

**NUCLEAR RADIATION PHYSICS** by Ralph E. Lapp and Howard L. Andrews, 4th, Prentice-Hall, Inc., Englewood Cliffs, New Jersey 1972. 447 pp, \$13.95.

Rarely have two authors who pioneered in a new field of science kept a textbook covering it in its entirety up-to-date over a quarter of a century. This by itself is a remarkable accomplishment. At the same time Lapp and Andrews have developed such a refined form of presenting an ever-increasing variety of topics that the number of pages of each consecutive edition has remained almost the same.

When *Nuclear Radiation Physics* was first published in 1948, only about two years had passed since artificial radioactive nuclides had become generally available from nuclear reactors. Now 24 years later the same two authors have taken again a fresh, new look at this still rapidly expanding field of physics which in the intervening years has found so many important applications. For medicine it has opened completely new horizons including the development of nuclear medicine.

The material presented in this latest edition is divided into 21 sections starting with ionization and ionization chambers followed by three other types of radiation detectors. Section 4 is concerned with classical mechanics, relativity, and quantum theory, topics which are covered by many textbooks several times the size of the whole book under consideration. Therefore, it appears doubtful what service the reader will get from the present 22 pages devoted to these three large fields of modern physics.

The following three sections cover particle-wave relations, atomic structure, and structure of the atomic nucleus. Only when one reaches Section 8 are the various types of ionizing radiation and their properties presented although the radiation detectors were described 150 pages earlier. Since the response of different types of radiation detectors depends very

much on their interaction with the radiation field, one of the most important aspects concerning radiation detectors has been completely ignored by the authors.

Nuclear reactions, charged-particle accelerators, neutron physics, nuclear fission, reactors, and fusion are the topics of the following five sections. Finally, the last two sections are devoted to cosmic and terrestrial radiation and transuranium elements.

At the end of each of the 21 sections, reference is given to pertinent articles and textbooks which cover each of the many topics in depth to which only a few pages are devoted in this fourth edition of *Nuclear Radiation Physics*. Therefore, depending on his interest and knowledge, the reader may have to regard the present text more as a guide to, rather than a guide through, the field of nuclear radiation physics. If he stops reading and tries to solve the problems given for each section he will find some stimulation to test his own skills.

Nuclear radiation physics is without any doubt one of the important corner stones of nuclear medicine, and within the last 25 years advances in the former usually were followed by progress in the latter. Nevertheless, it appears doubtful whether the practice of nuclear medicine is enhanced by some knowledge of the rather esoteric nuclear particles involved in the emission of radiation from a particular atomic nucleus, or some other remotely connected topics. Even nuclear reactors as a tool for producing radio-nuclides have to be taken for granted by most nuclear medicine physicians. In general only the radiation physicist is expected to be familiar with nearly all topics summarized in this recent edition of *Nuclear Radiation Physics*.

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**NUCLEAR MEDICINE.** 2nd, Edited by William H. Blahd, McGraw-Hill, New York, 1971, 858 pp, \$33.50.

This reasonably comprehensive textbook of nuclear medicine represents the most recent effort to provide a general reference source for the physician and other individuals interested in this field.

This second edition has been divided into three major sections: (A) fundamentals, (B) diagnosis, and (C) therapy, with good overall balance. There is an appropriate emphasis upon diagnosis (536 of 858

pages) which does represent the area of primary impact of nuclear medicine today. Many of the presentations in this diagnostic section deserve special comment for their general excellence of organization and content (e.g., those dealing with the thyroid, central nervous system, and disorders of hemato-poiesis, to specify only a few). Without further specific reference it can be emphasized that a review of this section should provide the reader with an unusually complete overview of the diagnostic appli-