Nevertheless, I note that the suggestions of the various contributors will suffer a lack of clarity and precision until the units involved are more specifically bounded.

Related to this point is a final comment addressed to the Service paper: *If* it is true that China, enjoying "the privilege of historical backwardness," is on the verge of a great leap forward, which (due to the "law of proportional development" so hotly discussed by the economists of Mainland China) will place China ahead of both the United States and the U.S.S.R., it is at least equally true that, until a bare 150 years ago, China was representative of a dominant culture capable of assimilating most others or, at least, of shrugging them off. Obviously the "law of evolutionary potential" does not, under present conditions, favor the truly backward and unspecialized cultures, but only those which have temporarily dropped a stride behind the leaders.

Although brief, *Culture and Evolution* is a valuable work that merits a wide readership, not only among anthropologists but among biologists and those in the physical sciences as well. Compliments to these bold authors; I hope that they have whipped up a storm, initiated a debate that will cross disciplinary lines and, perhaps, lead on to a more triumphant synthesis.

MORTON H. FRIED
Department of Anthropology, Columbia University, New York

I.C.A.R. Monographs on Algae. No. 1, *Zygnemaceae*. M. S. Randhawa. 478 pp. Illus. Rs. 26. No. 2, *Cyanophyta*. T. V. Desikachary. x + 686 pp. Illus. Sh. 72. Indian Council of Agricultural Research, New Delhi, 1959.

These excellent monographs constitute the first steps in the realization of an ambitious and commendable project undertaken by the Indian Council of Agricultural Research: the comprehensive taxonomic treatment of all groups of Indian algae. Randhawa's *Zygnemaceae*, however, is much more than a local floristic account. He treats this sharply defined group of fresh-water algae on a world-wide basis, recognizing 580 species in 13 genera, of which 174 species in 9 genera have so far been recorded from India. Most of the many species originally described from India have not yet been found elsewhere. Randhawa's task, on first consideration, would seem formidable, but was made possible (as he acknowledges) by the existence of several monographs on this group; the most recent was the monograph by Transeau (1951), who recognized 534 species in 13 genera. Part of the increase in the number of species recognized by Randhawa is due to the publication in the present work of 14 new species identified by M. O. P. Iyengar (unfortunately these species are invalidated by lack of Latin diagnoses). Randhawa follows the example of Kolkwitz and Krieger in providing chapters on occurrence and geographical distribution, cytology, and reproduction, in addition to an interesting introductory account of the history of phycology with special reference to the Zygnemaceae and to India. But the fact that Randhawa had excellent models to guide him should not diminish the high praise that he deserves for producing a first-rate work which retains the best features of existing treatments and enhances the subject by consistent and accurate bibliographic documentation and by incorporating the results of recent investigations.

Desikachary's monumental treatment of blue-green algae is limited to India and its neighboring countries, largely because of the size of the group: the number of species recognized is about 750, representing 85 genera. The systematic account is preceded by a welcome discussion of the cytology, morphology, reproduction, ecology, and phylogeny of Cyanophyta. Steering a middle course between Drouet and Elenkin, Desikachary accepts Fritsch's scheme of classification with certain modifications. Several new taxa are described. The illustrations, mostly redrawings, generally are satisfactory, but some are sketchy. The bibliographic documentation is thorough and accurate.

Both authors write in a clear and pleasing style. The books are well manufactured, although the bindings may not be strong enough to support the weight of the high-quality paper. The Indian Council of Agricultural Research and the authors are to be congratulated on these scholarly achievements, which bring to public attention the prominent rôle that Indians play in phycological research.

PAUL C. SILVA
Department of Botany, University of Illinois

The Mysterious Earth. Lester del Rey. Chilton, Philadelphia, Pa., 1960. xii + 214 pp. $2.95.

You and the Universe. N. J. Berrill (with support from Walt Whitman). Dodd, Mead, New York, 1958. viii + 215 pp. $3.50.

The Forest and the Sea. A look at the economy of nature and the ecology of man. Marston Bates. Random House, New York, 1960. 277 pp. $3.95.

