

## BOOK REVIEWS

**HANDLING RADIOACTIVITY.** Donald C. Stewart. New York, John Wiley & Sons, 1981, 282 pp, \$35.00

This book, which considers the question of handling radioactivity from many angles, is written by a chemist for bench chemists in the nuclear industry. The first chapter is a discussion of the nuclear literature with citations that includes the names and addresses of the major sources. The second chapter treats radiation protection in a factual manner, but unfortunately, with little material concerning the burning issues of low level radiation. The relevant portions of ICRU and ICRP publications, 10 CFR sections, etc. are cited so that the reader can pursue his or her interests. In the next four chapters the chemist's point of view is very evident. Dr. Stewart's practical experience is presented in a long chapter on radioisotope laboratory design, which covers all topics necessary for the planning of a facility to treat and isolate quantities of radioactive materials. The following chapter deals with shielding as one of the considerations that allow the quantities of activity to be raised yet further.

This is a radiochemist's book, not a radiopharmacist's, so no concern for biological purity or any discussion of laminar flow hoods, etc. are included. Monitoring and decontamination equipment and certain general kinds of equipment, such as balances, adapted for use in the special environment, are merely touched upon. There is a chapter on the radiation effects on materials that are used in the laboratory and in full-scale operations. A chapter on criticality makes plain the author's interest and expertise in this area. Transportation and waste disposal are handled less thoroughly at the end of the book. The book is written from the United States point of view with most reference to U.S. law and practice. The most recent references cited are from 1979; the old references cited come from a very important era in radiochemistry.

The book contains many helpful hints to practitioners. I would recommend it to radiochemists, especially those who are working with large quantities of radioactivity and those who are planning a new facility. I would hope that someone as knowledgeable and practical as Dr. Stewart, with over 30 years of experience, might find the opportunity to write such a practical book as this applicable to nuclear medicine.

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**GAMMA IMAGES IN BENIGN AND METABOLIC BONE DISEASES, VOL. I & II.** Wilfrido M. Sy, Ed. Boca Raton, Florida; CRC Press, 1981, Vol. I: 280 pages, \$69.96; Vol. II: 282 pages, \$74.95

During the past 10 years bone scanning has become an important diagnostic tool for the evaluation of numerous diseases that involve bone. Although detection of bony metastases is the most frequent application, scintillation bone imaging is useful in the evaluation of many other disorders. Moreover, unsuspected abnormalities in bone or soft tissue may be revealed although the study was performed for a different purpose. The nuclear medicine physician must be aware of these abnormalities and their scintigraphic presentation in order to render appropriate interpretations. Doctor Sy and his co-authors have directed these two volumes toward classifying and describing these disorders and demonstrating the appearance of the accompanying bone abnormalities on scans, scintiphotos, and radiographs. They are to be commended for their efforts because the book provides an opportunity to review

the changes produced in bone scans by disorders encountered both frequently and infrequently, which have not been brought together before in such depth.

The readers of this book would want to know what nonmalignant diseases have characteristic bone imaging patterns, to understand the pathophysiology of the abnormal accumulation of bone-seeking radionuclide, and to view numerous illustrations demonstrating the abnormalities. The authors have met these needs and have included a comprehensive list of disorders with individual chapters devoted to Paget's disease; osteomyelitis; benign bone tumors; osteoporosis; osteomalacia; extraskelatal manifestations; and the effects of endocrine, hematologic, and renal disease. Chapter 2 of Volume I presents an interesting and concise review of the development of bone-seeking radiotracers with emphasis on the technetium-labeled stannous phosphate complexes currently in use. The chapters, "Trauma and Other Orthopedics Related Conditions," "Joints and Joint Diseases," and the 86-page chapter with atlas devoted to presentation of various diseases in the hand, knee, and foot, are particularly helpful. Each chapter is accompanied by an extensive list of references.

If each entry had been limited to pathophysiology and presentation on scintiphotos and radiographs, it would have resulted in a slim, one-volume text, satisfactory for many readers. Instead, Dr. Sy chose to include considerable additional information about each disease entity, adding greatly to the length of each chapter. The etiology, pathophysiology, and clinical manifestations of each disorder are discussed at length, accompanied by descriptions of the laboratory and radiologic features, as well as the presentation on radionuclide bone scans. This background material serves as a review that will interest some readers, but others will find some of the additional material irrelevant from the standpoint of imaging. For example, two pages are devoted to the statistics and methods of performance of hemodialysis at the author's hospital and a listing of the symptoms and physical signs of chronic renal failure. The table of contents at the beginning of each chapter also adds to the number of pages but serves no real purpose.

The text is fairly clear on most points but some sentences will leave the reader bewildered as to meaning; for example, "In the absence of disease, despite their contiguous but differently oriented dynamic physiology (which, by the way, is governed by many variables existing within the internal milieu), equilibrium between the systems prevail." Occasionally the background material is factually wrong: the defect in sickle cell disease is attributed to a specific amino acid substitution of the beta polypeptide chain of the gene whereas the amino acid substitution described is actually in the beta polypeptide chain of hemoglobin; *Treponema pallidum* is classified as a nonbacterial cause of osteomyelitis. One also finds peculiar terminology, such as the use of "gamma bone lesions" and "photon accumulation" to refer to bony abnormalities that take up gamma-emitting radiopharmaceuticals and "nonoutline" to indicate nonvisualization of a bone that has not ossified.

Many of the illustrations show whole-body images performed on rectilinear scanners. Although these images tend to reproduce harshly, the significant abnormalities are apparent. Spot views were obtained with gamma cameras, and their greater resolution is more satisfying. Numerous radiographs are included for comparison with scans, but a number of them are "burned in" and show little detail. The authors made little use of laterality markers or arrows to indicate the specific abnormalities. Usually the reader can identify the abnormality by reasoning and referring back to the text, but some of the illustrations defy such analysis. The illustration layout and method of reference is annoying. For ex-