

**A COURSE OF
ELEMENTARY PRACTICAL
PHYSIOLOGY**

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A Course of Elementary Practical Physiology by M. Foster & J. N. Langley

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PRACTICAL PHYSIOLOGY,

BY

M. FOSTER, M.D., F.R.S.,

FELLOW OF, AND PREELECTOR IN PHYSIOLOGY IN, TRINITY COLLEGE,
CAMBRIDGE.

ASSISTED BY

J. N. LANGLEY, B.A.,

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PREFACE.

EVER since I began teaching Practical Physiology in University College, London, I have been in the habit of distributing among my students a syllabus to guide them in their work. By the introduction of fuller details what was at first a Syllabus has been changed into a Practical Course, which I now venture to publish in the hope that it may be found useful to others.

I fear that its use will be much restricted by the fact that in it Histology and Physiology are closely combined instead of being separated into two or more distinct courses. Although, in practice at least, I stand alone, I believe, in this matter, continued experience makes me more and more convinced that the plan which I adopt is, though troublesome, the safest one. Histological work, unless it be salted with the salt either of physiological or of morphological ideas, is apt to degenerate into a learned trifling of the very worst description; and students are generally only too ready to spend far too much of their time in the fascinating drudgery of cutting sections and mounting stained specimens. In morphological questions the physiologist has but an indirect interest; and details of microscopic structure ought only to occupy his attention in so far as they serve as a basis for physiological deductions. The reader in looking through this little book

will see that in it structure and function go hand in hand. In the case of each tissue or organ, as far as is practicable, the anatomy and histology are first studied, and then without delay the physiology, so that the student may, in learning what is known concerning the action of the part, form an opinion of the relative importance of the structural details.

The various topics are arranged in the order of my lectures, each Lesson containing the practical work corresponding to one or more lectures. In those lectures I first deal with the animal body as a collection of fundamental tissues, each tissue having a conspicuous and characteristic property or characteristic properties, and then consider the ways in which these tissues are arranged in mechanisms, and coordinated into an organic whole. Thus the student is first introduced to the 'structure and properties of blood, muscle, nervous tissue, and what, for want of a better name, I have called 'indifferent tissues'. Next comes the vascular mechanism, constructed out of the preceding tissues, and carrying on its work by means of their properties. I have found it practically convenient thus to break the series of fundamental tissues by the early introduction of this important mechanism. Returning to the fundamental tissues, the secreting tissues are next considered, under the divisions of the digestive, with which the lymphatics are not unnaturally taken, the respiratory, with which comes the respiratory mechanism, and the urinary, the practical work on the urine being an accompaniment to lectures on the general facts of nutrition. The great nervous mechanism of the body is then attacked, first as regards the special senses and then with reference to the spinal

cord and brain. The Lesson on the larynx is from its very nature disconnected from the others. The tissues of reproduction naturally form the subject of the concluding Lesson.

I have called it an Elementary Course because my class is divided into an Elementary and an Advanced Division, and this work is intended for the former only. I have found it, however, practically convenient to go into some subjects fully in the Elementary Class and to leave certain other subjects entirely for the advanced class. Thus while, on the one hand, some topics seem to be treated here in a more than elementary manner; others, on the other hand, *e.g.* the ear and hearing, binocular vision, &c., are entirely absent, being reserved for the advanced class.

I presuppose the student to have gone through a course of Elementary Biology, in which he has worked out the Lessons of Prof. Huxley and Dr Martin. He will thus have acquired a knowledge of the fundamental principles of Histology and Physiology, know how to use his microscope and possess a good acquaintance with the Anatomy of the Frog. The dissection of the dog and the rabbit as directed in Lesson I., in which attention is paid only to details of physiological importance, will at once put him in a position for the study of Physiology, strictly so called.

The instructions given are generally complete in themselves; but the student should have access to the Handbook of the Physiological Laboratory, to which (under the abbreviation *Hdb.*) he is frequently referred.

The demonstrations, appended to each Lesson illustrate the lecture belonging to the Lesson, and are for the most