

were provided which also added to the clarity of the information being presented. The illustrations and examples provided in this book were taken from Siemens CT systems which is not surprising since the publisher and editor of the original German version of the book was Siemens AK, Berlin and Munich.

I highly recommend this book to those who desire to advance their knowledge of the how's and why's of x-ray CT. It is short, well organized, easy to read, and informative. It contains practical technical and clinical information which have proven useful to me in my teaching and research endeavors.

JACK L. LANCASTER  
*University of Texas  
San Antonio, Texas*

#### ULTRASONIC BIOINSTRUMENTATION

*D.A. Christensen, New York, John Wiley & Sons, 1988, 235 p, \$57.06*

The book "*Ultrasonic Bioinstrumentation*" is written as a textbook for a senior or graduate level course in medical ultrasound. It is directed at a student familiar with partial differential equations and vector analysis, and so is likely to be most useful to students in engineering or physics. However, the concepts are presented with physical analogies and an intuitive approach which makes much of the material simple to grasp without a complete understanding of the underlying equations. Thus the book should appeal to a wide audience including design engineers, medical physicists, ultrasonographers, and clinicians.

The book begins with a derivation of the wave equation, and then discusses acoustic impedance and reflection and refraction at interfaces. The next chapter discusses the structure and ultrasonic properties (density, phase velocity, and

attenuation) of biologic tissues. Next is a chapter on transducers including the generation and reception of sound, the resulting acoustic beam patterns, lenses and arrays, and other factors affecting spatial resolution. Following this are chapters on instrumentation including: 'A', 'B', 'M', and 'C' mode and real-time (mechanical and phased array) imaging systems; and CW Doppler, pulsed Doppler, transit-time, and vortex flowmeters. The final chapter is on ultrasonic dosimetry and safety. At the end of each chapter are problems to solve, and a book of solutions to the problems is available from the publisher.

This book is one of the most concise yet thorough books I've found on the principles and physics of ultrasonic instrumentation. Now when asked to suggest an introductory book on medical ultrasound for an engineer interested in the field, or for a medical practitioner wishing to learn more about the basic physics behind the instrumentation, this is the book I will recommend.

CRAIG J. HARTLEY  
*Baylor College of Medicine  
Houston, Texas*

## Books Received

**Bone Mineral Measurements by Photon Absorptiometry: Methodological Problems.** *J. V. Dequeker, P. Geusens, H. W. Wahner, Eds. Leuven Belgium, Leuven University Press, 1988, 479 pp*

**Looking the Tiger in the Eye: Confronting the Nuclear Threat.** *C. B. Feldbaum. New York, Harper & Row, Publishers, Inc., 1988, 315 pp, \$14.95*

**An Atlas of Clinical Nuclear Medicine. I.** *Fogelman, M. Maisey. London, Martin Dunitz Publishers, Ltd., 1988, 950 pp, \$210.00*