

SKELETAL IMAGING.

L. Rosenthal, R. Lisbona. Norwalk, Appleton-Century-Crofts, 1984, 322 pp, \$55.00

This is an outstanding book—perhaps an exceptional one—and one that should be on the shelf of every nuclear medicine physician. It is a text, a reference work, a mini-atlas, a guide through the tortuous pathways of applied research, a discussion of the recent clinical literature, and a summary of state-of-the-art bone and joint scanning. Above all, it is co-authored by one of the leading investigators in the field, Dr. Rosenthal, and is another example of the high standards we have come to expect of his work.

An introductory chapter on skeletal radiopharmaceuticals, which includes an extensive discussion of mechanisms of bone tracer uptake in health and disease, is followed by chapters on primary bone tumors, metastatic cancer, marrow imaging, noninfectious arthritis, bone and joint infection, trauma, osteonecrosis, metabolic bone disease, Paget's disease, extraskeletal uptake, and proliferative bone disorders. Each chapter includes many sections. For example, the chapter on noninfectious arthritis includes sections on synovitis, juvenile rheumatoid arthritis, sacroiliitis, ankylosing spondylitis, osteoarthritis, transient synovitis, reflex sympathetic dystrophy syndrome, regional migratory osteoporosis, trochanteric bursitis, and plantar fasciitis, as well as a thorough discussion of radionuclide diagnosis in these disorders, a comparison of blood-pool and bone-seeking radiopharmaceutical images, the radionuclide response to therapy, and quantitative joint imaging.

Each section contains a review of the basic etiology, pathogenesis, and pathology of the disorder, as well as an excellent summary of the pathophysiology, pertinent clinical findings, roentgen appearance, and therapy, all referenced in detail (there are more than 600 references, most since 1980). This material serves as background for a discussion of the relevant scintigraphic findings. Pertinent articles (both basic and clinical) are summarized, some in great detail, with comments by the authors on the significance of the results. There are many figures and tables illustrating each section, taken both from the authors' extensive files and from publications by other investigators. The roentgen and scintigraphic images are well reproduced, and the index is excellent.

The only quibble I have with the book—and it is a minor one—is that it lacks a description of the normal bone scan, and a discussion of the finer points of imaging findings. That is, the book is written from the standpoint of the disease state rather than that from the nuclear physician examining a set of images, although, in many examples, detailed imaging information is to be found within the section discussion. This situation could be rectified by a chapter on the differential diagnosis of various scintigraphic findings, such as a solitary rib lesion that is elliptical and expansile, etc., and a "gamut" to aid the interpreter. Hopefully, the authors will include such a chapter in a revised edition.

This book is bound to aid both the neophyte and the experienced nuclear physician. It deserves reading and rereading by everyone engaged in bone scan interpretation.

N. DAVID CHARKES
*Temple University
Philadelphia, Pennsylvania*

COMPARTMENTAL ANALYSIS. MEDICAL APPLICATIONS AND THEORETICAL BACKGROUND.

F. Kajiya, S. Kodama, H. Abe, Eds. New York, S. Karger, 1984, 190 pp, \$79.25

Compartmental analysis is familiar to nuclear medicine practitioners because radioisotopes are frequently used as convenient and sensitive tracers. The preface and introductory remarks of this small (190 pages) volume define compartmental systems and their analysis, provide a brief historical perspective, suggest applications, and explore the limitations and problems encountered.

The remainder of this book is a collection of papers by 29 authors, nearly all Japanese. The English is, however, excellent throughout and most essays are organized as scientific papers, addressing and illustrating specific problems. Two parts follow the introductory remarks. The first is a series of four chapters outlining theoretical considerations relating to compartmental analysis. This section is technical, requiring a level of mathematical sophistication that few nuclear medicine practitioners possess. Investigators with solid grounding in differential equations and specific interest might find this review interesting because it systematically explores the modeling which forms the basis of compartmental analysis. This superficial review will, however, provide little new information for persons already experienced in compartmental modeling.

The last part of the book consists of 12 chapters presenting specific examples of medical applications of compartmental analysis. Whereas fewer than half of the studies reported involve radiotracers, the systems modeled would, nevertheless, be of interest to physicians. Unfortunately, the chapters are brief and do not review the system studied, and often report techniques of little or no clinical usefulness. Radiocardiography models blood transit through the heart measuring with a single precordial probe activity from injected iodine-131 labeled albumin. Myocardial blood flow is estimated in animals measuring the hydrogen gas concentration recorded by platinum electrodes imbedded in the myocardium. Hipuran renoscintigraphy revisits the analysis of renogram curves generated from regions-of-interest drawn over the kidneys and bladder. The authors attempt to correlate renal maximum counting rate (C_{max}), time to C_{max} , up-slope, and down-slope with clinical problems. Essays that examine the uneven distribution of gas in diseased lungs (measuring ex-