These three books are all concerned, in one way or another, with man's place on the planet or in the universe. Lester del Rey's book is a factual popularization of material about the earth and life, apparently summarized for the most part, from *Scientific American* articles. It is for brighter young people and will serve a useful purpose, although it might have been improved by some illustrations.

N. J. Berrill, a zoologist turned philosopher, wants to know "just what are we doing here, spinning on a tilted planet swinging round a star" and examines the nature of the planet and the life on it in chapters with themes set by quotations from Walt Whitman. It is the sort of book intended for those fascinated with the "Wonder Of It All," pinnacled, as Shelley said somewhere, deep in the intense inane.

The book by Marston Bates is something else again, an attempt to bring to the reasonably educated man the essence of ecology, and of man's place in nature, in the ecological rather than in the philosophical-evolutionary sense. It is a significant, careful treatment that deserves to be widely read by all who are concerned with nature and with where man's bread is to come from. However, it is not a plundered planet book except, perhaps, by implication, but an original treatment of what might best be called general ecology.

JOEL W. HEDGPETH
Pacific Marine Station, Dillon Beach, California

Introduction to Theoretical Meterology. Seymour L. Hess. Holt, New York, 1959. xiv + 362 pp. Illus. $8.50.

This is a very useful addition to the list of meteorological textbooks. It has many didactic merits. In particular, the attempt to deduce the complex atmospheric conditions from basic physical

principles is praiseworthy. It is also quite refreshing to see the importance of dimensional analysis called to the attention of meteorologists, quite a few of whom seem to ignore it. The innovation of using a list of symbols as end paper for the book is appealing.

The treatise proceeds, in logical form, from the principles of thermodynamics, hydrodynamics, and radiation to the problems of atmospheric motion. These are dealt with in an up-to-date fashion. There is a welcome excursion into the important field of turbulence. The book culminates in a discussion of numerical "weather" prediction (at present still a distinct misnomer) and ends with an approach to the explanation of the general atmospheric circulation. This terminates with Philipps' already classical numerical experiment of 1956.

Quite disappointing is the treatment of condensation and precipitation problems. The theory has certainly advanced beyond static saturation. Although Hess deliberately tried to avoid vector notation, I doubt whether this really simplifies things beyond a certain formal point for the student. Even the more elementary mathematical treatment will not make theoretical meteorology into a "snap" course. The effort required to solve the problems, which the author has appended to each chapter, will convince the beginner of that.

The book is very well illustrated and produced. One can wish it a long and successful run.

H. E. LANDSBERG
Office of Climatology,
U.S. Weather Bureau

Approach to Archaeology. Stuart Piggott. Harvard University Press, Cambridge, Mass., 1959. x + 134 pp. Illus. $3.

This is the newest in a series of books written by archeologists of the British Isles and designed to interpret the methods and results of archeology. Like the others, it is aimed at capturing the interest of the general reader. Stuart Piggott's work focuses on process and on the nature of archeological evidence rather than upon results.

The discerning reader will find much that is useful in this study. Topics range from archeology as a discipline; the methods and techniques of detection, recovery, and identification; and the construction of time-scales to the relationships of archeology to prehistory and history. In the latter instance the discussion centers on societies which left documentary and literary records and those which did not—text-free and text-aided archeology—as the basis for establishing the role of archeology. This distinction is far more emphatically made in Europe than in America, for in the New World the literary record is scant, and the dividing line between history and prehistory is less complicated. The important point, of course, is that the techniques of archeology are all that we have to shed light on certain aspects of societies, whether old or young, simple or complex, and whether literate or not. The distinction, therefore, is largely academic.

The disappointing feature of this book is its regional bias and the avoidance of recognizing contributions made by New World archeologists to the approach to the discipline. Tree-ring dating is briefly mentioned, but its regional applications, its potentiality, and its impact on time-scale building are not explored. Archeological reconnaissance as a means of testing the resources of an area and as a basis for formulating problems is ignored. Surely American archeologists have made relevant contributions to analytical procedures, to concepts of type and tradition, to settlement pattern studies, to epigraphy, to the interdisciplinary approach demanded by the deficiencies in the archeological record, and to fundamental digging procedures. All of this might be forgiven if it were not for the fact that the final section, "Suggestions for further reading," replete with excellent citations, does not include a single reference on New World archeology. The boycott appears to be intentional. It is all the more surprising, therefore, that the Harvard University Press produced the book to capture the American market. Had this book carried the title "A British Approach to Archaeology," the tenor of this review would have been quite different.

