BOOK REVIEWS

PHYSICAL TECHNIQUES IN MEDICINE. Volume 1, J. T. McMullin, ed. New York, John Wiley & Sons, 1977, 318 pp, illustrated, $27.50.

This is an interesting short book which treats selected, and important, areas of physics in medicine. There are twelve contributors from the United Kingdom, France, South Africa, Ireland, and Canada. The preface states that the book is directed to students and researchers in medicine, medical physics, bioengineering, and related areas. The editor, a physicist, points out the understandable difficulty in the dialog between physicians and physicists.

The book is comprised of seven large chapters. These include 1) Information Handling Systems in Medicine; 2) The Role of Ultrasound in Diagnostic Medicine: Present and Future; 3) Physiological Measurements with Transducers; 4) Quantitative Methods in Diagnostic Nuclear Medicine; 5) Dialysis; 6) Electroencephalography; and 7) Prediction and Diagnosis of Heart Disease by Non-invasive Methods.

Of these chapters, those on information, ultrasound, and quanitative methods in diagnostic nuclear medicine are of interest to individuals in nuclear medicine.

The initial chapter by F. Gremy and P. Tegoulet concerning "Information Handling Systems in Medicine" is a noble attempt to cover an extremely difficult topic. Unfortunately, as is usually the case with such an effort, a fairly thorough knowledge of the material is necessary before one can understand the "simplified version." Much of the description is directed toward European equipment (which is natural, since the authors are French), and, unfortunately, the English translation of the text is somewhat obscure at times. Also, the nomenclature and use of mathematical symbolism, although standard in the field, would have benefitted from greater explanation for those not conversant with them —for example, in sections dealing with Boolian algebra, information theory, Bayes' theory, etc.

The chapter by D. N. White, "The Role of Ultrasound in Diagnostic Medicine: Present and Future," represents a somewhat unusual approach to the topic, in that there are relatively few illustrations. Although information in this chapter does not range beyond that available in a number of other text books, the material covered may be of value to physicists in training who are interested in medical applications of ultrasound. It is unlikely to be of great value to physicians who desire to learn more about the physical aspects of ultrasound.

The chapter "Quantitative Methods in Diagnostic Nuclear Medicine" by L. P. Clarke and J. F. Mallne represents an interesting discussion of some important topics in nuclear medicine. These include instrumentation, the dilution principle, renal function studies, and estimation of blood flow by dilution methods. As in the case of other chapters, physicists desiring some contact with medicine are more likely to benefit from the material than would physicians. The discussion of the dilution principle and compartmental analysis is attractive in that some complex concepts are presented nonmathematically. Overall, the amount of mathematics used is certainly not oppressive.

For those in nuclear medicine, the final chapter "The Prediction of Diagnosis of Heart Disease by Noninvasive Methods" will be a disappointment because it concerns nonnuclear methods (e.g., ballistocardiography and impedance plethysmography).

To this reviewer, approximately one half of the book is likely to be of interest to individuals working in nuclear medicine and in radiology. However, the book represents a positive addition to a departmental library if for no other reason than to have as a resource the initial chapter dealing with information handling systems.

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REGIONAL DIFFERENCES IN THE LUNGS. John B. West with five other contributors. New York, Academic Press, 1977. 488 pp, $37.00.

This book is a collation of the results of research during the past decade on the physiology and clinical implication of regional differences in function and structure of the lungs. All contributors are acknowledged experts in their fields. The publication of this book follows by some 12 years Dr. West's monogram, "Ventilation/Blood Flow and Gas Exchange," with which most readers are probably familiar.

The information in the present scholarly work has been carefully developed to incorporate the currently accepted concepts and the basis for them. The book consists of 11 chapters, beginning with Methodology in the first two chapters—nonradioactive and radioactive methods—followed by discussions of blood flow, ventilation, gas exchange, transpulmonary pressure, stresses, effect of acceleration, pulmonary edema, local control of blood flow and ventilation, and closing volume.

Chapter 1 is a "must." As the development of Methodology is traced, the reader gains the perspective and appreciation of the radioactive technique in the pulmonary field. Chapter 2 is an excellent review by Dr. West of the radioactive methodology, based on his vast experience in pulmonary physiology and extensive uses of these methods. He is in a unique position to give nuclear medicine an objective evaluation of our achievement in the pulmonary application. All currently used radiopharmaceuticals, clinical and research, are appraised. This chapter also touches on the physiology of ventilation from static and dynamic points of view.

Chapter 3 presents the regional distribution of pulmonary blood flow in health and diseases under various environmental conditions. The concept of the three zone model is introduced. Together, Chapters 3, 4, and 5 are particularly valuable for a clear understanding of the role of V, Q, and V/Q in the pathophysiology of resepiratory failure. Chapters 6, 7, 8, and 10, dealing with transpulmonary pressure, stresses, effect of acceleration and closing volume are more for the pulmonary specialists, but nevertheless, a valuable source of references for nuclear medicine. In Chapters 9 and 10, discussions of pulmonary edema and local control of blood flow and ventilation provide a physiologic basis for interpreting clinical studies.

This book, as pointed out in its cover, should be of interest to chest physicians, cardiologists, internists, radiologists, physiologists, anesthesiologists, and above all, physicians in nuclear medicine. The depth of the discussions in some