

Book Reviews

Principles of Radiation Protection Engineering. Translation of Jaeger's *Principles of Radiation Protection*. By Lawrence Dresner, McGraw-Hill (1965), 451 pages, \$15.00.

This translation is competent in that it reads smoothly and well with only a few inexplicable distortions of accepted terminology, such as "moderating power" instead of "stopping power" for alpha particles and "highest permissible" exposure instead of "maximum permissible."

It is possible that the clarity of writing by authors at Oak Ridge and Argonne National Laboratories, the former Hanford Laboratories, and other US installations can be improved. It is not likely that the best way to do it is to have the work translated into German by Jaeger, then back into English by Dresner. Inevitably, because of the superior lead of the US in the field, the book can present little else. Inevitably, too, the material is out of date, being at best six years old. This age is particularly noticeable in the use of obsolete radiation units and the omission of significant recent advances in both reactor containment and the storage of radioactive wastes.

Accounts of more established subjects, such as the geometry of radiation sources, are, of course, not affected by age. However, the order of presentation of this material is less systematic than that found elsewhere, and the references are not fully representative.

The text seems to fall far short of the present claims made for it. Grossly inadequate chapters on radiation detection and radiobiological fundamentals certainly do not arm the engineer with the basics needed to produce the most effective and practical design. He will have no professional feeling for radiation protection, and, when he tries to design to protection criteria established for him, he will be faced too often with parenthetical observations whose derivations, for the particularly important practical case, are too complicated to be included.

Chapters on attenuation and heat generation are not adequate as teaching instruments. The central section of the book is rather loose, with more than its share of errors, potentially misleading statements, and inconsistencies. Later sections are mainly interesting condensations of actual examples of shielding practice for reactors, medical facilities, accelerators, hot laboratories, and radioactive waste management facilities. The merit would have been increased if selections were accompanied by critical appraisal and evaluation of alternative solutions.

In fairness to the original author, the more modest objectives defined in his preface have been substantially achieved. He has put together a body of information with which the civil engineer and architect who work in this field must be generally conversant. From the point of view of a German audience in 1960, the text was doubtless most helpful and time-saving. For the American engineer in 1966, it is not correctly balanced to serve as a major instructional text. Its value as a "conversancy medium"

for current engineering practice is falling rapidly with time in such a vigorously advancing field.

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About the Reviewers: Herbert M. Parker is presently Consultant to the Director of Battelle Memorial Institute's Pacific Northwest Laboratories in Richland, Washington. Prior to that, he was Manager of the Hanford Laboratories for nine years. His academic background was in physics in England (MSc., F. Inst. P.). After ten years as a radiological physicist, he joined the Manhattan Project in Chicago in 1942, and he subsequently headed the radiological sciences program at Oak Ridge and at the Hanford Works, Richland. He has just completed a term as a member of the Board of Directors of the American Nuclear Society.

Wilbur L. Bunch is a Senior Research Scientist at the Pacific Northwest Laboratories of Battelle Memorial Institute. He has been associated with various research and development programs in the nuclear energy field for the past 15 years. His studies of the attenuation properties of various concretes served as a basis for the design of the newer reactor shields at Hanford. He has also contributed to the development of in-core neutron-monitoring techniques and reactor instrumentation. His BS and MS degrees in physics were obtained at the University of Wyoming in 1949 and 1951. He currently serves as secretary of the Richland Section of the American Nuclear Society.

The Solid-State Chemistry of Binary Metal Hydrides. By George G. Libowitz. W. A. Benjamin, Inc., New York and Amsterdam (1965). 139 pp. \$7.50

The laudable objective of this book to provide a systematic and concise introduction to the behavior of solid binary hydrides has been excellently fulfilled. The study of metal hydrides has suffered in the past from a tendency to consider these compounds as a weird class of substances to which the usual laws of chemistry and thermodynamics did not necessarily apply. It was very gratifying to find the reaction of hydrogen with a metal not referred to as "occlusion." The thoroughly rational approach of this author should be helpful in the systematic development of research in this field.

The classification of hydrides by bond type is short but adequate and includes an impartial discussion of the un-