BIOLOGY

Villee

THIRD EDITION

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Preface

THIS BOOK was written with the concept that biology is a definable body of facts and theories, concerned with all the myriad facets of all kind of living things, and that it is not simply a mixture, in some predetermined ratio, of botany and zoology, anatomy and physiology, heredity and evolution, or any other of the life sciences. To bring to the fore the biologic principles which are basic to the study of living things, this edition contains a new chapter (Chapter Two) in which some of the major generalizations of biology are briefly discussed. These, of course, cannot be fully appreciated at the first reading but they should be helpful in providing a frame of reference for the succeeding chapters. They could be reread with profit later in the course. This third edition contains, in addition to this new chapter, major revisions in the chapters on genetics, evolution, and human anatomy and physiology, and smaller changes in the others. A number of illustrations have been replaced and many new ones have been added. The new line drawings for this edition were made by R. Paul Larkin, Gail Limberg, and William Osburn.

In writing an introductory text it is difficult to steer a true course between the Scylla of superficiality and the Charybdis of overdetail. This text attempts to present the major facts and principles of modern biology without superficiality and yet without undue emphasis on detail. Most students find the facts of life so interesting that a superficial treatment of them is an affront to their intelligence. The book may contain somewhat more material than is covered in certain biology courses. This enables each instructor to emphasize the subjects he thinks most important, yet provides the interested student with the opportunity to read about topics which are omitted or considered only briefly in the lectures. The scope and content of this book were greatly influenced by the author's experience as an instructor in the biology course taught by Professor Richard M. Eakin at the University of California, Berkeley, and his subsequent experience teaching biology at the University of North Carolina, Chapel Hill. I am greatly indebted to the many instructors who have made suggestions for revisions based upon their experience in using previous editions of the text. My special thanks are due to Professor Ralph W. Lewis, of Michigan State University, for several helpful suggestions, and to Dr. Dwain Hagerman who read a number of chapters of the manuscript of this revision.

I want to express my thanks to the artists, R. Paul Larkin, Margaret Croup, Betsy Hulbert, Gail Limberg, and Muriel McLatchie, who transformed my rough sketches into finished line drawings, and William Osburn, who drew the end sheets. I am indebted to a number of scientists—Drs. Russell J. Barrnett, John Bonner, Lewis Dexter, William Duryee, R. F.

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