Book Reviews

Radiation Dosimetry, Volume III. Edited by Frank H. Attix and Eugene Tochilin, Academic Press, New York (1969). 943 pp. $37.00.

This third and final volume of the second edition of *Radiation Dosimetry* covers, as its subtitle describes, radiation *Sources*, *Fields*, *Measurements*, and *Applications*. Its scope is thus very great and its 943 pages are more than the combined length of Vols. I (*Fundamentals*, 405 pp.) and II (*Instrumentation*, 462 pp.). The subject matter of Vol. III is divided into seventeen chapters contributed by 25 recognized authorities. In addition to standard topics one expects in any book on radiation dosimetry, one finds here also chapters on space radiation, ultrahigh-energy radiation and uncommon particles, heavy charged-particle beams, ionizing radiations from nuclear weapons, dosimetry in implant therapy, dosimetry at an interface between dissimilar materials, and dosimetry in industrial processing. Both dosimetry in radiobiology and in radiation protection are treated. Neutrons from reactors, from accelerators and radioactive sources, and in mixed gamma-neutron fields are covered in different chapters. The remaining topics discussed in Vol. III are x rays and teleisotope γ rays, distributed radionuclide sources, electron beams, background radiation, and the use of x and γ rays in radiotherapy. Volume III also contains an appendix of physical constants and conversion factors as well as author and subject indices. The chapter lengths are uniform, 12 chapters having 50 ± 10 pp. and all having 50 ± 20 pp. The size of Vol. III allows adequate length for coverage of the subjects in depth and detail, with liberal use of figures, graphs, and tables of numerical data and the inclusion of bibliographies. The treatments are authoritative and complete.

One finds frequent references to specific material in Vol. I, in which the basic physics and concepts for dosimetry are treated, and frequent cross references between the chapters of Vol. III. Naturally, there are variations among different authors in different chapters, but the book as a whole has its own distinct character, as do all three volumes when put together. It is quite evident that an excellent and conscientious job of planning and editing (and proof reading!) was done to avoid duplication by different authors and to unify this very extensive three-volume work. Little space is wasted. Volume III, backed by Vol. I, strikes a good balance between the presentation of theory and principle, on the one hand, and the presentation of useful technical data, on the other. Volume III can be read for content and retained as a reference book. The second edition of *Radiation Dosimetry* is a monumental addition to the literature. One can only be grateful to all concerned for the many, many hours that must have gone into its conception, preparation, and production.

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About the Reviewer: James Turner, who has reviewed books on dosimetry for us before, is a member of the Health Physics Staff at the Oak Ridge National Laboratory and has recently completed a one-year assignment to CERN. Dr. Turner is co-editor of Principles of Radiation Protection *and co-author of* Elementary Radiation Physics.

Isospin in Nuclear Physics. D. H. Wilkinson, Ed. North Holland Publishing Company, Amsterdam, and Wiley Interscience, John Wiley & Sons, New York (1969). 751 pp. $43.50.

Within a few years after the discovery of the neutron in 1932, it became abundantly clear that the nucleons are the true constituents of the nuclei and that the strong forces between them (now called hadronic) are either charge symmetric or even fully charge independent, that is, the same for *nn*, *np*, and *pp* pairs. If this is true, it follows that a new quantum number, the isospin (also called isotopic or isobaric spin) should have a good deal of validity. The consequences of this concept were fully developed by Wigner in his theory of supermultiplets in 1937. However, since the Coulomb forces between protons obviously violate charge independence, it was thought for a long time that these ideas were applicable only to light nuclei. With the discovery in 1961 of the isobaric analog states, that is, those in which the last neutron is replaced by a proton in the same orbital, it became clear and understood that isospin remains relatively good (with deviations not larger than ~1%) throughout the system of elements. The heavy volume under review is frankly intended for the research worker in nuclear physics. Its fourteen chapters by as many experts explore in detail almost all consequences and limitations of the concept. They compile what is known and pose the questions that are still unanswered. The editing is excellent with uniform notations, many cross references, introductions and summaries of concepts and results. However, a person whose main interest is in reactor physics will not find much that is applicable in his field. Therefore, we want to call the reader's attention to the

existence of this excellent and expensive work without going into a detailed description of its content.

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About the Reviewer: Lothar Nordheim has made substantial contributions to both nuclear and reactor physics. He has held positions at universities, national laboratories, and in industry. He is at present a consultant for Gulf General Atomic Incorporated. He is a Fellow of the American Nuclear and Physical Societies and a member of the Editorial Advisory Committee of Nuclear Science and Engineering.