BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.

Energy Resources in Colorado: Coal, Oil Shale, and Uranium

Author Jerome G. Morse

Publisher Westview Press, Boulder, Colorado (1979)

Pages 396

Price $33.00

Reviewer Arthur L. Reesman

So you don't live in Colorado, well neither do I. Key words can sometimes turn off more potential readers than they attract. However, I am certain that this book attracted the local audience for which it was designed, but many of us outlanders could also benefit from this book.

Energy Resources in Colorado provides much more than its title might indicate. With the exception of oil shale, which by the nature of its distribution is fairly well restricted to Colorado, Utah, and Wyoming with Colorado taking the lion's share, the text that relates exclusively to Colorado is minimal. The book was designed to provide the basic information on coal, oil shale, and uranium so that the "policymakers" in Colorado would have sufficient background to help formulate long-range plans concerning the development of these energy resources and the potential impact that their decisions could have on the human, economic, and natural resources in the State.

The information in the text is presented in a straightforward manner and the author appears to go out of his way to avoid editorializing. The book contains 99 tables, 39 figures, and 15 plates, but it is not a compilation of dry facts nor is it a novel. The author has digested data from a wide range of sources many of which are not readily obtainable to develop a book that provides the type of information that planners, legislators, corporations, and interested individuals need to help formulate a realistic appraisal of these three energy resources in the light of our present energy dilemma.

The author assumes that the reader is reasonably intelligent but with little or no technical background. A glossary of technical terms is provided. Each of the three resources is covered equally and the chapter headings in each section are essentially the same so that with a little work on the reader's part it is possible to compare these resources. The chapter headings for the uranium section are: Chapter 19, "Nature of the Resource"; 20, "Exploration"; 21, "Uranium Recovery"; 22, "Uranium Processing"; 23, "Commercial Development Considerations"; 24, "Environmental Considerations"; 25, "Regulatory Considerations"; 26, "Colorado Uranium: Importance and Impact"; 27, "Technological Developments Affecting Uranium Needs"; 28, "Uranium Production Constraints"; and 29, "The Future–Observations and Concerns."

After reading this book you may not become an active "stripper" or environmentalist, but you should appreciate the problems on both sides and the considerations that must be weighed in order to develop these energy resources with the maximum benefit at the least cost in terms of environmental degraduation and socio-economic disruption of the effected regions.

At $33, this book will not make the best seller list. As my department's library representative, I had not ordered it because our funds are limited and I assumed that the scope of the book was too provincial. I have rectified my mistake.

Arthur L. Reesman (BS, chemistry, Eureka College; MS and PhD, geology, University of Missouri) is an associate professor of geology at Vanderbilt University. His research interests are in low-temperature geochemistry. Past studies have included the behavior of both major and trace elements during chemical weathering and the genesis of clay minerals, and he is currently pursuing studies in stratiform mineral deposits.

Principles of Nuclear Radiation Detection

Author Geoffrey G. Eichholz and John W. Poston

Publisher Ann Arbor Science Publishers, Inc. (1979)

Pages 379

Price $29.95

Reviewer R. J. Woods

The detection and measurement of nuclear radiation is an essential step in the safe and efficient use of radioisotopes and radiation-producing equipment, whether employed in medicine, industry, nuclear-power production, or research. The present book introduces the techniques used for this purpose at a level suited to senior undergraduate or graduate students, and will undoubtedly find considerable use as a text in such areas as health physics, nuclear medicine, and nuclear engineering. The approach is directed toward the practical applications of radiation instrumentation rather than being exclusively concerned with the physical principles involved.

The first three chapters of the text introduce the terms and units to be used, the interaction of high-energy radiation with matter, and the statistics of counting. Units are basically SI, though the roentgen and curie are used where appropriate and readers used to the pre-SI units are unlikely to experience any difficulties. The six chapters that follow discuss gas-filled detectors, scintillation detection systems, semiconductor detectors, track devices, miscellaneous detectors (chemical dosimetry and calorimetry), and neutron detectors, respectively. Each chapter includes examples of the major types of detector covered by the chapter heading, the principles governing their operation, and the range of conditions under which they can be used. The chapters conclude with a brief list of references for further reading and a short selection of problems related to the chapter content. Two final chapters cover instrument calibration and standards, and the electronic systems that are most frequently associated with radiation detectors. Appendixes outline the importance of detector geometry and list symbols and conversion factors.

While in any book this size there will be areas that individual readers would like to see treated in more detail, the actual coverage is such that anyone reading the book should acquire a sound basic knowledge of radiation detection and of the applicability and range of the various detection techniques—the material that in fact a good radiation detection course should teach. Having reached this stage, readers will probably wish to go further in their own particular area of interest. The references at the end of each chapter are current and should make this possible, though the references given will probably have to be supplemented by technical reports, reviews, and original papers in some of the more recently developed areas. A minor complaint is the absence of references to the sources of data given in the tables since, invariably, readers will find that at some point they need to refer to the original source for additional data.

Problems associated with each chapter illustrate the types of calculation that can be carried out. In a number of cases the questions assume a certain amount of basic physics and chemistry that, while not particularly difficult, may prove a barrier to readers who have not had to use this knowledge for a number of years. Since the book should appeal to radiation workers who are not physicists yet require a quick overview of new or unfamiliar detection techniques, the authors might consider including answers to the problems and some worked examples in any future edition to reassure such readers that they have indeed understood the material.

Apart from the minor points referred to above, the book should fully meet the requirements of students and others who need a survey of modern methods of nuclear radiation detection and measurement. Text and diagrams are admirably clear and are likely to endear the book to both students and professionals.

Robert J. Woods is a professor of chemistry with the Department of Chemistry and Chemical Engineering, University of Saskatchewan, Canada. His current research interests relate to the radiation chemistry and photochemistry of coordination compounds of transition-metal ions and organic ligands, although at the present time he is on sabbatical leave with the Mines Pollution Control Branch of Saskatchewan Environment, working on problems associated with the uranium mining industry in Saskatchewan.