Yet, there seems to be more mileage for the publisher in this concept. On the next round, perhaps the monographs could be brought out in looseleaf form in a handsome buckram binder available at a graduated price scale according to the number selected. Of course, a new title is in order, *Selected Topics in Nuclear Engineering.*

PAUL C. ZMOLA
Combustion Engineering, Inc.
Nuclear Division
Windsor, Connecticut

(Editor's Note: Paul C. Zmola is presently manager of Advanced Design and Development in the Nuclear Division of Combustion Engineering, Inc. He received his Ph.D. in 1950 from Purdue University, majoring in heat transfer. From 1950 through 1955, he was a senior development engineer at the Oak Ridge National Laboratory.)

Protection Against Radiation. By JOHN D. ABBATT, J. R. A. LAKEY, AND D. J. MATHIAS. Cassell, London, 1961. 235 pp., $6.50.

This is a useful text and to the layman, the physician, or the engineer it could be a prized first introduction to the subject of radiation protection. It covers a wide range of subjects including elementary physics of radiation, sources of radiation, medical care of radiation workers, dosimetry, instrumentation, maximum permissible exposure, personnel protection, shielding, and treatment of radiation effects. Because of this wide assortment of topics, all discussions are cursory and at a rather elementary level. Thus, the physicist or engineer might profit considerably from reading the chapters on radiation dosimetry, instrumentation, and personnel protection and should not waste his time reading the elementary discussions on physics of radiation or shielding. Although the health physics technician would benefit by a careful study of the entire text, the senior health physicist would not find in it much—if any—new information. For the college administrator who needs a better understanding of the problems of health physics or for the medical man who wishes to develop a greater insight into this field and better prepare himself to assist in radiation emergencies, this is a very valuable book.

A few examples of statements in the text that should be qualified are: "Radioactive elements observed in nature have a very long half-life" or "Gamma rays are a penetrating electromagnetic radiation similar to X-rays but very much more powerful." There are several statements with which the senior health physicist would take issue; for example, "Radiation dosimetry is the measurement of the intensity of radiation" or "gamma curies are curies of gamma activity." The text contains a very good assortment of tables and graphs that are useful in the rapid estimation of shielding factors, counting errors, unit conversions, etc. Some of the tables, although of value as a principal source of information for the layman or as a quick reference for the scientist, are a poor substitute for the more detailed discussions provided in the NCRP and ICRP handbooks. For example, the health physicist or engineer could refer more profitably to ICRP publication numbers 1, 2, and 3 for the authoritative and detailed discussions on maximum permissible exposure, internal dose, x-ray protection, etc. Likewise, the NCRP-NBS Handbooks provide a wealth of detailed information that can only be touched upon in this book. For example, NCRP-NBS handbooks numbers 63, 72, and 75 provide some of the best available information on the measurement of neutron flux, neutron dose and the protection against neutron radiation.

The discussion of health physics instruments not only furnishes the layman with a good, quick review of the types of instruments in use but also provides the health physicist from other countries with the opportunity to make comparisons with those instruments in common use in England. The table of levels of maximum permissible surface contamination for radioactive materials lists values that are higher than corresponding values used in the U. S., e.g., 70 times higher than those used at Oak Ridge National Laboratory. The general philosophy expressed by these authors is very good. For example, they state that since any unnecessary exposure is undesirable, we must always balance risk against acceptable potential benefit to the individual and to the community. They point out that, "In radiation work the doctor has a new colleague in the health physicist, and it is of the utmost importance that the health physicist and medical practitioner should work together as equal professional colleagues" and to the medical practitioner they caution, "It must be constantly remembered that the primary purpose of examining patients prior to or during radiation work is to protect the patient and it must never be regarded as an instrument of management."

KARL Z. MORGAN,
Director, Health Physics Division
Oak Ridge National Laboratory
Oak Ridge, Tennessee

(About the Reviewer: Karl Z. Morgan is editor of the journal Health Physics, *and a member of the International Commission on Radiological Protection and the National Committee on Radiation Protection. He is chairman of the National and International Committees on Maximum Permissible Dose of Radiosotopes. As director of the Health Physics Division of the Oak Ridge National Laboratory, he supervises a large program of research in basic and applied problems of health physics. He is one of the original health physicists, having joined the metallurgical laboratory at the University of Chicago in 1943. He is a fellow of the American Physical Society and of the American Nuclear Society.)*

Reactor Heat Transfer. By W. B. HALL. Temple Press, London, 1958. 68 pp., 15 figs.

Reactor Heat Transfer is a monograph written for engineers and physicists working in nuclear reactor engineering by W. B. Hall, research manager at the Windscale Research and Development Laboratory. The monograph is divided into three chapters.

Chapter 1 presents a review of some of the elements of convective heat transfer. The heat transfer coefficient or conductance and the mixed mean fluid temperature are defined. The classical differential equations for the transient transport of heat and momentum in flowing fluids are also derived. The empirical convective heat transfer and friction relationships are summarized and the analogy between heat and momentum transfer is referenced. Discussions of entrance region convection and high gas velocity heat transfer are also presented.

Chapter 2 deals with fission heat source distributions in idealized solid fuel element reactor cores. The common