BOOK REVIEWS

CRC ATLAS OF SCINTIMAGING FOR CLINICAL NUCLEAR MEDICINE. Henry N. Wellman, ed. West Palm Beach, Florida, CRC Press, Inc. Section I: $195, Section II: $100, Section III: $900.

The editor, contributors, and publisher are to be congratulated on a monumental work, one that is superbly directed to the practitioner of nuclear medicine. In addition to presenting a wide variety of well-illustrated cases, they have provided basic science information in an easily assimilated form that will be welcomed by physicians.

The format of the atlas is unusual; it is composed of three sections. The first section along with either Section II or Section III (or preferably both) form companion units. The first section includes three chapters of basic science information and the remainder is devoted to the presentation and interpretation of cases, accompanied by appropriate schematic drawings of the scintimages for assistance in interpretation. Section II contains the printed scintimages and Section III the same scintimages in transparencies. The entire work is in large, loose-leaf form with four binders for Section I, and two binders each for Sections II and III. The advantages of this form of presentation are that it can be easily updated, subsequent additions can be made, and pages can be removed for educational purposes.

Chapters 1 through 3 of Section I—Methodology and Interpretation—cover instrumentation for scintimaging, practical guidelines for radiopharmaceutical preparation, and radiation safety. The lucid, understandable approach to these basic science topics with minimal mathematics offers the clinician the opportunity to grasp important fundamentals with confidence. Another unique feature is the presentation of extensive tables on collimator characteristics for rectilinear scanners and gamma cameras, gamma camera specifications, characteristics of generator systems, commercially available radiopharmaceutical kits, half-value layers for absorbers, and numerous other tables in each area of the basic sciences. Decay schemes are presented for 14 radionuclides.

Chapters 4 through 12 are devoted to examples of scintimaging for the different organ systems with sections on pediatric studies and on imaging with oncophilic radiopharmaceuticals. Each clinical chapter is introduced with information specific for the area in question, and includes such topics as patient preparation, radiopharmaceuticals, instrumentation, dynamic and static imaging, pathology, and scintimaging findings. Each case is presented in history format with an explanation of the images and correlation with the schematic drawings of the images. A very wide variety of lesions are represented for each organ system, a total of nearly 500 cases. The chapters contain excellent reference sources. The scintimages, both in the printed and transparency format, are consistently well reproduced. Several of the accompanying radiographs are not of the same high quality.

This publication is a *highly* desirable addition to both academic and nonacademic departments of nuclear medicine and can be used advantageously for self-learning, as an aid in diagnosis, and for teaching.

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THE PHYSICAL PRINCIPLES OF DIAGNOSTIC RADIOLOGY. Perry Sprawls. Baltimore, University Park Press, 1977, 365 pp, $24.50.

"Not *another* book on radiological physics!" I hear you cry. Yes, another book on radiological physics. Why, when there are so many already that just devising an original title for a new one is no mean feat of ingenuity, why do we need another? Since the author is already a full professor, the usual reason obviously does not apply. No—there must be a *good* reason. To find it we need go no further than the author's own words in the Preface: "Training in—radiological physics—is undergoing a significant change in many institutions. For many years most radiologists trained in both the diagnostic and therapeutic applications of radiation. Traditionally, the physics training was heavily oriented toward the therapeutic applications. However, in recent years there has been a major emphasis placed on the physics of diagnostic radiology because most radiologists are entering that field and also because the diagnostic x-ray systems are increasingly sophisticated. It is these changes that have produced a need for a book of this type."

Professor Sprawls' own words make it clear that he intended his text for residents in diagnostic radiology training programs and not, as stated on the fly-leaf, "as a primary text for training x-ray technologists." As a result of long experience teaching radiological physics to radiology residents the author says ruefully: "The book assumes that the reader has no background in physics." While some residents will be maligned by this assumption, the majority will welcome it.

The text is a paragon of lucid prose. Basic concepts are explained in simple, sometimes graphic language: "X-ray photons impinging on a surface, like raindrops, will do so in a random pattern." The approach is largely qualitative with mathematics kept to a minimum. (For those with little grounding in mathematics there is an appendix that explains the mathematical relationships used in radiology in terms even the least mathematically inclined resident should be able to understand.)

Equations are stated rather than derived but in several sections the use of nonstandard notation may be confusing to some readers. For example, the familiar $I/_{I_0} = e^{-\mu x}$ equation that describes the attenuation of x-rays by an absorber is replaced by $p = e^{-\mu t}$, where p is the "penetration factor." This factor is expressed in units of cm^{-1} and hence is normalized for the x (thickness) dimension of the more familiar equation. Although the concept of penetration factor has some advantages in a discussion of x-ray imaging, its use destroys the analogy with the radioactive decay equation $N/_{N_0} = e^{-\lambda t}$ and is therefore probably a retrograde step.

The text begins conventionally with the fundamental physics of energy and of the structure of matter. The latter is dealt with purely at the atomic level. Nuclear phenomena are not considered. (What have nuclear phenomena to do with diagnostic radiology? More on that later.) Radiation quantities and units are introduced, including a section on light quantities and units which is so confusing it should be rewritten. The production of x-rays and the principles of x-ray tube operation and control are, on the other hand, described very clearly. Chapters on image contrast and reso-