

BIOLOGY: A SEARCH FOR ORDER IN COMPLEXITY



Second Edition

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Biology: A Search for Order in Complexity

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Introduction

As the title of the book implies, the science of biology is a search for order in the complexity of living things. The word *biology* itself comes from two Greek words, *bios* (life) and *logos* (discourse). Because life is extremely complex, searching for the orderly processes in biology ranks as one of the most challenging adventures in science. It is hoped that this book will motivate readers to participate in this adventure.

Progress in any science depends upon the discovery and application of its underlying principles; those principles which describe the orderly processes that occur in the midst of change. For example, progress came in biology when Mendel discovered that in spite of many changes, which showed up in his garden peas from generation to generation during his experiments, there was an orderly process behind these changes. He described this orderly process by means of his famous laws of genetics. These laws have become the guiding principles employed by plant and animal breeders. By means of Mendel's laws, we can predict, statistically, many of the hereditary characteristics that can occur in offspring.

More recent research seeks to find orderly processes at the bio-chemical level. To keep the reader abreast of some of the unifying factors at that level, a unit describing the relationships between chemistry and the study of biological science has been provided.

Although the unifying theme of the entire text is the orderly processes described by the principles of biology, the content is not limited to an exposition of those principles. The book also contains a useful and comprehensive background of biological information. This additional knowledge of the facts of biology helps the student apply the basic principles and also gives him an understanding of the need for a continuing search for the fundamental properties of living things.

This book is designed for use as a textbook for high school biology. It has numerous illustrations, questions at the end of each section in a chapter, review questions at the end of each chapter, "Taking It Further" suggestions, and supplementary material to challenge the advanced students. Although the editors acknowledge their indebtedness to many other books (as will be seen by the references cited), this textbook has a wealth of new material that has a new approach to the subject. It is hoped that the student and teacher will find this nonconventional approach refreshing and rewarding.

As you prepare your mind to enter into the rigors of scientific study and the wonders of God's creation, it would be wise for you to follow the noble example of the great scientist, George Washington Carver. This brilliant botanist, of the nineteenth and early twentieth centuries, had the humility and wisdom to ask the Creator to give him a proper understanding of how to comprehend what he was studying in the plant kingdom. Carver himself wrote often of how he would begin his day of study with a simple, child-like prayer; "Lord, I don't understand the mysteries and functions of this plant, but I know You do—show me." May the same Creator God, who gave such grace and usefulness to George Washington Carver, strengthen your heart to understand that we often have not because we ask not.

