

**1986 YEAR BOOK OF NUCLEAR MEDICINE**  
*B. Hoffer. Chicago, Year Book Medical Publishers, Inc.*  
1986.

Once again Dr. Hoffer and his able associates—Drs. Gore, Gottschalk, Sostman and Zaret—have compiled a valuable synopsis of the current literature in the field of nuclear medicine published through July, 1985. The 300 well-chosen articles represent selections from 63 scholarly journals encompassing both those oriented toward diagnostic imaging *per se* as well as those serving the more clinically oriented specialties. The 15 chapters of the year book reflect these respective interests. Recent developments in the technologic aspects of nuclear medicine are reviewed in chapters on magnetic resonance, physics and instrumentation, radiochemistry and radiopharmacology, health physics, and radiation biology. Organ system related topics are addressed in chapters devoted to the cardiovascular, peripheral vascular, pulmonary, gastrointestinal, genitourinary, musculoskeletal, hematologic, endocrine and central nervous systems. Finally, individual chapters address the topics of oncology and infection. As in the previous volume, the year book begins with a keynote review article on a topic of special interest. This year the topic is “Thallium-201 Stress Scintigraphy: Is Quantitative Analysis Worth the Trouble?”

The format of previous volumes is wisely preserved presenting the salient points of each article reviewed followed by brief, insightful editorial comments designed to provide a sense of perspective drawn both from the accompanying articles and the reviewer's experience. Indeed, the organization of the individual chapters frequently juxtaposes articles on similar topics, often with direct comparisons in the subsequent commentaries. This enhances the value of the volume as a review of current literature. Finally, the decision to assign individual chapters to specific editors adds to the balance and coherence of the effort.

The publishers have again provided a quality product in a conveniently sized volume. Reference information is isolated as a discrete block of copy with the title in boldfaced print, which greatly facilitates reviewing individual chapters for articles of interest. Commentaries are similarly distinguished by their own unique type font. Images, figures and tables are well-rendered. Both subject and author indices are provided for the reader's convenience.

The *Year Book of Nuclear Medicine* remains a valuable addition to the personal library of every physician active in the field who requires a familiarity with the breadth of new information available from the literature but lacks the time or resources to obtain it directly. Residents in diagnostic imaging, and physicians in related clinical specialties who frequently utilize nuclear medicine in their practices will find it a welcome short cut to current information. For these reasons, it is a recommended addition to the library of every hospital or department offering nuclear medicine services.

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**NUMERICAL RECIPES: THE ART OF SCIENTIFIC COMPUTING.**

*W.H. Press, B.P. Flannery, S.A. Teukolsky, W.T. Vetterling.*  
*Cambridge, Cambridge University Press, 1986, 818 pp.*  
\$39.50

Numerical algorithms are tools for the solution of problems. The worker in medical imaging often needs a working routine quickly without wading through the technicalities of its derivation. This book saved me hours one Sunday afternoon when I discovered that my image processing computer did not have a random number generator in its subroutine library.

The authors address most of the significant topics in practical numerical methods. Chapter topics include the solution of linear algebraic equations, interpolation and extrapolation of data, the integration of functions, evaluation of functions, a discussion of special functions, random numbers, sorting techniques, root finding and nonlinear sets of equations, finding the extrema of functions, eigensystems, Fourier transform methods of spectral analysis, the statistical description of data, modeling of data, integration of ordinary differential equations, two point boundary value problems, and partial differential equations. Each chapter begins with an introduction which describes the issues of the chapter and in the process defines terms and symbols followed by a section or two which reviews the basic concepts of the chapter. The intention of the authors is to present the reader with techniques which will solve the reader's problem. Each chapter begins with relatively simple techniques and then presents more elaborate ones. The authors consciously restrict themselves to the techniques which they consider to be best. As a consequence, the reader is relieved of the task of figuring out which of many presented methods to use on the problem at hand. The most useful feature of the book is the abundance of working subroutines. Not only does the book tell one what tool to use on a problem, but it also provides the tool, both in FORTRAN and in Pascal.

The chapters on random numbers, numerical integration, spectral analysis, and data modeling are the ones which this reviewer has used. The techniques are presented in a straightforward manner. The authors resort to relatively unknown sources if necessary to achieve their aim of presenting the best methods. The programs given work.

Programmers using the C language, which is similar to Pascal, will be disappointed to discover that the Pascal routines are literal translations of the FORTRAN originals. As a consequence, array indices start with unity and this is assumed in all of the array index arithmetic. A simple way around this is to translate the Pascal code directly into C and to decrement at the start of the function any array pointers passed to the function. Then the calling program can use arrays indexed from zero. Another pitfall for C translations is the lifetime of variables within functions. One should declare variables which must retain their values from one function call to another to be of “static” types.

