

**PRINCIPLES OF ZOOLOGY: TOUCHING THE
STRUCTURE, DEVELOPMENT, DISTRIBUTION
AND NATURAL ARRANGEMENT OF THE
RACES OF ANIMALS, LIVING AND EXTINCT;
PART I. COMPARATIVE PHYSIOLOGY FOR
THE USE OF SCHOOLS AND COLLEGES**

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Principles of Zoology: Touching the Structure, Development, Distribution and Natural Arrangement of the Races of Animals, Living and Extinct; Part I. Comparative Physiology for the Use of Schools and Colleges by Louis Agassiz & A. A. Gould

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LOUIS AGASSIZ & A. A. GOULD

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RACES OF ANIMALS, LIVING AND EXTINCT

WITH NUMEROUS ILLUSTRATIONS.

PART I.

COMPARATIVE PHYSIOLOGY.

FOR THE USE OF SCHOOLS AND COLLEGES.

BY

LOUIS AGASSIZ AND A. A. GOULD.

REVISED EDITION.

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P R E F A C E .

THE design of this work is to furnish an epitome of the leading principles of the science of Zoölogy, as deduced from the present state of knowledge, so illustrated as to be intelligible to the beginner. No similar treatise now exists in this country, and, indeed, some of the topics have not been touched upon in the English language, unless in a strictly technical form, and in scattered articles. On this account, some of the chapters, like those on Embryology and Metamorphosis, may, at first, seem too abstruse for scholars in our common schools. This may be the case, until teachers shall have made themselves somewhat familiar with subjects comparatively new to them. But so essential have these subjects now become to a correct interpretation of philosophical zoölogy, that the study of them will hereafter be indispensable. They furnish a key to many phenomena which have been heretofore looked in mystery.

Being intended for American students, the illustrations have been drawn, as far as possible, from American objects: some of them are presented merely as ideal outlines, which convey a more definite idea than accurate sketches from nature; others have been left imperfect, except as to the parts especially in question; a large proportion of them, however, are accurate portraits from original drawings. Popular names have been employed as far as possible, and to the scientific names an English termination has generally been given; but the technical terms have been added, in brackets, whenever misunderstanding was apprehended. Definitions of those least likely to be understood, may be found in the Index.

The principles of Zoölogy developed by Professor Agassiz in his published works have been generally adopted in this, and the results of many new researches have been added.

The authors gratefully acknowledge the aid they have received, in preparing the illustrations and working out the details, from Mr.

E. Desor for many years an associate of Professor Agassiz, from Count Pourtalés and E. C. Cabot, Esq., and also from Professor Asa Gray, by valuable suggestions in the revision of the letter-press.

The first part is devoted to Comparative Anatomy, Physiology, and Embryology, as the basis of Classification, and also to the illustration of the geographical distribution and the geological succession of Animals; the second to Systematic Zoölogy, in which the principles of Classification will be applied, and the principal groups of animals will be briefly characterized.

Should our aim be attained, this work will produce more enlarged ideas of man's relations to Nature, and more exalted conceptions of the Plan of Creation and its Great Author.

Boston, June 1, 1848.

PREFACE TO THE REVISED EDITION.

In revising the present work, the authors have endeavored to render more precise those passages which admitted of too broad a signification or of a double interpretation; and to correct such errors as had arisen from inadvertence, or such as the rapid progress of Science has disclosed. They are indebted for many suggestions on these points to several distinguished teachers who have used the work as a text book, and more especially to Professor Wyman, of Harvard University. Several entirely new paragraphs have also been added.

A list of some of the principal authors who have made original researches, or of treatises which enter more into detail than was admissible in an elementary work, has been given at the close of the volume, for the use of those who would pursue the subject of Zoölogy in a more extended manner.

The work having thus been revised and enlarged, the authors submit it to the public with increased confidence in its accuracy and usefulness.

Boston, February 1, 1861.

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