lular anatomy and physiology that is prerequisite to the ensuing extensive discussion of the specific pathways of radiotracer incorporation. Detailed descriptions of the numerous radiotracers that have been used in the past and that may be useful in the future are included.

Chapter One reviews the general topics of localization of radiotracers. Subsequent chapters present excellent discussions on the localization of radiotracers in inflammatory lesions and tumors and the role of radiotracers in the study of endocytosis and phagocytosis. The application of radiotracers to bacterial phagocytosis is of interest to fewer readers than are the other chapters.

Particularly excellent are the chapters, "Radiotracer Localization in Inflammatory Lesions" and "Mechanism of Localization of Radiotracers in Tumors." These exceptionally complete reviews of the pertinent literature will be most welcome by all of those who have endeavored to ascertain the mechanism of accumulation of gallium-67 citrate and related agents. The bibliography with each chapter is current and complete with two chapters having greater than 300 references.

Volume I of *General Processes of Radiotracer Localization* will be of primary interest to radiochemists and radiopharmacists who are concerned with the development of new radiotracers and techniques. The general nuclear medicine physician will find this text a valuable reference. It is a resource with extensive information concerning the wide and varied mechanisms of the localization of radiopharmaceuticals by healthy and diseased tissues.

RUSSELL A. BLINDER
R. EDWARD COLEMAN
Duke University
Durham, North Carolina

GENERAL PROCESSES OF RADIOTRACER LOCALIZATION, VOLUME II. L. J. Anghileri, Ed. Boca Raton, Florida, CRC Press, 1982, 255 pp, $78.00, US; $88.00, outside US

General Processes of Radiotracer Localization, Volume II is concerned with the mechanism and use of various in vivo techniques using radiotracers. Eight diverse areas are extensively reviewed. These topics include the use of radiotracers for the estimation of blood flow, the clearance of microspheres, the localization of thromboembolic disease, the study of essential element metabolism, nuclear cardiology, nuclear cisternography, respiratory function studies, and ophthalmological studies.

In general, each chapter presents a good overview of the subject, particularly the chapters on thromboembolic disease and cisternography. The chapter concerning the estimation of blood flow and volume using the intravascular dispersion of radiotracers presents theoretical and clinical applications of the tracer technique for determining flow and volumes. Many of the problems of the technique, especially as related to the dispersion process, are discussed. The chapter on ventricular function is quite basic and covers material well known to clinicians in nuclear medicine, and it is a good review for persons not clinically involved with radiotracer studies in cardiology. The chapter on respiratory function reviews the evaluation of pulmonary function using multidetector instrumentation and Xe-133. Most of the data is from the early to mid-1970s and is not applicable to radiopharmaceuticals and instrumentation available today. Also, the nuclear physician will find some of the chapters lacking in clinical correlation since the desire of the authors was to address the wide audience of all those who work with radiotracers. The extensive bibliography with most of the chapters will be of considerable benefit to persons interested in the topics discussed.

Volume II reviews several important topics in which radiotracers are used. Since the topics are very specific (e.g., ophthalmologic studies and essential element metabolism), Volume II is of less general interest than Volume I to the scientist using radiotracer techniques. Furthermore, some of the chapters discuss largely outdated technology or are too superficial. Thus, this volume is of limited utility to scientists and physicians using radiotracers.

RUSSELL A. BLINDER
R. EDWARD COLEMAN
Duke University
Durham, North Carolina

BIOLOGIE DE L'ACTION DES RAYONNEMENTS IONISANTS. C. Ferradini, J. Pucheault. Paris, Masson, 1983, 224 pp, 150 F

This book emphasizes the close relationship that exists between the biological and physiocochemical effects of ionizing radiation. The authors begin with a detailed review of the interactions of ionizing radiation with matter and the radiolysis of water and aqueous solutions. The properties of free radicals are also thoroughly discussed. Clear distinction is made between indirect effects resulting from the chemical reactions of the products of radiolysis with the surrounding milieu and the direct effects due to deposition of primary energy in homogeneous and heterogeneous milieus. A full chapter is devoted to the discussion of radiolysis of various biological compounds, such as carbohydrates, lipids, sulfuric compounds, amino acids, and nucleic acids. As radiobiology is specific to the living matter and its development, it cannot be based solely upon the knowledge of the physical chemistry of the free radicals. Thus, in another chapter, additional specific points are considered: First, that the living matter is exquisitely sensitive to radiation due to the presence of DNA, (structural cause), processes such as enzymes inactivation, and the phases of mitosis (dynamic causes); second, that there is a logarithmic relationship between cell survival and dose. Various models for cell death and factors modifying radiosensitivity are discussed. The important concept of high toxicity of the radiolysis radicals as compared with that of the radicals of biochemical origin is also introduced, with hypotheses explaining the reason for this discrepancy. Finally, pertinent information is provided regarding the biotechnological applications of ionizing radiation such as sterilization of medical equipment, food preservation, and preparation of polymers. Interesting concepts about the origins of life are discussed as related to the role of ionizing radiation.

In conclusion, this material is presented in a logical manner, with appropriate explanations, definitions, and with continuity of thought throughout the chapters. The book contains a good list of references and has a well-designed index. In view of the degree of difficulty of the content, however, a more schematic organization of ideas in the form of tables, charts, and more illustrations would have made certain concepts clearer and easier to understand. Despite this minor limitation, the book should be of benefit to all radiation workers, and in particular to fellows and physicians in nuclear medicine.

ROBERT LISBONA
VILMA DERBEKYAN
Royal Victoria Hospital
Montreal, Canada

NUCLEAR POWER: HEALTH IMPLICATIONS OF TRANSURANIUM ELEMENTS. Copenhagen, WHO Regional Publications, European Series II, 1982, 88 pp

This is a conveniently organized, short report based on a meeting of the World Health Organization (WHO) working group on transuranium elements in Brussels, November, 1979. It is not a proceedings, but rather an interim report (one of a series) by the group. At the beginning there is a summary of the current state of knowledge, along with recommendations for further studies. This is followed by more detailed chapters on physical and chemical properties, metabolism, dosimetry and safety, sources