BOOK REVIEWS

HANDBOOK OF RADIATION MEASUREMENTS AND PROTECTION Section A, Volume II. Biological and Mathematical Information. A. Brodsky, Ed. Boca Raton, FL, CRC Press, Inc., 1982, 720 pp, $94.00, U.S., $105.00, outside U.S.

This hefty volume is itself part of a larger handbook series of undecided length with a proposed range as large as public health itself, from basic mathematics to legal and public information. Considering the enormity of the overall project, it is a pleasant surprise to find such a thorough and well-organized volume. The book is not just a collection of tables, but contains a wealth of explanatory material and even examples of applications of the material to many important areas in radiation protection.

This particular volume contains extensive biological data, including well-illustrated material on anatomy, microbiology, physiology, ecology, radiation toxicology, and human isotope distribution. Following this segment is a mathematics section covering radioactive decay, statistics, internal dosimetry, standard mathematical and statistical tables, Monte Carlo methods, kinetics, and even programming for minicomputers. The final section of appendices gives a short discussion of the causes and results of the incident of March, 1979, at Three Mile Island.

The biology section contains detailed anatomic drawings of the human organ systems, with functional descriptions relevant to radiological health. The section on ecology contains a brief but important discussion of the emerging field of quantitative toxic chemical and biological "dosimetry" as well as a very useful collection of radiotoxicity data. Everything you ever wanted to know about man's intake, output, composition, size and shape is tabulated along with radionuclide characteristics (short of decay schemes).

The sections on radioactive decay and statistics are particularly satisfying. They comprise a clear and thorough text on applied statistics in radiation measurements, complete with numerical examples. This is one area where radiation scientists must excell and where many who are studying such matters as cancer risk and cosmic radiation risk find their background lacking. These handbooks take the approach that the reader is not necessarily trained in all areas and successfully give the interested, but perhaps rusty, professional an opportunity to fully understand and utilize the techniques and tables in the handbook. Nowhere is this philosophy more successfully applied than in the section on statistics.

The volume includes, perhaps unnecessarily, the complete table of integrals, which is found in several other books. Of course, much of the tabular information in this volume is available elsewhere, but the completeness of this handbook is one of its attractive features. It will be an often-used and well-worn reference for teachers and researchers alike.

In order for a handbook to be useful, it must have a good indexing system, and this volume fulfills that requirement. The table of contents is rather spartan, however, and the page headings are useless, since each of the 700 pages has the same vague heading, "General Scientific and Engineering Information." This format makes the organization of the book unclear to the casual observer and is a minor frustration in an otherwise well-organized, educational, and useful handbook of biological, ecological, and mathematical data for the radiation scientist.

J. LAWRENCE BEACH
Univ. of Kentucky Med. Ctr.
Lexington, Kentucky

RADIONUCLIDE BRAIN IMAGING. D. Front. E. Norwalk, Connecticut, Appleton-Century-Crofts, 1982, 141 pp, $32.50

This book is one in a series entitled *Current Practice in Nuclear Medicine* edited by Sheldon Baum. If the others in the series are as well written and illustrated as this one, the collection should be well worth having. Dr. Front points out in the preface that the number of brain scintigraphy studies have significantly declined since the introduction of computed tomography (CT). The author and four other contributors have attempted to fill in a gap that nuclear medicine physicians may have felt because of the weakened ties between their specialty and neurology and neurosurgery. Each of the six chapters has a basic background with this goal in mind.

This atlas-type book is of high quality. Most of the figures are clear but a few, such as the image of herpes simplex encephalitis, have lost some definition in the process of reproduction. The excellent ultrastructure figures would have been more helpful with the addition of a few arrows for those of us with a faltering knowledge in microscopic anatomy. There are very few typographical errors in the text, but I was confused by the illustration of a subdural hematoma in Fig. 4-3 in which one set of images appears to show a right-sided lesion and others a left-sided one.

