ogies and actually devotes more space to IVP's, CT and ultrasound than to nuclear medicine. This may be appropriate because of the limited role nuclear medicine has in diagnosing and evaluating such tumors. The renal transplantation chapter is well balanced and includes discussion of the use of bone scans for diagnosis of avascular necrosis of the femoral head, an occasional complication of long-term steroid therapy. The pediatric, trauma, and lower tract chapters are well done, covering the subjects adequately. The final chapter in this section, on nephrological applications contains discussions on measurement of renal size, evaluation of acute and chronic renal failure, and the diagnostic approach to renal vascular hypertension. The discussion on hypertension is well done but is indicative of the problem of trying to cover too much in a single volume. In nine pages the authors cover the etiology of renovascular hypertension, the differential diagnosis of hypertension, OIH studies and their interpretation for this problem, and a general diagnostic approach to the hypertensive patient.

The last section, on basic principles, includes chapters on physics, instrumentation, radiopharmaceuticals, mathematics, and radiation dosimetry. This is an attempt to cover all of basic nuclear medicine in a limited amount of space. Although the chapters are generally well done they are, of necessity, somewhat limited. Some of the chapters might be useful in teaching basic principles in a nuclear medicine resident training program. There is some attempt to direct the discussion in these chapters toward renal studies, but most of the discussion is more general. It is unlikely these chapters will be read in depth by the urologists and nephrologists. The nuclear medicine personnel are also unlikely to read them because they will have encountered these discussions elsewhere.

Overall this book should be useful to a nuclear medicine physician who conducts a large number of renal studies and who wishes to gain greater insight into the clinical indications and uses of the studies. There are numerous illustrations and graphs throughout the book. The x-rays and gamma camera images are of adequate quality.

Unfortunately, because of the attempt to provide useful information to such a wide audience, much of the book covers topics that are so basic to nuclear medicine that they will be viewed as unnecessary by most nuclear medicine physicians. It is not clear that the cost of this book can be justified for the limited new information it contains.

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PHYSICS IN NUCLEAR MEDICINE. Second Edition.
J.A. Sorenson, M.E. Phelps. Orlando, Grune & Stratton, Inc., 1987, 590 pp, $47.50

The first edition of *Physics in Nuclear Medicine* was published in 1980 and quickly became recognized as the best available textbook for teaching in-depth nuclear medicine physics to nuclear medicine and radiology residents and nuclear medicine student technologists. The text was logical and clear, and the figures were well-drawn and illustrative of the concepts. Its only shortcomings were the absence of discussion of computers and radiopharmaceuticals.

The second edition continues in the tradition of the first edition, with an improved typeface for better readability. Many of the chapters received only minor changes, especially those dealing with physics and basic detector theory. The chapters dealing with instrumentation were substantially revised, and new chapters dealing with tomography, digital image processing, and tracer kinetic modelling were added. Two new appendixes were added, one providing a nomogram for converting between traditional and SI units and the other dealing with the mathematic process of convolution. The second edition is 186 pages longer than the first edition, partly due to the new typeface and mostly due to the new chapters.

How well have the authors done with the updates and expansions? In general, quite well, although I was disappointed that references, camera images, and pictures of equipment were largely left unchanged from the first edition. Examples include an outdated MIRD phantom, a no-longer "modern" well counter, and a gamma camera that is no longer in production. None of the references to liquid scintillation seem to have been updated to reflect the new water-soluble scintillation fluids and modern quench correction circuitry. There is no description of microprocessor-based Anger camera positioning circuits, and the discussion of multiformatters is inadequate given their pervasiveness. The rectilinear scanner is discussed as if it were still in commercial production, and bone density measurement techniques are not presented. NEMA standards were not addressed. ICRP 30 was not mentioned in the internal dosimetry chapter.

Noncircular orbits were not addressed in the SPECT section, and the advantages of having an in-house cyclotron were not discussed in the PET section. The digital image processing chapter is good as far as it goes, but the treatment of computer hardware is totally inadequate; an entire chapter should be devoted to computers. The chapter on tracer kinetic modelling is very good, but it will prove tougher reading because of the complexity of the subject matter.

Some typographical and editorial errors need to be pointed out. Figure 7–6, which deals with ^{99}Mo-^{99m}Tc transient equilibrium, is incorrect. Because of the branching ratio of ^{99}Mo, the actual equilibrium activity of ^{99m}Tc is less than that of ^{99}Mo rather than greater. In Equation 10-26, the MIRD absorbed dose equation, is missing an S between Ã and the parenthetical term. In the discussion of dose calibrators, the Capintec-type sealed chamber is described, but the RADX-type ambient air chamber is not. In Chapter 19 the statement is made that the high sensitivity collimator is usually used for SPECT; most users prefer the high resolution collimator in order to preserve resolution at depth. Both the first and second editions fail to distinguish between byproduct and NARM (naturally occurring and accelerator produced) radioactive materials when discussing Nuclear Regulatory Commission licensing.

Physics in Nuclear Medicine, Second Edition, will undoubtedly replace the first edition as the standard textbook for the instruction of nuclear medicine and radiology residents and nuclear medicine technologists. Instructors will have to supplement this text with other materials dealing with computer hardware, radiopharmaceuticals, and radiation biology. I strongly encourage the adoption of this textbook in all teaching

programs, and everyone who owns a copy of the first edition should purchase a copy of this second edition.

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Books Received

Thyroid Cancer: Role of Radionuclides in Diagnosis, Management and Treatment. *D.H. Shah, O.P.D. Noronha, Eds. Bombay, Radiation Medical Centre, Bhabha Atomic Research Center, 1986, 236 pp*

Practical CT Technology and Techniques. *L.L. Berland. New York, Raven Press, 1986, 285 pp, $29.95*

Radiology in Emergency Medicine. *R.C. Levy, H. Hawkins, W.G. Barsan. St. Louis, The C.V. Mosby Company, 1986, 468 pp, $79.95*

Radiation Oncology, Volume 2. *T.L. Phillips, W. Wara, Eds. New York, Raven Press, 1986, 182 pp, $65.50*

Clinical Imaging of the Pancreas. *G. May, R. Gardiner. New York, Raven Press, 1986, 192 pp, $42.00*

Radiology of the Liver, Biliary Tract, Pancreas and Spleen. *A.C. Friedman, Ed. Baltimore, William & Wilkins, 1987, 1110 pp, $84.50*