

A Special Publication from NABT



POLLUTION

Edited by Paul Klinge
and Clarence Lange

This publication was prepared for high school and college use. It is divided into three sections: the realities of pollution, teaching about pollution, and laboratory investigations.

Twenty-four authors have contributed to this publication. They include Hugh Iltis, A. M. Winchester, E. J. Kirsch, Bernard Sohn, William Mayer, Alexander Cohen, David Dilcher, Karl Zobel and Alan H. McGowan.

This useful and practical publication is available from NABT for \$2 per copy.

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explain modern sampling devices and observational techniques (including the development of diving apparatus and manned submersibles).

"Life in the Oceans" explores the microscopic world of plankton; the mechanisms of feeding, breeding, and movement among marine organisms; and special topics, such as returnees and the migrations of turtles and eels. Ecosystems are discussed and illustrated using examples of salt marsh, coral reef, intertidal zone and abyssal communities.

"The Great Resource" documents humanity's continuing quest for food, mineral wealth, and electrical power from the sea. Arguments against uncontrolled exploitation appear in discussions of declining fish harvest and pollution from oil, heavy metals, and radioactive wastes.

"The Face of the Deep," encompassing part two of the book, surveys the major basins of the world ocean, one by one. A typical section—the Atlantic Ocean—gives statistics on size, shape, and depth, and an imaginative, artistic map displays the major bathymetric features. A series of maps reconstruct the opening of the Atlantic Ocean over the past 200 million years. Additional maps show the distribution of temperature, mineral resources, fish resources, and the patterns of surface and deep water circu-

lation. The meanderings of the Gulf Stream show vividly on a color-enhanced satellite photo.

Because it is expensive, the book would not ordinarily be used as a textbook but it should be available as a reference for secondary and college students taking courses in natural and earth sciences. Scientists as well as nonscientists will want to have this book on their reference shelves, and no library should be without it.

I suggest in subsequent editions that the glossary be expanded and a general bibliography be provided for persons who want supplementary information.

Richard R. Graus
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MATHEMATICAL AND BIOLOGICAL INTERRELATIONS

by Brian A. C. Dudley. 1977. John Wiley and Sons (605 Third Avenue, New York 10016). 319 p. \$13.95.

A book written for the British education system is often difficult to fit into the American scheme. Such is the case with Dudley's work. It touches lightly on a number of rather unrelated topics where some elementary mathematics is useful

for the biologist. These topics include measurements in one and two variables, methods for their graphic presentation, various kinds of proportions and scale factors, certain topics in the study of growth, elements of classification from the viewpoints of Venn diagrams, tree diagrams and set notation, permutations and combination work of a simple kind, including applications to genetics, and some material on exponential growth and decay, largely approached through graphical means. No calculus is used and, though some ideas derived from statistics are occasionally brought into the argument without much preparation, no statistical procedures as such are provided.

Both the procedures given and the mathematical manipulations used are generally elementary. Perhaps as a consequence the examples used, selected from many areas of biology, tend to be somewhat superficially treated.

The book suffers from technical infelicities. For example, when two pie graphs are used to compare data, the sector depicting one of the major components should begin in the same angular position in each graph and the items should occur in the same sequence around the circles; on page 20, neither is the case. Some statements are too

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strong, such as one on page 34 to the effect that statistical "tests of the difference between populations of results are based on the assumption that both populations in the comparison have a Normal frequency distribution," a statement only true of some but certainly not all such tests. Some views seem excessively restrictive as when an arc of points in a scattergram is said to show that there is no correlation (p. 43). There is here no linear correlation, it is true, but because variables so related, such as temperature and enzyme activity, show a constant, repeatable relationship, to deny any correlation between their values is too narrow a view. Similarly, the statement on page 47 that "height is an inherited characteristic in humans," based solely on the fact that parental height is a factor in the height of children, is also not a sound statement for the relationship could be due to other factors, such as dietary correlations. Some statements are incomplete, such as when we are told on page 49, that it is an error "to calculate and use correlation coefficients when it is not valid to do so" without being informed at all about the limits of their validity. Finally, there are some plain errors such as the statement, on page 78, that the 95% confidence limits for a mean are the mean plus or minus its standard error.

Of what utility, then, is this book? It might be scanned by a bright high school senior who plans to present the results of a small scientific investigation but s/he would have to be warned about the sort of problems mentioned above. A college or beginning graduate student, by neglecting most of the elementary material, might find an idea for a graphic display. But the possibility of the use of the book as a primary or ancillary text or even as a heavily used reference work in high school or college seems quite small.

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RACE AND RACES

by Richard A. Goldsby. 1977. Macmillan Publishing Company, Inc. (866 Third Avenue, New York 10022). 158 p. Price not given.

This is a well-organized, clearly written, little paperback, on a biological topic that has far reaching social implications. Dr. Goldsby has made a successful attempt to constantly relate these social implications to the biological facts. He defines race with a forceful proof that *Homo sapiens* clearly demonstrates more than

the "one" claimed by some. In fact, Dr. Goldsby describes twenty-six distinct races of humans. A description of "racial indicators" such as ear wax, urine, and blood types is given.

The point is well made that race can be understood only in the light of population studies. A bit of background in the areas of genetics and population genetics would be useful in studying this book.

One well-done chapter reviews what is known about evolution and humans. It is brief and to the point. Another chapter deals with the origin of races in humans and how such factors as skin color, sickle cell anemia and the Rh factor, lactose tolerance, and genetic drift have been used in origin studies. An extensive study of race and I.Q. and a careful interpretation of racial I.Q. scores is done with great objectivity and sensitivity in the last chapter. Numerous tests and studies are analyzed and evaluated. A four-page list of suggestions for further reading and an index concludes the book.

This book should be useful to a wide variety of people including high school and college teachers and students studying genetics and adults desiring background on this important topic.

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THE BIOLOGY OF DEVELOPING SYSTEMS

by Philip Grant. 1978. Holt, Rinehart and Winston (383 Madison Avenue, New York 10017). 720 p. Price not given.

As a substitute for traditional embryology, this text introduces us to a combination developmental biology, cell biology and genetics. The focus is on genetic information and its role in programming development.

In the beginning chapters, the author describes the nature and organization of developmental patterns in cells and mechanisms for retrieval. The greater part of the book explores how information is used in growth, morphogenesis, and differentiation. Congenital abnormalities, neoplasia, and aging are taken up in the concluding chapters.

The book is written in a clear, free-flowing style. Its clarity no doubt is due, in great part to the fact that the author's wife read every chapter and helped improve the academic style. Although she had no training in biology, it was felt that if she could follow the text, so could any student. In addition there are numerous illustrations. Each chapter contains a list of references that attests to the painstaking and extensive research that preceded the writing.