

### PRINCIPLES OF NUCLEAR MAGNETIC RESONANCE IN ONE AND TWO DIMENSIONS.

R. R. Ernst, G. Bodenhausen, A. Wokaun. (*Eidgenössische Technische Hochschule, Zurich*). Oxford, Clarendon Press, 1987. XXIV + 610 pp. \$98.00

This book is one of a series of monographs on chemistry. This well-written monograph provides a thorough development of advanced nuclear magnetic resonance (NMR) spectroscopy in both one and two dimensions. The presentation stresses principles rather than techniques or applications. The subject is treated using density operators, product operators, and super operators usually at the most complete and rigorous level.

Following a brief introductory chapter, the dynamics of nuclear spin systems are treated in detail. In Chapter 3, the tools for manipulation of nuclear spin Hamiltonians are explored. One-dimensional Fourier spectroscopy is described in chapter four beginning with the classic Bloch equations and ending with Fourier double resonance. The basics of multiple-quantum coherences and multiple-quantum transitions are discussed in Chapter 5. In the next three chapters, two-dimensional spectroscopy is developed. Following Chapter 6 which develops the principles, Chapter 7 explores the methods of separation of nuclear spin interactions and chapter eight presents correlation methods based on coherence transfer. In Chapter 9, two-dimensional methods for studying chemical exchange and cross-relaxation are reviewed. Chapter 10 is a brief survey of the various nuclear magnetic resonance imaging techniques. The references for all chapters are grouped together at the end of the book and number well over a thousand ending, with a few exceptions, in 1985. The subject index appears to be quite thorough.

The book will be most useful to NMR spectroscopists who are already familiar with the subject and who wish to develop a more complete understanding of Fourier spectroscopy particularly in two-dimensions. The writing is clear and concise and occasionally cutesy—"It has now become possible to taste the forbidden fruits of spectroscopy with impunity". The quality of the figures is uniformly excellent. The book is pleasingly free of errors, typographical and otherwise. The book will probably become a classic reference book for this field. It is unlikely that the clinicians and practitioners of nuclear medicine who want to improve their understanding of magnetic resonance imaging will last through the preceding 533 pages necessary to reach the chapter on imaging.

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### DIAGNOSTIC ULTRASOUND: TEXT AND CASES.

Dennis A. Sarti, Ed. *Yearbook Medical Publishers*, 1987, 1266 pp. \$125

This is the second edition of a well known textbook of diagnostic ultrasound, first published in 1980. This edition

has been expanded in keeping with the demands of a rapidly developing field. There are many more contributors and the additional chapters are on breast, intraoperative ultrasonography and pediatric ultrasonography including neonatal brain and fetal heart.

The book begins with a survey of the basic principles of ultrasound. The remaining 17 chapters cover specific organ systems or specific clinical needs. The excellent and unique format of chapter layout is maintained in this edition. Each chapter is divided into two major sections, a written text part followed by case presentations. The written text describes technique, normal anatomy and pathologic state encountered and is written by the contributors. The case illustration sections are comprised of very good quality, well-labeled sonograms used to exemplify the text discussions. The case material is compiled by the editor himself. Apart from some of the thyroid and scrotum sonograms which are old images, the rest of the illustrations are adequate and many are excellent. Although there are many contributors, the book is evenly presented, well laid out and maintains its style.

The main deficiency of this book is that it cannot be considered a comprehensive textbook of diagnostic ultrasound as it does not have any chapters on Doppler ultrasound and endosonography such as endovaginal or endorectal ultrasound.

Overall, I found "Diagnostic Ultrasound: Text and Cases", to be an excellent, easy to read textbook. It remains a superb textbook for the radiology residents learning ultrasonography and for the practicing radiologists. I highly recommend it as a reference book for the ultrasonographers.

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## Books Received

**Safety and Efficacy of Radiopharmaceuticals: 1987.** K. Kristensen, E. Norbygaard, Eds. *Dordrecht, Martinus Nijhoff Publishers*, 1987, 371 pp. \$100.00

**Radiobiology for the Radiologist, 3rd Edition.** E.J. Hall. *Philadelphia, J.B. Lippincott Company*, 1987, 528 pp. \$42.50

**Common Abbreviations in Clinical Medicine.** K. Haber. *New York, Raven Press*, 1987, 239 pp. \$15.00

**Quality Assurance and Image Artifacts in Magnetic Resonance Imaging.** R.J.R. Knowels, J. A. Markisz. *Boston, Little, Brown, & Company*, 1987, 149 pp. \$22.00

**Magnetic Resonance Imaging: Basic Principles.** S.W. Young. *New York, Raven Press*, 1987, 298 pp. \$39.00