In the first chapter on brain tumors, several newer concepts are introduced. One is the use of a "permeability agent" such as Tc-99m glucoheptonate and a "vascularity agent" such as Tc-99m labeled red cells for imaging. When the views are evaluated separately, four different behavior patterns can be distinguished. The chapter on the radionuclide imaging of the cerebrospinal fluid is especially well organized.

It is difficult to rationalize the future sphere for conventional brain imaging. The recent advent of CT and the almost breathtaking clarity of nuclear magnetic resonance images have introduced a new age for diagnostic neuroradiology. This fact is apparent by the rarity of CNS topics discussed in the Nuclear Medicine chapter meetings and in the reduced number of recent publications. Nevertheless, this book does cover its subject well and is a necessary part of the series planned to cover current practice in Nuclear Medicine.

JOHN B. SELBY
Veterans Administration Medical Center
Charleston, South Carolina

QUALITY CONTROL AND DATA ANALYSIS IN BINDER-LIGAND ASSAY. R. P. Channing Rodgers. Scientific Newsletters, Inc., 1981, Vols. 1 and 2: 355 pp, Vol. 1, $36.00, Vol. 2: $38.50

Rodgers has compiled a thorough and lucid guide to the statistical evaluation of ligand assays. Written as a programmed text, it has enough repetition to reinforce new material and makes effective use of illustrations and tables. These volumes systematically and succinctly explore aspects of assay performance, data analysis, and quality control. The sections are brief (one or two pages) and never pedantic, drawing the reader's attention to key words and phrases with underlining. Questions at the end of each section review major points. These two volumes will be most useful to the less-experienced technologist, but there is much for the researcher as well.

Volume 1 presents most of the more basic material, touching on types of error, the implications of the law of mass action, and basic binder-ligand reactions. In a quest for completeness, some

seldom-used procedures are presented, such as correcting the response parameter counts for radioactive decay. Methods of characterizing binders are detailed, from Scatchard analysis to the less well-known Hill-Sips and Cornish-Bowden plots.

Volume 2 explores random and systematic error, the use and types of quality control samples, and gives advice on the choice of an automated data reduction system. The scope of the book moves from elementary (calculating a mean and standard deviation) to more advanced statistical methods (establishing confidence limits, imprecision profiles, assessing systematic error). The explanation of imprecision profiles (called precision profiles by Roger Ekins) and their role in defining assay sensitivity is noteworthy, since readers in the United States are only now becoming familiar with this approach. The author's treatment of between-run precision and the knotty problem of how many spot quality control samples to use, along with their placement in an assay, are informative and straightforward.

These two volumes are packed with information on the fine points of analyzing ligand assays. Their programmed format makes these points easy to find, should one wish to clear up a doubt or refresh his memory. They will make a useful, practical addition to the library of anyone involved with ligand assays.

KRISTIN A. ALYEA
LYNN R. WITHERSPOON
Ochsner Hospital
New Orleans, Louisianna

CRITICAL DIAGNOSTIC PATHWAYS IN RADIOLOGY: AN ALGORITHMIC APPROACH. R. L. Eisenberg, J. R. Amberg. Philadelphia, J. B. Lippincott Company, 1981, 488 pp, $52.00

In the recent past, we have seen a proliferation of numerous, novel diagnostic imaging modalities, which have been superimposed upon time-honored diagnostic methods. In applying this vast diagnostic armamentaria in a rational manner, one hopes to achieve maximum accuracy. It should be accomplished in the least invasive manner possible, while still trying to keep the cost in dollars and cents at a "reasonable" level. The aim of this multiauthored text is to provide a diagnostic "roadmap" or algorithm.

Although the book is by no means comprehensive, it does provide a rational, organized approach to twenty-eight different common diagnostic problems, ranging from the solitary pulmonary nodule to the acute abdomen, and encompassing such selected areas as hypertension, renal masses, and headache. The algorithms or flow charts for each diagnostic problem are listed at the end of each of the twenty-eight chapters. The chapters themselves provide the discussion and rationale behind the flow charts. The text is extensively illustrated and while many of the illustrations are excellent, the findings are obscure on more than a few.

