Book Reviews

Reactor Shielding Design Manual. Theodore Rockwell, III, Ed. Van Nostrand, Princeton, N.J.; McGraw-Hill, New York, 1956. 472 pp.; 481 pp. Illus. $6.

This is the first book to appear that is devoted exclusively to the subject of radiation shielding for nuclear reactors. The work was sponsored by the U.S. Atomic Enery Commission at the instigation of H. G. Rickover, and it was published simultaneously by the two book companies. The compilation of techniques, formulas, and data for use in calculations is based on work in the naval reactor program and the pressurized water reactor program. The information appears to be applicable not only to reactors but to systems using fission-product and cobalt gamma-ray sources.

Chapters 1 and 2 contain well-written basic descriptions of radiation attenuation and dosage limits. Chapters 3 and 4 tell how to determine radiation source strengths and how to design shields for the reactor core and cooling system.

Chapters 5, 6, and 7 provide general engineering principles and data on materials and sources of radiation in reactors. Chapter 8 is devoted to the effect of ducts and voids, and Chapter 9 tabulates geometric transformations and special useful integrals. Chapter 10 provides attenuation coefficients, build-up factors, and nuclear data. The book is replete with graphs and illustrative numerical examples.

The material in the various chapters is well-integrated and demonstrates careful editing. The technical level is such that it may be readily understood by both scientists and engineers. A sampling of the contents indicates that the book is quite comprehensive. One feature that is unfortunately missing is emphasis that authors such as Blizard place on certain principles—for example, that shield design is an art rather than a science, that the unusual radiation is the important one, and that comparison methods are very powerful. If such viewpoints are understood, the book serves as an invaluable source of numerical data and formulas. It is difficult to see how the book could conveniently be used as a text, but it is certain that it should find a prominent place in reference shelves for nuclear engineering classes, for reactor designers, and for those engaged in radiation research.

The editors, authors, and contributors are to be commended for the preparation of this useful addition to the literature of reactor technology.

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Floods. William G. Hoyt and Walter B. Langbein. Princeton University Press, Princeton, N.J., 1955. ix + 469 pp. Illus. $7.50.

William G. Hoyt has been concerned with the many facets of stream flow, of which floods are the most spectacular and costly, for most of his professional career. For many years he was a member of the U.S. Geological Survey, the principal agency responsible for measuring flood flows and studying the conditions that result in them. Later he became director of the Division of Water and Power of the U.S. Department of the Interior, where he was in a position to study many of the proposals for engineering structures to control floods. Walter Langbein was a close associate of Hoyt's for many years on the survey, and his principal hydrologic interest likewise has been the characteristics of stream flow.

To find two men as well informed on the whole range of flood problems would be difficult indeed, and their book reflects their long and intimate acquaintance both with flood phenomena and with the engineers and scientists who are engaged in the field of water supply and water management.

The book is uncommonly timely, for within the last year parts of the nation have experienced devastating drouths and serious water shortages, and other areas, notably New England and California, have suffered disastrous floods. Thus, the nation is more alive than ever before to the enormous and often needless loss of money, lives, and property that is exacted yearly by destructive floods.

The differences of opinion concerning the best ways to control floods are so serious that an understanding of the hydrology of floods has become essential to sound planning of the nation's water management.

The authors begin by establishing the fact that, since the birth of civilization, man, by settling in the fertile flood plains of the world, has exposed himself and his property to losses by floods. By encroaching on stream channels with bridge piers and other structures, he has reduced the area through which floodwaters may pass and has thereby increased the height of flood stages. The authors describe clearly the essential facets of a sound approach to flood problems and the many and varied causes of those problems; the life history of a typical flood; and the estimation of flood damages. A chapter on man's adaptation to floods discusses our present national policy toward floods, which is primarily one of "flood protection." This policy has as its purpose the construction of various types of engineering works that will enable full-time occupancy of lands within the flood plains.

Since there is no specific provision either in the Constitution or in the Amendments thereto relating to floods, the federal flood control program has developed slowly and in a piecemeal fashion. The authors present an excellent résumé of our flood-control policy, pointing out that much of it is predicated on assumptions for which satisfactory proof is lacking. The problems, projects, and plans for individual major basins are well presented. The book contains nearly 100 pages of a well-documented chronology of floods in the United States, beginning with the Mississippi River flood of 1543, which hindered the explorations of the Spaniard De Soto.

The book is well printed and bound, and for the most part highly readable. It should serve as a splendid source book for the layman who wishes to understand the flood problem and his government's attempts to cope with it in different parts of his country. He must not, however, expect that the most optimistic plans will anticipate complete protection from floods. Major storms will still produce floods, but the effects can be ameliorated.

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Methods of Biochemical Analysis. vol. III. David Glick, Ed. Interscience, New York, 1956. 437 pp. Illus. $9.50.

The objectives of this series are to review recently developed and improved methods used in biochemistry, to critically evaluate them, and to present the best methods available in enough detail to enable the individual to carry out the analyses. The authors represented in the third volume have done commendable