

BOOK REVIEWS

COMPUTED EMISSION TOMOGRAPHY. P. J. Ell, B. L. Holman, Eds. New York, Oxford University Press, 1983, 546 pp, \$75.00

This multi-authored book is designed to serve as a survey and in-depth review of the various technical aspects and clinical applications of positron emission tomography (PET) and single photon emission computerized tomography (SPECT). For the most part it is quite successful and can be used by physicians and scientists for an overview of the topics covered and as a reference.

The PET section begins with a clear and comprehensive description of available instrumentation, technical problems and their solutions, and new developments. This is followed by a detailed review of pharmaceuticals available for positron imaging, along with methods for production and labeling. Chapters on the heart and brain demonstrate applications to various types of pathology while stressing the use of a variety of radiopharmaceuticals in conjunction with appropriate physiological models to obtain metabolic information. Finally, an excellent summary chapter places everything in proper perspective.

In the SPECT section a brief, nontechnical description of instrumentation is supplemented by two very technical chapters dealing with attenuation correction and noise characteristics of rotating camera systems, which are written from a theoretical rather than a practical viewpoint. A more unified approach would have been preferred, for these chapters do not provide the clear and balanced treatment of instrumentation that the corresponding chapter in the PET section provides. Developments in single photon radiopharmaceuticals are nicely covered in three chapters dealing with receptor-specific, antigen-antibody, and metabolic analogue tracers. The chapters on the brain, liver, and heart present results of tomographic imaging with standard radiopharmaceuticals for various types of pathology. Most of the clinical images were obtained with the Cleon (or Union Carbide) multidetector imager, a device no longer available. The editors appear to have a strong bias toward this device (see p. 406) but do not acknowledge the significant problem of nonuniform sampling by the Cleon imager nor the major advantage of enabling one to generate high quality sagittal and coronal images from the rotating camera. The many Cleon images in the book do demonstrate the indicated pathology adequately, but I would not consider them comparable to those currently being obtained with rotating camera systems.

Special mention must be made of three chapters in the SPECT section: One by Lassen describing exciting work on regional cerebral blood flow through tomography with inhaled xenon-133; One providing excellent coverage of the use of radiolabeled amines for brain blood flow; and one describing how tomographic lung imaging can be used to generate true quantitative measures of regional ventilation and perfusion.

In summary, one should not expect this book to serve as an atlas of emission tomographic pathology or as a guide to the use of the rotating camera, but it can be highly recommended to all physicians and scientists desiring a detailed, well-rounded account of the current status and the potential of positron and single photon emission tomography.

BERNARD E. OPPENHEIM
Indiana University School of Medicine
Indianapolis, Indiana

CRC HANDBOOK OF CHEMISTRY AND PHYSICS, 64th EDITION. R. C. West, M. J. Astle, W. H. Beyer, Eds. Boca Raton, Florida, CRC Press, Inc., 1983, 2386 pp

The *Handbook of Chemistry and Physics*, published almost annually since 1922 by the CRC Press, is one of the most informative sources for scientists in the physical sciences, and is of considerable benefit to those in the biological sciences. The Editorial Board and staff of collaborators and contributors are distinguished scientists, all authorities in their particular fields. The usefulness of this handbook is attested to by the fact that many eminent chemists and physicists extend the effort to offer suggestions for continued improvement of each succeeding volume.

As stated by the Editor-in-Chief (RCW), the aim of the text has been to present in a condensed form a large amount of accurate, reliable, and up-to-date information on the fields of chemistry and physics consistent with convenience in form and possibility of wide distribution and utility. An examination of the several tables, such as "Physical Constants and Inorganic Compounds," "Physical Constants of Organic Compounds," and "General Physical Constants" reveals a plethora of comprehensible information in a very condensed format.

As in the past, thorough revisions and additions have been made as the directions of the physical sciences dictate. All of the tables have been revised and several new tables added. For example, the nomenclature of the sugars has been updated and their structures redrawn. The effort required to maintain accuracy is exemplified by the tables enumerating more than 15,000 organic compounds.

This handbook is one of those reference texts essential for every library and laboratory, either clinical or research. As in previous editions, the entire volume is excellently executed.

FRANK H. DELAND
University of Kentucky and
Veterans Administration
Medical Center
Lexington, Kentucky

THE PHYSICS OF RADIOLOGY. H. E. Johns, J. R. Cunningham. Springfield, Illinois, Charles C Thomas, 1983, 796 pp, \$49.50

The Physics of Radiology is considered by many to be the "bible" of radiological physics. This is the fourth edition, the first having been published some 30 yr ago, in 1953. Traditionally, it has been a "therapy-oriented" book, and the newest edition continues that tradition. The emphasis has shifted, however, and this edition contains substantially more material on the physics of radiological imaging (particularly x-ray) than previous ones.

Because this is a standard text, and probably familiar to most readers, I will not embark on a detailed chapter-by-chapter review. Rather, I will itemize some of the changes from the third edition that appear to me to be of greatest interest.

1. The discussion of radiation therapy machines has been updated to place greater emphasis on linear accelerators, with correspondingly less emphasis on Co-60 units.