RADIONUCLIDE IMAGING OF THE GI TRACT.
F.A. Mettler, Ed. New York, Churchill Livingstone, 1985, 363 pp, $50.00

This book is the second in a series of subspecialty texts on “Contemporary Issues in Nuclear Imaging.” For this topic, the editor has assembled a combination of recognized experts and less well-known authors to come up with a book directed to the imaging practitioner. Though it is labeled as gastrointestinal imaging, this term has been taken somewhat loosely, and the traditional topics of liver, spleen, and biliary imaging are supplemented with chapters on hemorrhage, abscess, and tumor detection to cover the abdomen in general.

The opening chapters deal with subjective evaluation and particularly quantitative assessment of gastroesophageal function. These topics are covered by a leading author in the field, and though somewhat longer than would be necessary for a simple review, they contain a wealth of information not readily available in a single source elsewhere. This detail includes such items as exact formats for functional imaging and even addresses of vendors of certain specialty items. The following chapter includes GI hemorrhage imaging with RBCs and sulfur colloid and Meckel’s diverticulum scanning. In addition to defining the technique and interpretation of these studies, this chapter goes to great lengths to define the role of these modalities in the overall clinical assessment of bleeding and includes background and comparative information on nonradionuclide options including radiologic and endoscopic techniques. Liver and spleen imaging is divided into different chapters to cover benign and malignant disorders respectively, but by having the same coauthors for these chapters, repetition is kept to a minimum. As with the preceding chapters, these entries are practically oriented and very detailed.

There is again emphasis on correlative imaging. Properly little attention is given to pancreatic scanning, but this and other miscellaneous topics such as breath analysis are included for completeness. A final chapter on computer applications is useful, but is quite a change of pace from the clinical emphasis of the remainder of the book.

There is some variability between chapters with respect to details of format, but this would be barely noticeable to the reader investigating a specific topic and does not detract from the book’s readability. Images are not exceptional but are of adequate quality. The use of diagrams and especially charts and tables in many chapters are a major strength. There are few typographical errors, and the printing quality of the text is quite good. References are up to date and extensive in most chapters.

Overall, this book is a useful addition to the nuclear medicine practitioner’s library, however, its detail makes it somewhat long for casual reading by persons not involved in this type of imaging. The book is quite reasonably priced and would be an excellent source for nuclear medicine residents or for practitioners wishing to expand their services into this area.

WARREN H. MOORE
St. Luke’s Episcopal Hospital
Houston, Texas

NUCLEAR MAGNETIC RESONANCE IN BIOLOGY AND MEDICINE.
S. Chien, C. Ho. New York, Raven Press, 1986, 275 pp

This book is a compilation of manuscripts corresponding to presentations at the Symposium on NMR in Biology and Medicine sponsored by the Institute of Biomedical Sciences and the Central Laboratories of Molecular Biology, both units of Academia Sinica; and by the National Science Council of the Republic of China in Taipei in December 1984. The purpose of the symposium was to introduce state-of-the-art concepts and technology in nuclear magnetic resonance (NMR) to scientists and students. The purpose of the book was to disseminate valuable information to the scientific community at large. The chapter authors are recognized authorities in various aspects of NMR and magnetic resonance imaging (MRI).

The book is organized with four divisions (1) Solid-state NMR Studies; (2) High Resolution NMR Studies; (3) NMR Imaging; and (4) In-Vivo NMR Spectroscopy. Each division has three or four chapters for a total of 14 chapters in this 243-page volume.

The first half of the book is devoted to highly focused, detailed results in specific NMR studies in molecular biology; for example, “P-31 NMR studies of E. Coli membrane vesicles.” Basically, four topical areas are discussed; namely, protein-lipid interaction in membranes, bacteriorhodopsin, nucleic acids, and biomolecular structures on high field NMR (14.09T, corresponding to a frequency of 600 MHz for proton and 243 MHz for P-31). Quite appropriately, the symposium organizers provided a pre-symposium in an effort to give an introductory overview to the principles, technology, and instrumentation of NMR. The content of the pre-symposium was not included in this book.

The three chapters on NMR imaging are also written by well-known authorities in the field. The overview is limited in clinical application cases in the musculo skeletal system and the heart. This is an interesting circumstance in view of the fact that 70–80% of clinical MRI done today involves the brain and spine. The illustrative images are no longer state-of-the-art, a chronic and common problem experienced by all who write books on NMR imaging.

In the final quarter of the book, three chapters are presented on in vivo NMR spectroscopy, again concentrating almost exclusively in a very focused application in muscle function and metabolism.

