacles. When you do see it you will not know that it is an animal, for it has neither eyes, nor head, nor arms, nor legs. It is simply like a lump of jelly. But if you look a minute, you will see it put forth some part of its body like a finger to take a little lump of food. This finger is also a mouth and swallows the food. Then the



An amoeba, sketched at intervals of ten seconds ($\times 400$).

finger becomes a stomach and changes the food to blood so that the animal can grow. When it wants to go for a walk, it puts forth a finger, and then the whole body rolls itself into the finger, and thus it moves forward. So the little amoeba can make an arm, or a mouth, or a stomach, or a leg, wherever and whenever it wants to.