mind that they recount the history of antinuclear protests in the two countries and view the nuclear opposition primarily as a social movement. Given the divergence in the history and the development of governmental organizations of France and the Federal Republic of Germany, it is interesting to see the difference in the role of the courts and in the government response to this conflict in the two countries. To the American reader, the authors' analysis of the role of scientific expertise in this struggle and the significance of extraparliamentary dissent should be of interest and contain some lessons.

Moss's book takes a more journalistic approach to his subject. He tends to overdramatize his statements but presents a fair attempt to explain the history of nuclear power development and to present technical material to a nontechnical audience. Moss seems to feel that nuclear power has been oversold, that nonproliferation of weapons is a valid issue in fuel cycle policy decisions, and, in the process of maintaining an evenhanded approach, tends to leave the reader with his worst fears unresolved. The slightly breezy style may offend some and it is easy to spot some technically dubious statements. Nevertheless, the book can be recommended to any reader who would like a readable review of atomic power and of the political problems surrounding it.

*Editor's Note*: These two books are being presented in a combined review because of the reviewer's desire to compare two different approaches to political considerations in the development of the nuclear industry.

*Geoffrey G. Eichholz is Regents' Professor of Nuclear Engineering at the Georgia Institute of Technology, which he joined in 1963. He obtained his PhD in physics at the University of Leeds, England, and was awarded the DSc degree in 1979. He has edited the book* Radioisotopes Engineering *and is the author of* Environmental Aspects of Nuclear Power *and* Principles of Nuclear Radiation Detection, *both published by Ann Arbor Science Publishers. His research interests include the migration of radioactive wastes, environmental surveillance problems, radiation detector development, industrial radiation application, nuclear materials technology, and the health physics of nonionizing radiations.*

## Handbook of Multiphase Systems

| | |
|---|---|
| *Editor* | G. Hetsroni |
| *Publisher* | Hemisphere Publishing Corporation, New York (1981) |
| *Pages* | 1536 |
| *Price* | $64.50 |
| *Reviewer* | Efstathios E. Michaelides |

The *Handbook of Multiphase Systems* has been long awaited by the engineering community. It thoroughly presents all aspects of two-phase flows of current interest for research or design purposes. Starting from the basic equations for the modeling of flows, the book individually examines gas-liquid, solid-liquid, and solid-gas flows. Special topics of engineering interest such as boiling, condensation, pneumatic conveying, fluidization, and measurement techniques are examined separately.

The authors have provided a scholarly presentation of the material with all chapters in the form of review articles. The articles contain most of the data and theories published to date and the bibliography is adequate.

The book is likely to be used by engineers in both design and research areas. The amount of information contained in the book is enormous, and it certainly will find a place in every technical library as a reference text. The only shortcoming of the otherwise excellent work is the great number of typographical errors in it.

*Efstathios E. Michaelides studied at the University of Oxford, England (BA, engineering science and economics, 1977) and Brown University (MS, 1979, and PhD, 1980, engineering science). Since the summer of 1980 he has been an assistant professor at the University of Delaware, Department of Mechanical and Aerospace Engineering. His research interests are multiphase flow, energy conversion, geothermal energy applications, and irreversible thermodynamics. He has contributed about 25 papers to scientific and technical literature.*

## Light Water Reactor Nuclear Fuel Cycle

| | |
|---|---|
| *Editors* | Raymond G. Wymer and Benedict L. Vondra, Jr. |
| *Publisher* | CRC Press, Inc., Boca Raton, Florida (1981) |
| *Pages* | 259 |
| *Price* | $74.50 |
| *Reviewer* | Bernard L. Cohen |

This book is basically a compendium of five articles by staff members of the Oak Ridge National Laboratory dealing largely with the chemical aspects of the light water reactor (LWR) fuel cycle. After a brief introductory chapter, there is a 55-page overview of the fuel cycle by R. E. Leuze with special emphasis on the front end—mining, milling, refining, conversion, enrichment, and fuel fabrication. The remaining four chapters are on the back end of the fuel cycle, with three of them on reprocessing—chemical aspects of reprocessing (42 pages) by D. O. Campbell, Purex chemistry (60 pages) by W. D. Bond, and chemistry of volatile fission products (28 pages) by J. C. Mailen and L. M. Toth. The final chapter is on radioactive waste management (52 pages) by A. G. Croff. The first and last of these five articles give very extensive coverage with minimal detail; whereas, the three articles on reprocessing seem, to a nonchemist at least, to be more detailed. A considerable fraction of the discussion is about future and proposed technologies like hold-back of tritium in

reprocessing, and partitioning or transmutation of high-level waste.

The authors are all deeply involved in the technology they describe, so the writing is highly authoritative and generously supplemented with numerous figures and tables. Most of the articles also have numerous references.

The coverage is limited to technology with little mention of health effects, environmental impacts, risk assessment, and such subjects, and no discussion of political or public policy questions. It might be a suitable textbook for a course on nuclear fuel cycle technology, although its price might be a barrier and there are no exercises for students. Its principal value will be as a general reference, assembling in one brief and readable volume, a great deal of authoritative information about all aspects of the LWR fuel cycle.

*Bernard L. Cohen is a professor of physics at the University of Pittsburgh, former director of its Scaife Nuclear Physics Laboratory (1965-1978), past chairman of the American Physical Society (APS), Division of Nuclear Physics (1974-1975), and 1981 recipient of the APS Bonner Prize for research in nuclear physics. For the past eight years he has specialized in environmental aspects of nuclear energy with special emphasis on waste management, radon problems, health effects of radiation, and risk and risk aversion. He was the 1980-1981 chairman of the American Nuclear Society's Division of Environmental Sciences.*