cept of atomic weight, the second law of thermodynamics, the interpretation of spectra, the uncertainty principle—all traditional stumbling blocks to novices in science—are presented rapidly, nonchalantly, with practically no examples and few diagrams. The extreme condensation in places leads to statements which a nonscientist would find misleading or confusing—for example, the assertion that alkali metals "combine with oxygen in the proportion 2:1" (page 149); the picture of a molecular model with no caption other than "Structural chemistry" (page 152); the use of ocean waves as an example of simple transverse wave motion (page 246); the casual statement about "certain sharply defined frequencies . . . called line spectra" (page 349). More serious, perhaps, is the impression left by some of the brief discussions that scientists are a species of wizard, who effortlessly hit on the magical equation or the kind of experiment necessary to solve a problem.

This characteristic of the book may be a shortcoming or not, depending on the audience for which the book is intended. A reader with a modest background in elementary science could fill the gaps and resolve the ambiguities without trouble. Henry Margenau, in a foreword, expresses "a strong desire to see this sort of treatment in the hands of my physics and of my philosophy students"; and for such students, the book is admirably suited. On the other hand, the author himself maintains that "the objective of the book is to introduce the physical sciences," presumably to liberal art students like those in his own classes. It seems questionable just how clear a conception of science such students will obtain from discussions that gloss over difficulties and apparently require no rigorous thinking on the part of the reader. The scarcity of numerical examples and diagrams, the lack of end-of-chapter questions, the near-absence of subheads in the text, the masking of important definitions by philosophical asides—these hardly seem calculated to help beginners in learning science.

One other aspect of the book makes it ill-suited for elementary classes. At times the author is lured by his philosophical rambling into assertions which by themselves sound pretty extreme. One example, at the end of a discussion on entropy, probability, and determinism, is this bald statement: "We have recovered free will." Another, apropos "the white-coated multitude" of applied scientists, is the statement: "These men are the most dangerous of all. They are the illusion but not the stuff of which civilization is made." Now both of these examples are here taken out of context, and both are reasonable enough in the paragraphs where they occur. But elementary students have a genius for taking statements out of context; these examples are the sort of thing that students like to underline in red pencil, and remember long after they have forgotten the rest of the text.

Objections of this sort are, of course, only facets of the much-debated and never-solved question of how science can best be presented to liberal arts students. In defense of a book like this one, it can be argued that a student on reading it will find science palatable, he will get at least an emotional appreciation of the contributions of science to our culture, he will learn enough of the vocabulary to sound sophisticated, and he should be impressed with the provisional, empirical nature of scientific hypotheses. Perhaps this is all that can be expected. For teachers who feel that students need more personal contact with the rigors of scientific thinking, however, the book can serve only as a supplement to a more orthodox presentation.

As supplementary reading in an elementary course, or as a text for more advanced students with a sound background in science, philosophy, and history, the book is a valuable contribution to the increasing body of literature that attempts to bridge the gap between the "Two Cultures" of C. P. Snow, the scientific and humanistic cultures of the modern world.

KONRAD B. KRAUSKOPF
School of Mineral Sciences,
Stanford University

Miscellaneous Publications

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

Advances in Computational and Mathematical Techniques in Chemical Engineering. Chemical Engineering Progress Symposium Series, No. 31 (vol. 56). American Inst. of Chemical Engineers, New York, 1960. 120 pp.

Bibliography of Fossil Man. pt. 1, 1845–1955, *R* to *Z*, pp. 101–145. George E. Fay. Sociology and Anthropology Department, Southern State College, Magnolia, Ark.

Bulletin of the Florida State Museum, Biological Sciences. vol. 5, No. 4, "Middle-American Poeciliid Fishes of the Genus *Xiphophorus*." Donn Eric Rosen. Univ. of Florida, Gainesville, 1960. 186 pp. $2.80.

Doctor Langley's Paradox: Two Letters Suggesting the Development of Rockets. Miscellaneous Collections, vol. 140, No. 3. Russell J. Parkinson. Smithsonian Institution, Washington, D.C., 1960. 7 pp.

Fellowships in the Arts and Sciences, 1961–62. Michael Edmund Schiltz. Association of American Colleges, Washington, D.C., ed. 4, 1960. 149 pp. $3.

Hormones in Fish. Zoological Society of London, London, 1960. 181 pp. This is the first of a new series that has been established to publish the papers read at the symposia held by the society; the object of the symposia is to bring together workers who are engaged in research on different aspects of any branch of zoology where rapid progress is being made.

Index Chemicus. vol. 1, No. 2, article Nos. 319–724. Institute for Scientific Information, Philadelphia, Pa., 1960. Educational institutions, $250 yearly subscription; industrial institutions, $500 yearly subscription.

Inventory of Engineers and Scientists Employed in Florida in January 1958 and Employment Projected to 197x. Including supplementary data on physicians and dentists. Univ. of Florida, Gainesville, 1960. 98 pp.

Klinische Physiologie. Aktuelle probleme in Ubersichten. vol. 1, pt. 2. W. A. Muller, Ed. "Atypische Proteine," Von Hartwig Cleve, Helmuth Deicher, Fritz Hartmann, and Norbert Lang; "Grundmechanismus der Magensaureproduktion und deren Regulation," Von E. Heinz. Thieme, Stuttgart, Germany, 1960 (order from Intercontinental Medical Book Corp., New York 16). 84 pp. $4.30.

The Nighttime Influence of Irrigation upon Desert Humidities. Environmental Protection Research Division, Technical Report EP-136. Ivan Bennett and Ronald A. Nelson. Quartermaster Research and Engineering Command, Natick, Mass., 1960. 41 pp.

Nuestro Indio. Realidad, accion oficial, misiones religiosas, proyectos. Ministerio de Justicia, Republica de Venezuela, Caracas, 1960. 26 pp.

Protein and Amino Acid Requirements in Early Life. L. Emmett Holt, Jr., *et al.* New York Univ. Press, New York, 1960. 63 pp. Paper, $1.

Russian-English Scientific and Technical Dictionaries— a Survey. Prepared by A. F. Hubbell for the National Science Foundation. New York University Committee for Russian-English Technical Dictionaries, New York Univ., New York 3, 1960. 20 pp. $0.40.

Teacher Exchange Opportunities. Summer seminars—teaching for American elementary, secondary, and junior college teachers. Under the International Educational Exchange Program of the Department of State. U. S. Office of Education, Washington, D.C., 1960. 39 pp.

U.S. Atomic Energy Commission. Civilian Power Reactor Program. pt. 2, *Status Report on Pressurized Water Reactor as of 1959*, 86 pp., $1.25; pt. 3, *Status Report on Aqueous Homogeneous Reactors as of 1959*, 184 pp., $1.25. Order from Supt. of Documents, GPO, Washington 25, D.C.