

**THE FROG: AN
INTRODUCTION TO
ANATOMY, HISTOLOGY
AND EMBRYOLOGY**

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The frog: an introduction to anatomy, histology and embryology by A. Milnes Marshall

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THE FROG:

AN INTRODUCTION TO

ANATOMY, HISTOLOGY, AND EMBRYOLOGY.

BY

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Fifth Edition.

REVISED AND ILLUSTRATED.



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SMITH ELDER, & CO., WATERLOO PLACE.

1894.

PREFACE TO THE FIRST EDITION.

THE Owens College Course of Elementary Biology, which forms part of the scheme of study prescribed by the Victoria University, is of a rather more extended and comprehensive nature than the courses held elsewhere under the same name; and experience has shown me that there is want of a book that will guide and direct the student through the practical part of his work, the whole ground of which is covered by no one of the existing manuals. It is to meet this want that the present little work has been prepared.

This first instalment of the work consists of an Introduction, containing practical instruction in the methods employed in biological investigation; followed by the application of these methods to the examination, both anatomical and histological, of an actual animal. For this purpose the frog has been selected as being easy to obtain, convenient to dissect, and a fairly typical example of the great group of Vertebrate animals. Where, from its small size or for other reason, the frog has proved unsuitable, other animals have been substituted for it.

For convenience of reference, and in order to definitely stamp the practical character of the work, directions for dissection, etc., have throughout been printed in italics.

It is not expected that the student should do the whole of

the work here given the first time he goes over it. The dissection of the muscles and of the cranial nerves should only be attempted if time remain after the other work is completed.

In preparing this first part I have received very valuable assistance from Dr. Hartog, Demonstrator of Biology in the College, and from my friend and pupil Mr. C. H. Hurst. I am also much indebted to Prof. Gangee and to Mr. Waters for the important help they have given me in the histological portions.

OWENS COLLEGE,

August, 1882.

PREFACE TO THE THIRD EDITION.

SINCE the appearance of the former editions, the publication of the Junior Course of Practical Zoology by Dr. Hurst and myself has completed, so far as Animal Morphology is concerned, the Owens College Course of Elementary Biology.

I have retained *The Frog* in its original form, as the mode of treatment is more elementary, and in some ways different from that of the larger book. The present edition has been carefully revised, and an account of the development of the Frog has been added. In preparing this account, I have had the advantage of examining some excellent series of sections mounted by my friends and former pupils, Mr. H. Sidebotham, and Mr. A. E. Giles.

OWENS COLLEGE,

July, 1888.

PREFACE TO THE FIFTH EDITION.

THE principal changes in the present edition are in the chapter on Embryology, in which some new figures have been introduced and some mistakes corrected.

In revising the book I have received valuable aid from my friends Dr. Hurst and Mr. Gamble, Assistant Lecturers in Zoology in the College.

OWENS COLLEGE,

December, 1893.

NOTE.

THE preparation of the present (fifth) edition for the printer was Professor Marshall's last professional act, and was completed only a week before his death.

In correcting the proofs I have made no change of any importance.

C. HERBERT HURST.

OWENS COLLEGE,

April, 1894.