purpose may have been fulfilled at the workshop itself, most of the contributions in the book are authored by oceanographers.

Be that as it may, the contributions are uniformly well written, informative, and current. Physiological topics treated include photosynthesis, respiration, cell division, and nutrient assimilation. There is also a series of reviews on physiological behavior as applied to multispecies communities, as well as discussions of compartmental analysis and cell morphology. The chapters by J. A. Raven and J. Beardall, B. B. Prézelin, and P. J. Syrett I found especially enlightening, and in these the stated purpose of the workshop is illustrated best. Raven and Beardall, dealing with respiration and photorespiration, use the theme of cellular economics: running costs, efficiencies, and survival. The wealth of physiological detail is thus put in an ecologically useful context, and the reader never loses sight of the larger intent of the discussion. Prézelin ("Light reactions in photosynthesis") suggests promising techniques for field use borrowed from laboratory studies of photosynthesis and pigment systems. Syrett presents a lucid discussion of nitrogen metabolism and concludes by noting the relative success with which features of nitrogen metabolism discovered in the laboratory have been used to explain ecological observations.

I note less self-assurance among those authors whose physiological measurements are used with natural populations. All appear to be attempting to come to terms with the effects of environmental variability on physiological behavior. My own feeling is that the problem will require experimental designs unconstrained by classical laboratory approaches. At the same time, I fully agree with R. W. Eppley, who, in his cogent review of phytoplankton growth rates and nutrient assimilation, suggests independent (physical and chemical oceanographic) means by which estimates of primary production based on physiological processes can be verified.

*Physiological Bases of Phytoplankton Ecology* is an important book. Certainly it is required reading for practitioners. The reviews of the progress and the recognition of the limitations of algal physiology as applied to oceanographic studies (and, I might add, the modest price) also make it worthwhile in educating future oceanographers.

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## Bacteria

**The Prokaryotes**. A Handbook on Habitats, Isolation, and Identification of Bacteria. MORTIMER P. STARR, HEINZ STOLP, HANS G. TRÜPER, ALBERT BALOWS, and HANS G. SCHLEGEL, Eds. Springer-Verlag, New York, 1981. In two volumes. 1, 2284 pp., illus., + plates + index. $380.

This comprehensive "handbook" is more than its subtitle implies. Besides summarizing available information on "habitats, isolation, and identification of bacteria," it attempts to provide an overview of the general biology of essentially all genera formally described in the last (eighth) edition of *Bergey's Manual of Determinative Bacteriology* plus additional newly proposed ones. The book generally follows the taxonomic groupings and sequence of Bergey's *Manual*. The 169 chapters that make up this two-volume set are the products of some 180 authors who, on the basis of their own research experiences, are among those best qualified to deal with the allotted groups. The handbook is, then, authoritative. Although other experts may be annoyed by sins of omission or presentation, the novice can have confidence in the accuracy of the data presented.

The descriptive material and the encyclopedic nature of the book make it unsurpassed as a general reference to the less well known groups of bacteria and the literature pertinent thereto. The individual groups are not covered in depth, and the book has little to offer the expert in his or her own field. However, it will usually provide the neophyte with a good general introduction to a particular organism and with a starting point for attempts at isolation, cultivation, and identification. The book is not uniformly successful in these respects. By way of example, seven pages are allotted to *Escherichia coli*, including two pages of tables and one of references, which obviously cannot provide even a minimal introduction to its biology. The value of the entire section on the Enterobacteriaceae and perhaps of other major sections would have been greatly enhanced by the addition of an introductory chapter, similar to the one introducing the phototrophic prokaryotes, describing the structure, physiology, and metabolism of the group as a whole.

As an example at the other extreme, the nine pages devoted to the family (sic) Pelonemataceae, including some four pages of tables of totally trivial information, are more than adequate to underscore our lack of knowledge of this group of very dubious taxonomic validity. More important than the waste of space, the retention of formal taxonomic nomenclature for groups above the genus rank in the example above and elsewhere in the handbook is bad science and should have been eliminated. This is particularly so for groups of uncultured organisms known only by distinctive, and conceivably aberrant, morphologies. Increasingly over the last decade or so powerful tools have been developed and applied to the study of bacterial phylogeny. The taxonomic results of these studies are well presented in such chapters as "Introduction to the family Enterobacteriacea" or "The methanogenic bacteria." It is regrettable that an introductory chapter specifically concerned with bacterial phylogeny, progress, and pitfalls was not included. Another obvious lack is that of a critical discussion of the enrichment culture technique—principle, practices, and limitations. A significant percentage of the book is devoted to assorted applications of this methodology, and a critical discussion of it in the introductory section would have been worthwhile.

Overall, the two volumes represent a monumental undertaking very successfully done. The wealth of information contained should insure the inclusion of the book in the libraries of all organizations dealing extensively with bacteria. Considering its high price, its vast scope, and its large complement of inherently dull material, such as media recipes and undigestible tables, individual purchasers may well be limited to those who enjoy browsing through the *Book of Knowledge* or the *Encyclopaedia Britannica* as I do.

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### Books Received

**Anodic Oxidation of Aluminium and Its Alloys**. V. F. Henley. Pergamon, New York, 1982. x, 170 pp., illus. Cloth, $25; paper, $12. The Pergamon Materials Engineering Practice Series.

**Applications of Lasers to Chemical Problems**. Ted R. Evans, Ed. Wiley-Interscience, New York, 1982. xii, 292 pp., illus. $55. Techniques of Chemistry, vol. 17.

**Applications of Optical Fourier Transforms**. Henry Stark, Ed. Academic Press, New York, 1982. xviii, 546 pp., illus. $67.50.

**Appropriate Methods of Treating Water and Wastewater in Developing Countries**. George W. Reid, Ed. Ann Arbor Science (Butterworth), Ann Arbor, Mich., 1982. viii, 392 pp., illus. $27.50.

**Art and Autoradiography**. Insights into the Genesis of Paintings by Rembrandt, Van Dyck, and Vermeer. Metropolitan Museum of Art, New York, 1982. 112 pp., illus. Paper, $19.50.

**The Art of Abstracting**. Edward T. Crimmins. ISI Press, Philadelphia, 1982. xii, 150 pp. Paper, $13.95.

**Artificial Particle Beams in Space Plasma Studies**. Proceedings of an institute, Geilo, Norway, Apr.

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