From an editorial point of view, there are a few other problems. Some of the figures are reversed and mislabeled. For example, a figure of a digital subtraction study illustrated in the first chapter has interposed labeling of the subtracted and unsubtracted view. In one of the algorithms describing the work-up of renal injury, the normal and abnormal categories are reversed and until this is appreciated, the chart is quite confusing. An additional problem that this text suffers from is the minimal reference to the newest diagnostic modalities. Digital angiography is only briefly alluded to and nuclear magnetic resonance is mentioned only in the introduction. This type of deficit, while quite understandable, may limit the future usefulness of this text.

Any particular diagnostic pathway is going to have an institutional bias. An institution with a strong computed tomography (CT) service tends to use that procedure when ultrasound might be more appropriate. Of course, the opposite might also be true. Similarly, in the evaluation of possible acute cholecystitis, ultrasound is mentioned as the procedure of choice. Although it may, in fact, be the case, in many institutions cholescintigraphy with technetium-99m labeled iminodiacetic derivatives has proven to be the most accurate means of detecting cystic duct obstruction and making a specific diagnosis of acute cholecystitis. The text only briefly mentioned this possibility. In addition, the use of Tc-99m labeled red cells or sulfur colloid in acute lower gastrointestinal bleeding is not mentioned in the appropriate pathway.

In spite of all the problems listed above, we find this work to be beneficial in at least providing a framework. While individual algorithms may have to be modified in many cases to reflect institutional bias, it appears that the text would be useful as an introductory guide to radiology residents, medical students, and nonradiologists.

EVERETT M. LAUTIN
LEONARD M. FREEMAN
Montefiore Medical Center
Bronx, New York

THE CONTROL OF EXPOSURE OF THE PUBLIC TO IONIZING RADIATION IN THE EVENT OF ACCIDENT OR ATTACK—Proceedings of a Symposium Sponsored by the National Council on Radiation Protection and Measurements. Bethesda, Maryland; NCRP Publications, 1982, 277 pp, $20.00

This publication is fascinating and disturbing in that it deals with American preparedness, or lack of it, in the event of nuclear accident or attack. It is disturbing on several levels. First and foremost, the subject matter and the details of a hypothetical nuclear attack are stupefying as is the realization that it is necessary to contemplate such events. Secondly, it is disconcerting to realize what a shambles our civil defense system is in when it comes to nuclear incidents, although I confess to having some hope for a humanity that can possess nuclear weapons and not live in constant fear of their use. Finally, it is disturbing, though perhaps understandable, that the National Commission on Radiation Protection (NCRP) is considering nuclear power accidents and nuclear attack in the same context. This last concern was discussed at some length in the meeting. The reader can determine whether the advantages of pooling the nation's radiation expertise and equipment is worth the risk of further confusing the public, the press, and perhaps our potential adversaries about the reasons for future preparedness and the relative risks of these two very different eventualities.

This symposium is an outgrowth of the earlier work by the NCRP on the effects of krypton-85 release following the incident at Three Mile Island in March, 1979. It is part of a general attempt to improve on the confused response to that incident by the public, the scientific community, and the government. The symposium also serves as an introduction to the newly chartered committee SC-63 of the NCRP and as such was designed to generate ideas and questions for the committee. In attendance were representatives of the various civilian and government agencies who would be involved in such emergencies and representatives of many of the scientific and professional societies that have expertise in matters of emergency response, radiation effects, instrumentation, and medicine. Notably absent from the speakers list were current members of the press, particularly those of the electronic press, who have proven to be a crucial link in the chain of emergency response, both in positive and negative ways.

The underlying hypothesis of this project is that we can protect some significant segment of the population from the consequences of large-scale nuclear war, even thought the "broad destructive" nature of such a war is recognized. Quixotic or not, the NCRP believes an informed public and elementary precautions are worth pursuing (the probability of nuclear attack is listed at 0.1 per