

PREFACE

The author is grateful for the generous reception given the first edition of this textbook. The present revised edition retains the approach, style, and basic organization of the original.

Content has been updated to take account of recent advances. Chapters have been rearranged to give due emphasis to those areas of biology which seem to be moving most rapidly: behavior, treated in Unit IV; biochemical genetics, in Unit V; and ecology, in Unit VII. Human ecology, one of the major growing points of present-day biology, is stressed in the final and climactic chapter, Man and the Environment. Space biology also receives careful treatment.

While teachers will find the newer fields treated thoroughly and understandably, the book strikes a balance between the old and the new. Experienced teachers will find much familiar material in the traditional fields of morphology, physiology, taxonomy, genetics, and evolution. The book is relatively short. An effort has been made to discuss each topic in adequate depth, and yet not overwhelm the student with encyclopedic detail.

The author has tried to keep the text lively, clear, and interesting throughout. Difficult areas are treated cyclically. Subjects such as cell respiration, photosynthesis, genetics, and biochemical genetics are first discussed briefly on an elementary level, then more challengingly on an advanced level. This procedure, well received in the first edition, has been expanded in the present edition. Teachers can readily teach parts of the biology course on the basic level, then explore selected topics in greater depth. They can also encourage students to browse through the book and read unassigned sections on their own, or dig into a provocative field beyond the level of class presentation.

For easy reference, each chapter is organized in lettered major divisions and numbered sections. The abundant questions are of several types. Those at the end of major divisions are primarily study guides. They can be answered by reference to the text. Group A questions are basic, while Group B are more difficult.

The topics For Thought and Discussion at the end of each chapter cannot be answered explicitly from the text. In many cases a factual answer is not possible. Rather, they call for the student to consider a problem, form an opinion, and then present evidence supporting the opinion. The topics may be assigned for written answers, or they may become subjects for class discussion.

The vocabulary is not overly technical. Major biological terms are printed in **boldface**. Other terms and concepts that merit emphasis are printed in *italics*. Boldface terms are listed in the vocabulary at the end of each chapter. They are repeated, with brief definitions, and pronunciations where advisable, in the glossary.

The superb drawings and photographs of the first edition have been supplemented with many additional four-color illustrations. But every figure, however attractive, was selected primarily for its value in helping to clarify some biological concept. Abundant cross

references and carefully phrased captions make the illustrations useful teaching tools, complementing the text.

In recent years, change has affected the teaching of biology as well as the content. Many feel that teaching subject matter may be less important than teaching science — the *process of inquiry* by which biology grows. The emphasis in this text, from first to last, is on the role of inquiry in biological science. The author hopes that readers will find the book true to its subtitle: *An Inquiry into the Nature of Life*.

Like any author in science, I could not have written this book alone. I have been most fortunate in having the cooperation of many scientists and teachers, who supplied information, tested early drafts in the classroom, critically reviewed one or the other edition, and provided encouragement. I am particularly happy to express my gratitude and appreciation to the following, who were so generous with their time and talent on my behalf:

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