

Microbiology

BASIC MICROBIOLOGY, by Wesley A. Volk and Margaret F. Wheeler. 3rd ed., 1973. J. B. Lippincott Co., Philadelphia. 600 p. \$11.95 (hardback).

This is an up-to-date edition of an interesting microbiology textbook that covers the many specialties of this large field. Although admittedly designed primarily for students possessing minimal biology or chemistry background, the book does not sacrifice sophistication, as do so many introductory books, and the style is engaging and clear.

The material is divided into five sections. The first covers fundamentals, such as cell structure, nutrition, metabolism, genetics, and a survey of microorganisms. The treatment is generally balanced, although the nutrition and metabolism chapters are not as extensive as some might prefer; but this is undoubtedly due to the restrictions of intended readership. Also, the chapter on nonbacterial prokaryotes gives rather short shrift to the mycoplasmas, which is a little peculiar, considering the ascending recognition of the importance of this ubiquitous group in disease and also considering how much research information has accumulated about them. However, these are not serious impediments.

Sections on microbial control, on microbiology in everyday life, and on pathogenic microorganisms are convincingly presented. Especially interesting is the treatment given the antibiotics and their mode of action. Finally, there is an excellent and quite contemporary section on infection and host resistance, which reflects the relatively recent expansion of our thinking about immunologic mechanisms.

Each chapter is followed by references, a summary, and a set of study questions. The summaries are fairly useful, although the questions are generally not especially imaginative for college students.

Three helpful appendices follow the text. The first is a bacterial classification; the second is a brief history of the field, divided into areas of interest; and the third is a glossary, in which perhaps 800 terms are defined.

In summary, this is an introductory and, perhaps, middle-level microbiology textbook that covers the field well, is helpfully and very intelligently illustrated, and is interestingly presented.

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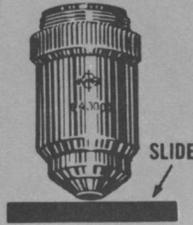
INTRODUCTION TO BACTERIA AND THEIR ECOBIOLOGY, by R. N. Doetsch and T. M. Cook. 1973. University Park Press, Baltimore. 383 p. \$12.50.

The intention of this book is rather unusual: the authors wish "to illustrate

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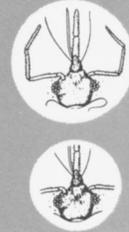
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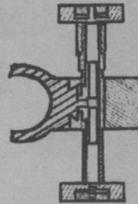
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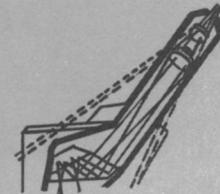
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a selection of biological properties of bacteria that reveal them as important living beings." They note "a tendency to equate the properties of all bacteria to the 'white rat' of bacteriology, *Escherichia coli*," adding, "We will try to dispel this myth." The authors have done their job well. The book is purposefully limited in scope (to the bacteria) but is refreshingly written in a way that combines the discoveries of the science with the up-to-date information to explain the relationships between bacteria and their environments. The sections are as follows: bacteria in nature, some general structural features of bacteria, heterogeneity of

form and function, populations and habitats, bacterial energetics, bacteria as environmental determinants, and an epilogue. The index is useful, and the references at the end of each section are pertinent.

A word of warning: to quote from the dust cover, the book is "A fundamental source of information for all scientists, engineers, and environmentalists who need a well-grounded, functional understanding of bacteria and the natural environment." This means that the book would be of limited value in the conventional general-microbiology course, which attempts to touch on many aspects of the science. However, *Intro-*

duction to *Bacteria and Their Ecobiology* does achieve its distinct purpose.

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MICROBIOLOGY AND HUMAN DISEASE, by George Wistreich and Max Lechtman. 1973. Glencoe Press, Beverly Hills, Calif. 814 p. \$13.95. With instructor's guide, 206 p. (softback), and laboratory exercises (2nd ed.), 252 p., \$5.95 (softback).

The authors' statement in the foreword needs some qualification. "*Microbiology and Human Disease* is not written for the specialist, but for the student who is in need of a broad foundation in microbiology, and who wants to obtain some insight into the role microorganisms play in health and disease," the authors say. But that portion of the book (about 60%) in which are found the principles of microbiology (structure and function, genetics, growth, metabolism, immunology, and so on) is certainly less comprehensive and is severely simplified in comparison with the well-known works of either Stanier et al. (*The Microbial World*, 3rd ed.) or Davis et al. (*Principles of Microbiology and Immunology*). It is doubtful that a student can get a "broad foundation in microbiology" from this textbook without substantial supplementary reading. Perhaps with this in mind, the authors have provided a bibliography of about 300 references, including original papers and other textbooks, arranged in the order of the relevant chapters, at the back of the book and in the instructor's guide. To their credit, the list is quite a good one.

The text is generally well illustrated and indexed, and it contains a 17-page glossary of medical and microbiologic terms. Unfortunately, there are several errors. In the middle of the book there is an atlas of color plates; at least 10 of the 93 figures, many of which depict the results of diagnostic tests, are either mislabeled or misordered. A photograph of a common high-speed refrigerated centrifuge (p. 387) is labeled an "ultracentrifuge." These are examples of items potentially confusing to students. More regrettably, the statement (p. 58) that "The term *fermentation* should never be used in reference to any microbial process, unless the process is performed under anaerobic conditions," is quite misleading. Have the obligately fermentative but facultatively anaerobic lactic acid bacteria recently come into disfavor for providing us with pickles, sauerkraut, cheese, and yogurt?

The sections on disease, including chapters on medical protozoology and helminthic diseases, are written in a manner quite as simplistically dogmatic as is the rest of the book but are certainly more detailed with respect to clinical diagnosis, treatment, and control than are comparable sections in

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either of the two textbooks mentioned earlier.

The laboratory manual is addressed to students in applied medical sciences (as might very well have been done with the textbook). The exercises are more numerous than necessary (which is good) and appear to be workable and clearly explained. Again, emphasis is on medicine and pathogens—not really on general microbiology. For example, the only enrichment medium suggested is nutrient agar. Isolation of organisms from nature is not seriously considered.

Books like this one fail to demonstrate that the fields of microbiology and medicine offer many ideal systems in which one might study some of the fundamental properties of life. They fail to present the essentially investigative approach of the sciences; that is, they fail to examine data and hypotheses critically. Medical technologists need this approach every bit as much as do doctors and potential research scientists.

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Houston

Statistics

BIOSTATISTICAL ANALYSIS, by J. H. Zar. 1974. Prentice-Hall, Inc., Englewood Cliffs, N.J. 620 p. \$15.95 (hardback).

The author has produced an introductory, comprehensive coverage of biostatistics in 328 pages. The 292 additional pages are devoted to an appendix of mathematical and statistical tables and the like. Most methods necessary for statistical analyses of biologic data are included in the text. As usual, however, the book contains more material than can be mastered by students in an introductory course in statistics.

The book is well written and easy to read. Numerous examples using biologic research data are provided. I consider it one of the better biostatistics books available for use as a textbook and for reference.

John Ransom
Kansas State Teachers College
Emporia

Textbooks

INTEGRATED BIOLOGY, by L. Hill, D. Bellamy, and I. C. Jones. 1973. Harper & Row, Inc., New York. 267 p. \$6.95 (softback).

With the great diversity of introductory general-biology textbooks available, it is difficult to find one showing sufficient difference to stimulate interest. *Integrated Biology*, originally written in England by Hill, Bellamy, and Jones, was edited by Paul Paolini to better fit the format of a single, one-semester biology course as commonly offered in American institutions. The