This book is indispensable to anyone who wishes to employ numerical techniques quickly and confidently without becoming an expert in applied mathematics. The authors' clear, non-sense style also makes the book attractive to those who

are curious about numerical methods but are left unenlightened by theorems and proofs.

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**NUCLEAR MEDICINE IN CLINICAL ONCOLOGY. Current Status and Future Aspects.**  
*C. Winkler, Ed. Berlin, Springer-Verlag, 1986, 420 pp, \$90.00*

This book is a collection of 61 papers presented in the Tumor Symposium of the Society of Nuclear Medicine Europe held in May 1985 in Bonn, Federal Republic of Germany. As Dr. Winkler states in the preface, it is not always easy to correctly assess the practical significance of the respective procedure with regard to application on a broad scale. Oncology has emphasized the strength of nuclear medicine in tissue characterization since nuclear medicine has the sensitivity to identify physiologic change before structural change. Oncologists should be informed on the often highly specialized or new methods in order to integrate these methods into their treatment planning in the best manner possible. This book contains contributions of international experts exchanging views on the current importance of nuclear medicine in clinical oncology.

This book is grouped into nine sections:

1. Introduction and Basic Considerations.
2. Technical Principles.
3. Diagnostic Use of Radiopharmaceuticals.
4. Radioimmunodetection.
5. Nuclear Magnetic Resonance Imaging and In Vivo Spectroscopy.
6. Positron Emission Tomography.
7. Use of Tumor Markers in Vitro.
8. Therapeutic Use of Radiopharmaceuticals including Labeled Antibodies.
9. Experimental Approaches and Future Aspects.

The coverage attempts to be encyclopedic, but the depth of the discussion is uneven and generally limited in scope with preliminary research reports that are inevitable in a symposium with multiple authors. However, the sections on introduction, radioimmunodetection and therapeutic use of radiopharmaceuticals are very informative and orient the reader to current developments in radioimmunologic diagnosis and therapy. The sections on NMR imaging and spectroscopy are also informative with general overviews. This book suffers from a lack of good illustrations and from poor editing by some contributors. The reference sections vary from excellent to poor.

Nevertheless, I find this book to be useful in considering the clinical application of up-to-date nuclear medicine procedures for the diagnosis and therapy of cancer. This book is recommended primarily for nuclear physicians but it will be also of value to clinical oncologists. Radiology residents or practicing radiologists may not find it a good value in view of the price, since it mostly deals with investigational studies. Unusually

high price seems to limit its usefulness.

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**SPECT SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY: A PRIMER.**

*R.J. English, S.E. Brown. New York, The Society of Nuclear Medicine, 1986, 148 pp, \$17.00*

The authors' principle objective in writing this book was "to assist nuclear medicine technologists in expanding their knowledge of nuclear medicine to include SPECT". The objective is approached in this short text in a series of six chapters, an 11 page appendix and a six page glossary. The book begins with an introductory chapter which gives a brief history of SPECT; this is followed by a chapter that presents a description of the basic fundamentals of various image reconstruction methods. Backprojection, filtered backprojection, two-dimensional Fourier and iterative reconstruction and correction methods for photon attenuation are each addressed. Quality control requirements, acquisition parameters, image processing techniques and clinical applications of SPECT are presented in the four remaining chapters. Adequately illustrated and presented with a minimum of mathematics, with the exception of an eight page appendix that provides a mathematic description of backprojection, filtered backprojection, two-dimensional Fourier transformation and attenuation correction, the book provides a very good introduction to the basics of SPECT. It introduces the reader to the acquisition, processing, display and quality control techniques encountered in SPECT procedures and it provides the reader with a guide to basic SPECT terminology. Although the text would have benefited from better editing of some of the definitions listed in the glossary and improved wording of some of the study questions at the end of chapters, this was felt to be a minor criticism in respect to the overall good quality of the remainder of the text.

This primer on SPECT meets the authors goals of bringing together material to "answer the technologist's fundamental questions" on SPECT and, at the same time, it provides a good introductory text on the technology underlying rotating camera SPECT for the nuclear medicine resident or nuclear medicine clinician.

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## Books Received

**Physics in Nuclear Medicine, Second Edition.** *J.A. Sorenson, M.E. Phelps. Orlando, Grune & Stratton, Inc., 1986, 590 pp, \$47.50*