trouble, but not its location. There is also a discussion of video waveform monitoring. This area is quite specialized and might well be something to call on engineers or personnel from diagnostic radiology to perform on nuclear medicine equipment. Chapter Ten relates to special diagnostic imaging systems, such as portable instruments, tomographic equipment, and special procedures suites. All of these chapters use photographs of equipment and films to illustrate their points, and in general, the reproduction is good and the images match the captions. I would quarrel with a couple of them, but nearly always good examples were chosen and used in the correct places.

Chapter Eleven includes discussions of miscellaneous tests and techniques grouped together: video hard-copy cameras, image quality tests for product comparison, attenuation measurements, copy film, methods for lowering fluoroscopic dose rate, what to do before the service engineer *leaves*, and film viewboxes. Chapter Twelve, which covers equipment specification, purchase, and acceptance testing, belongs with Chapter Eleven. This chapter shows evidence of being an afterthought, for some of the topics could have been more thoroughly covered. Video hard-copy cameras might well have been described with the video monitors themselves, and there is no discussion of the problems and causes of nonuniformity across the field, which is so often evident in images created with these devices. Product comparison should have been included in Chapter Twelve on equipment purchase. The discussion on lowering fluoroscopic exposure rate belongs in the section dealing with other fluoroscopic topics. Chapter Twelve devotes two pages of helpful advice on equipment purchase, and it is supplemented by Appendix B, which contains a whole set of equipment specification forms, meant for copying. The authors suggest the use of these forms to avoid the problems that arise when vendors do not specify the same parameters or answer the specifications in an RFP in the same fashion. Only a few of these forms could be used in nuclear medicine and, curiously, there is no form for film processor specification.

Overall, the book is more enjoyable than a book on quality control and quality assurance might be expected to be because of the inclusion of the "Problems and Pitfalls" sections and the anecdotal discussion in the chapters. I kept wishing for such a volume devoted to nuclear medicine. However, it occurred to me that this book is curiously old-fashioned, because it does not mention computers or digital devices, either as radiologic equipment or as tools in the QC trade. This omission would have to be addressed in the nuclear medicine equivalent of this book.

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QUALITY ASSURANCE IN NUCLEAR MEDICINE. World Health Organization. Geneva, Switzerland, World Health Organization Publications, 1982, 72 pp, $5.50

This guide resulted from a week-long workshop on quality assurance (QA) in nuclear medicine, held in Heidelberg, West Germany, in November, 1980. Dr. R. F. Mould of London served as Rapporteur for the contributions of the 36 workshop participants from 17 nations. Quality assurance is defined by the authors as all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service.

The text is divided into chapters on: definition of the problem, organization of quality assurance programs, quality control of nuclear medicine instrumentation, quality control of radiopharmaceuticals, records and evaluation of clinical results with special reference to quality assurance, phantoms, and conclusions. The authors describe the relationships among international, national, and local organizations that foster efficient practice of nuclear medicine. Helpful tables are provided that specify routine performance tests for (a) activity meters (radionuclide "dose" calibrators), (b) gamma cameras, (c) single photon emission computed tomographic (SPECT) systems using rotating cameras, (d) rectilinear scanners, (e) single- and multiprobe counting systems for gamma radiation measurements in vivo, (f) manual and automatic counting systems for gamma radiation measurements in vitro, and (g) data-processing systems.

The chapter on QC of radiopharmaceuticals is brief and somewhat superficial but provides many pertinent references to the literature.

The authors describe an area of QA often neglected—i.e., the clinical diagnostic study itself and the subsequent accumulation of patient records. To use these records efficiently, excellent flowcharts have been developed that trace the pathways through the studies and demonstrate how to gain the maximum information from them, thereby providing information for future studies.

The text covers flood-field phantoms, a count-rate performance phantom, a resolution and linearity phantom, a step-wedge phantom, total performance phantom, and a phantom for use with SPECT systems. Finally, there is a useful glossary.

For anyone establishing or directing a nuclear medicine department, this modestly priced book is essential reading to ensure that clinical diagnostic procedures are performed in the most efficient manner possible. The text is concise and clearly written.

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BOOKS RECEIVED

Noninvasive Diagnostic Methods in Cardiology. Noble O. Fowler, Ed. Philadelphia, PA, F.A. Davis Company, 1983, 411 pp, $50.00

Nuclear Medicine Annual 1983. Leonard M. Freeman, Heidi S. Weissmann, Eds. New York, NY, Raven Press, 1983, 408 pp, $39.50

Ultrasound Annual 1982. Roger C. Sanders. New York, NY, Raven Press, 1982, 363 pp, $51.50

Progress in Radio-Oncology II. K.H. Karcher, H.D. Kogelnik, G. Reinartz, Eds. New York, NY, Raven Press, 1982, 510 pp, $60.00

The Human Environment—Past, Present and Future. (The Lauriston S. Taylor Lecture Series in Radiation Protection and Measurements, Lecture No. 7). Merril Eisenbud. Bethesda, MD, National Council of Radiation Protection and Measurements, 1983, 40 pp, $11.00

Ultrasound (Environmental Health Criteria Series-22). World Health Organization. Geneva, Switzerland, World Health Organization, 1982, 199 pp, $8.00

Lasers and Optical Radiation (Environmental Health Criteria Series-23). World Health Organization. Geneva, Switzerland, World Health Organization, 1982, 154 pp, $6.50