With regard to level of the material presented, there is a wide divergence. In the 75% of the book dealing with NMR spectroscopy, a moderate to high level of sophistication and experience in molecular biology and NMR techniques is needed to comprehend and appreciate the excellent content of that part of the book; hence, it is written for the scientist active in the field. It is likely that students profited mostly from the presymposium in terms of the goals to “introduce state-of-the-art concepts and technology” than for the detailed scientific presentations. In contrast, the 25% of the book devoted to imaging is an interesting and probably useful collection of anecdotal clinical cases that are presented at a
level that can be easily understood by most every imaging physician and technologist.

Due to the contrast described above and the focused scientific chapter that illustrate NMR techniques and the suboptimal image quality, this book suffers from a significant lack of evenness and informity. The time to publication has also limited the timeliness of the imaging section. The quality of the publication is unfortunately below average with regard to type set, paper quality and image quality. While the cost is certainly reasonable, the technical quality of the product is low.

Those interested in this book are likely to be those scientists and clinical investigators who already have adequate introductory and comprehensive texts and who want to supplement their libraries with a book which describes the specific topics covered from the viewpoint of contemporary investigations. In this respect it will serve very much as a personal reference.

C. LEON PARTAIN
Vanderbilt University Medical Center
Nashville, Tennessee

NCRP REPORT 91: RECOMMENDATIONS ON LIMITS FOR EXPOSURE TO IONIZING RADIATION.
Bethesda, NCRP Publication, 1987, 72 pp, $11.00

The last set of recommendations for exposure limits for ionizing radiation published by the National Council on Radiation Protection and Measurements was in 1971 in their Report No. 39; “Basic Radiation Protection Criteria.” Report No. 91 contains recommendations that are intended to replace all of those proposed in the previous report. At the time of the 1971 report it was not possible to relate radiation exposure limits to risk estimates. Now that such data is available it is possible to derive limits based upon acceptable risk. However, the NCRP still believes it is premature to do this because of the uncertainties of the risk estimates for both external and internal exposures. Therefore, they have adopted in principal the ICRP system of limits published in Publication 26 in which risk estimates were presented to demonstrate the acceptability of the effective dose equivalent limits but were not used to derive them directly. Report No. 91 describes the recommendations of the ICRP with some minor modifications and updates proposed by the NCRP. These recommendations are very similar to those in the proposed revision to 10 CFR 20. The NCRP has adopted the ICRP’s dose equivalent limits even though they believe recent information suggests that the ICRP risk estimates may be low, possibly by as much as a factor of 2. Therefore, until more thorough re-evaluation of risk estimates are complete, particularly with respect to the dosimetry of the Japanese bomb survivors, the NCRP accepts these limits believing that the risk uncertainties do not critically effect the choice of dose equivalent levels for either limits or guidelines.

The NCRP’s radiation protection goals and philosophies are described as an introduction, followed by recommendations on occupational limits for the summed exposures from internal and external ionizing radiations. Limits are defined for both stochastic and nonstochastic effects. In addition to occupational exposure limits there are recommendations for the embryo-fetus, members of the public, and students.

The recommendation for the effective dose equivalent limit is 5 rem/yr for occupational exposure. The NCRP has dropped the recommendation of a lifetime cumulative dose of 5 (n-18) rem and encourages that the total lifetime occupational effective dose equivalent be less than the individual’s age expressed in years times one rem per year. For nonstochastic occupational limits they recommend 15 rem for the lens of the eye and 50 rem for all other organs and tissues including the skin. A recommendation of 0.5 rem for the embryo-fetus is consistent with previous recommendations but they advise that once the pregnancy is known that the limit be 0.05 rem/month. A limit of 0.1 rem/yr for continuous or frequent exposure from man made radiation excluding medical, and 0.5 rem/yr for infrequent exposure is recommended for members of the public. There are also specific recommendations for remedial action levels including one for radon. The NCRP has defined a Negligible Individual Risk Level (NIRL) that appears to this reader to be indistinguishable from the often discussed deminimis dose. They recommend setting it at 1 mrem/yr.

As with so many of the NCRP reports, “Recommendations on Limits for Exposure to Ionizing Radiation” is mandatory reading and a necessary handy reference for all radiation safety specialists. The report is clearly written and concise like most of it’s recent predecessors.

PAUL H. MURPHY
Baylor College of Medicine
Houston, Texas

Books Received

Gamuts in Nuclear Medicine, F.L. Datz. East Norwalk, Appleton & Lange, 1987, 39 pp, $34.95