interpreted, rather than on the details of history itself. However, there is room for differences of opinion on the scope and emphasis of historical geology.

For their intended purposes, both books are to be warmly commended. Strahler's book would seem best suited as a text for mature students who are beginning their study of the earth sciences. It is rigorous, and yet almost totally nonmathematical. Zumberge's book, on the other hand, would seem to be best suited to less-mature students, for example, students that might be found in a typical junior college. Zumberge is generally patient and careful in his explanations.

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Nuclear Engineering

The Design of Gas-Cooled Graphite-Moderated Reactors. D. R. Poulter, Ed. Oxford University Press, New York, 1963. xii + 692 pp. Illus. $13.45.

This book treats an important and timely, but rather specialized, subject in the field of nuclear power generation. It was written for practising engineers who are interested in the design of large nuclear power stations and for students who have a broad background in nuclear engineering. The contributors are well-qualified specialists who have worked with these design problems in the power reactor program in England.

Most of the discussion is concerned with the factors that must be considered in designing a complete nuclear plant for producing economically competitive electric power. Chapter 1, which treats the general design concept and points out subtle features and interrelationships that are easily overlooked, might be called "design philosophy." In the remaining chapters, specialists discuss the details of power plant design; this discussion begins with a short review of reactor physics and includes chapters on reactor control and instrumentation, safety, materials, fuel elements and fuel handling, graphite structure, gas coolant circuits, shielding, steam plants, electrical systems, structural engineering, and future developments. Thus practically all phases of power plant design are considered.

Although the discussion in each section is mostly qualitative, it includes a few general equations and some of their modifications for special cases; occasionally figures are quoted to illustrate a point. The book is not intended as a design manual. Neither solved examples nor any general method of design is provided. Such information would be particularly useful to the advanced student who wishes to round out his education in nuclear engineering with a more of less detailed power plant design. From this book, the student will derive some general qualitative notions and ideas about things to include and things to avoid, but he will receive little help in setting up a design method. Unfortunately, the references will not direct him to sources of design information, although I presume they are adequate to support the qualitative conclusions.

The book provides a good summary of the design experience in this particular field, but it was not intended to include quantitative design methods or comparisons of different methods.

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Transuranium Elements

Man-Made Transuranium Elements. Glenn T. Seaborg. Prentice-Hall, Englewood Cliffs, N.J., 1963. viii + 120 pp. Illus. Paper, $1.50; cloth, $3.95.

This book provides a brief account of the preparation, utilization, and properties of the presently known 11 elements that follow uranium in the periodic table. Chapter 2, roughly one-quarter of the book, presents the salient experiments and some anecdotes concerned with the identification and the isolation of weighable quantities of these elements when achieved. The actual dates on which these ingenious experiments were carried out and the names of the co-workers are given. The experiments involved fantastic techniques and were performed mostly as classified work in the Radiation Laboratory at the University of California (Berkeley). The next five chapters include discussions of the location of these elements in the periodic table, and the special chemical methods which are required to handle the minute quantities of the elements as well as the severe radiation hazards involved. Applications of the transuranium elements for nuclear explosions, power reactors, and special radioactive sources are described. Predictions about possible extension of presently known techniques to the preparation and identification of new elements are offered. Part 2, the latter half of the book, which is considerably more technical in its treatment, surveys production methods, the chemical and physical properties of the elements and their compounds, and finally the nuclear properties of the elements. A complete isotope table of elements 93 to 103 is included as an appendix.

The book, which was prepared to provide supplementary reading for use in the Chemical Education Material Study—that is, the CHEM Study program—is pitched at a level that is too advanced for all but the most exceptional high school students; indeed, part 2 appears to be directed to senior college students in the physical sciences at the very least. The volume will be a most useful reference book for advanced students and specialists, since it briefly and efficiently summarizes the significant knowledge concerning the transuranium elements. Important chemical and nuclear properties have been delineated. Also, developments in modern theories of electronic and nuclear structure, based on the information derived from these new elements, are sketched clearly and concisely.

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New Books

Mathematics, Physical Sciences, and Engineering

Structure and Ultrastructure of Microorganisms. An introduction to a comparative substructural anatomy of cellular organization. E. M. Brieger. Academic Press, New York, 1963. 343 pp. Illus. $10.

Tropical Meteorology in Africa. Proceedings of a symposium (Nairobi), December 1959. D. J. Bargman, Ed. Published by Munitalp Foundation, Nairobi, 1960 (available from World Meteorological Organization, Geneva). 462 pp. Illus. Paper.

The Use of Artificial Satellites for Geodesy. A symposium (Washington, D.C.), April 1962. G. Veis, Ed. North-Holland, Amsterdam; Interscience (Wiley), New York, 1963. 436 pp. Illus. $14.

Viscosity and Flow Measurement. A laboratory handbook of rheology. J. R. Van Wazer, J. W. Lyons, K. Y. Kim, and R. E. Colwell. Interscience. (Wiley), New York, 1963. 426 pp. Illus. $14.