ing organisms, there would appear to be little basis for distinguishing classes from individuals, a separation critical to comparative and evolutionary analysis. Groups of organisms achieve their individuality on the basis of their history, not by virtue of characters alone, and a hierarchical pattern does not itself guarantee individuality: a covering law is needed.

The diversity of views found in this book mirrors those within the field of comparative biology. Current debates over the goals, assumptions, and methods of phylogenetic analysis are likely to continue, reflecting as they do the extraordinary vitality of historical and comparative inquiry.

GEORGE V. LAUDER
Department of Anatomy,
University of Chicago,
Chicago, Illinois 60637

The Self

Psychological Perspectives on the Self. Vol. 1. JERRY SULS, Ed. Erlbaum, Hillsdale, N.J., 1982. x, 274 pp. $24.95.

There was a time when researchers studying the self evoked contempt and condescension. That time is behind us now. *Psychological Perspectives on the Self* ratifies the reemergence of the self as a viable topic of scientific scrutiny.

Suls has brought together a distinguished group of scholars whose work represents several major themes in the recent social psychological literature. After Bandura's opening paper on the antecedents of self-efficacy, several authors explore the nature of self-knowledge. McGuire and McGuire review evidence that indicates that people identify themselves along dimensions that set them apart from others. For example, blacks will be more apt to define themselves in terms of ethnicity if they are among whites than they will if they are among blacks. The authors speculate that this tendency may undermine efforts to lower racial salience through integration.

Papers by Markus and Sentis and Greenwald borrow ideas from cognitive psychology in hopes of elucidating the nature of self-knowledge. After Freud, Greenwald assumes that there exist a number of components of the self that are independent (such as conscious and nonconscious, verbal and nonverbal). He argues that the manner in which these components are articulated with one another can be best understood by assuming that self-knowledge is structured like a computer program. Although Greenwald's arguments are too general to generate testable hypotheses, the basic notion of synthesizing ideas from social and cognitive psychology seems promising.

One central issue raised here concerns the impact of people's beliefs about themselves on their behavior. Wicklund's approach has been to specify the conditions under which people become self-focused and consequently act on their underlying beliefs and dispositions. In contrast, Jones and Pittman assume that people generally ignore internal guides to action and instead conspire to present the particular "self" that will enable them to evoke desired responses from others. Their wide-ranging account provides one of the richest treatments of self-presentational phenomena since Goffman first delineated the subject in 1959.

The major themes of both the Wicklund and the Jones and Pittman papers surface in a paper by Snyder and Campbell. These authors argue that just as some people characteristically act on their beliefs and dispositions (like Wicklund's self-focused individual), others act to elicit certain reactions from others (like Jones and Pittman's manipulative individual). Snyder and Campbell review research that documents the behavior patterns of individuals who vary along this personality dimension.

If the book has a major shortcoming it is that most of the authors' generalizations are based on the results of laboratory investigations of college students. The only authors who directly confront this problem are Suls and Mullen. They question the conclusions drawn from previous work on self-evaluation by arguing that the manner in which people formulate self-evaluations changes dramatically over the life-span. Further, they offer interesting speculations concerning the antecedents of phenomena such as mid-life crises.

Other authors fail to acknowledge the hazards of generalizing from laboratory studies of college students. For example, on the basis of findings that indicate that people in experiments change their moods and self-ratings in response to recent events, Gergen argues that self-concepts are quite malleable. This conclusion is undermined by evidence that self-concepts are very difficult to change in nonlaboratory situations such as therapy.

But if some of the claims made in the book are debatable, none are entirely unreasonable or unsubstantiated. On balance, this is an extremely solid, well-written volume, one that makes it easy to understand why research and theorizing on the self have gathered so much momentum of late. And if it is disappointing that it offers little insight into such important issues as the antecedents and consequences of low self-esteem and pathological self-concepts, this too may soon be remedied. Next year Suls plans to publish volume 2.

WILLIAM B. SWANN, JR.
Department of Psychology,
University of Texas, Austin 78712

Biological Oceanography

Physiological Bases of Phytoplankton Ecology. Papers from a NATO Advanced Study Institute, Lipari, Sicily, Oct. 1980. TREVOR PLATT, Ed. Department of Fisheries and Oceans, Ottawa, 1981 (available from Canadian Government Publishing Centre, Hull, Quebec). x, 346 pp., illus. Paper, $C21.95; in Canada, $C17.95. Canadian Bulletin of Fisheries and Aquatic Sciences 210.

Whereas on land the measurement of plant production may be as simple as mowing the grass and weighing the clippings, at sea the analogous measurement is problematic. Primary producers, herbivores, decomposers, and detritus cooccur in as little as a liter of seawater. They are impossible to separate, and given a constantly shifting and moving ocean they are difficult if not impossible to sample repetitively. Therefore, to a much greater degree than terrestrial ecologists, biological oceanographers have come to rely on measures of physiological activity to grapple with questions of ecological relationships. Photosynthesis, respiration, and nutrient uptake measured in isolated samples of seawater become means of assessing growth and material cycling. Solving the measurement problem, however, at the same time presents a new set of interpretational problems. To be meaningful, determinations of physiological activity made in the field must be calibrated against laboratory observations, although one could never hope to achieve in the laboratory the same environmental or biotic diversity found in the ocean.

This volume is a selection of the major contributions to a NATO Advanced Study Institute. The idea behind the workshop, according to the editor's foreword, was to encourage the development of the science of the physiological ecology of phytoplankton by exposing biological oceanographers to advances made by laboratory physiologists. Though this

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.

JOHN MARRA
Lamont-Doherty Geological Observatory, Columbia University, Palisades, New York 10964

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.

SYDNEY C. RITTENBERG
Department of Microbiology, University of California, Los Angeles 90024

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.

(Continued on page 816)