EMIL W. HAURY
Department of Anthropology,
University of Arizona

Reprints

Baker, Robert H. *When the Stars Come Out.* Viking Press, New York, rev. ed., 1960. 182 pp. $1.25.

Bridgman, P. W. *The Logic of Modern Physics.* Macmillan, New York, 1960. 242 pp. $1.25.

Butterfield, H. *The Origins of Modern Science, 1300–1800.* Macmillan, New York, 1960. 252 pp. $1.25.

Braithwaite, Richard B. *Scientific Explanation.* A study of the function of theory, probability and law in science. Harper, New York, 1960. 384 pp. $1.85.

Collis, John Stewart. *The Triumph of the Tree.* Vicking Press, New York, 1960. 276 pp. $1.25.

Cowling, T. G. *Molecules in Motion.* Harper, New York, 1960. 183 pp. $1.45.

de Broglie, Louis. *Physics and Microphysics.* Translated by Martin Davidson. Harper, New York, 1960. 286 pp. $1.50.

Kruse, W., and W. Dieckvoss. *The Stars.* Translated by Ralph Manheim. Univ. of Michigan Press, Ann Arbor, 1960 (*Die Wissenschaft von den Sternen,* Springer, Berlin, ed. 2, 1954). 202 pp. $1.95.

Lessing, Lawrence P. *Understanding Chemistry.* New American Library, New York, 1959. 192 pp. $0.50.

Sutton, O. G. *Mathematics in Action.* Harper, New York, 1960. 252 pp. $1.45.

Toulmin, Stephen. *The Philosophy of Science.* Harper, New York, 1960. 176 pp. $1.25.

Van Melsen, Andrew G. *From Atomos to Atom.* The history of the concept *atom.* Harper, New York, 1960. 249 pp. $1.45.

von Buddenbrock, Wolfgang. *The Senses.* Translated by Frank Gaynor. Univ. of Michigan Press, Ann Arbor, 1960 (*Die Welt der Sinne,* Springer, Berlin, ed. 2, 1953). 167 pp. $1.95.

Weidel, Wolfhard. *Virus.* Translated by Lotte Streisinger. Univ. of Michigan Press, Ann Arbor, 1960 (*Virus: Die Geschichte vom Geborgten Leben,* Springer, Berlin, 1957). 159 pp. $1.95.

Miscellaneous Publications

(Inquiries concerning these publications should be addressed not to Science, *but to the publisher or agency sponsoring the publication.)*

Basic Research Résumés. A survey of basic research activities in the Air Research and Development Command. Office of Technical Services, Washington 25, 1960. 334 pp. $3.

Boletin de Geologica No. 3. Facultad de Petroleos, Departmento de Geologia, Universidad Industrial de Santander, Bucaramanga, Colombia, 1959. 77 pp. $3.50.

Forest, Wildlife, and Recreational Resources. Atlas of Illinois resources, section 3. Division of Industrial Planning and Development, Springfield, Ill., 1960. 46 pp.

A Long-Range Forecast of United States Precipitation. Miscellaneous Collections, vol. 139, No. 9. C. G. Abbot. Smithsonian Institution, Washington, D.C., 1960. 78 pp.

National Interests in Antarctica. An annotated bibliography. Compiled by Robert D. Hayton. U.S. Antarctic Projects Officer, Washington, D.C., 1959 (order from Supt. of Documents, GPO, Washington 25). 137 pp. $1.25.

Public School Finance Programs of the United States, 1957–1958. Misc. No. 33. Albert R. Munse and Eugene P. McLoone. U.S. Office of Education, Washington, D.C., 1960 (order from Supt. of Documents, GPO, Washington 25). 283 pp. $2.