

concerns, the writer recommends the book to all reactor physicists and reactor engineers concerned with the reliability of data and calculation methods. The authors are to be congratulated on having adeptly encapsulated a large and rapidly changing subject within the covers of a single book.

Dr. Raymond L. Murray received his first degree in science education at the University of Nebraska, where he also received a masters degree in physics. His doctorate was from the University of Tennessee. In World War II, he contributed to the uranium isotope separation research and production at Berkeley and Oak Ridge. He has been a faculty member at North Carolina State University since 1950, assisting in the establishment of the first nuclear engineering curriculum and the first university nuclear reactor. He served as Burlington Professor of Physics, as head of the nuclear engineering department for 11 years, and currently is professor emeritus. He has published a number of research papers on reactor theory and design analysis, has written textbooks in nuclear engineering and basic physics, and serves as consultant to industry on reactor design and nuclear safety. He has been a member and chairman of the North Carolina Radiation Protection Commission. His current studies involve nuclear reactor analysis related to the Three Mile Island-2 recovery and to uranium resource extension, the application of microcomputers to nuclear problems, and public information on nuclear energy, especially radioactive waste management.

World Energy Supply

<i>Author</i>	Manfred Grathwohl
<i>Publisher</i>	Walter de Gruyter and Company, Hawthorne, New York (1982)
<i>Pages</i>	450
<i>Price</i>	\$49.50
<i>Reviewer</i>	Efstathios E. Michaelides

Reading this book by Grathwohl has been a gratifying and rewarding experience. It is a complete treatise on the subject of energy, written with a rare combination of technical expertise and economic competence. Its pages contain a vast amount of information, valuable to the practicing engineer, the research scientist, and even to the nontechnical social scientist.

After a brief introduction, the book presents a short historic background and the basic principles for the conversion of energy (laws of thermodynamics). Then follows a presentation of the primary energy consumption in the world and its connection to national economic and population growths. Here some basic aspects of energy economics are also examined. The third chapter of the book is devoted to the potential of the world's primary energy sources. The sections cover conventional sources, such as coal, oil, and gas as well as more modern sources, such as fuels for nuclear fusion and fission, geothermal, solar, and tidal energy. The lengths of these sections are approximately proportional to the expected impact of the energy source on the world energy

supply. The fourth chapter examines the technical aspects of the production of secondary energy forms. The production of electricity from nuclear fission or fusion is given in detail as well as heating from solar energy. Sections include methods for the production of electric power from the wind, waves, ocean currents, biomass photolysis, tides, and geothermal resources. The direct methods for energy conversion (magneto hydrodynamics, thermoelectrics, thermionics, fuel cells, and radionuclides) are also discussed. A lengthy exposition follows on the technical and economic aspects of coal gasification and hydrogen energy. The fifth chapter of this book discusses the environmental and safety considerations of energy production and transportation. The topics covered include the safety of nuclear installations and the waste problem, the environmental impact of new energy sources, the emissions of pollutants, and the climatic changes associated with the release of carbon dioxide and waste heat.

The number of references (close to 800) is an asset for this book. Thus, the interested reader can improve his knowledge of a specific subject by looking at the relevant references. The exposition is complete with lists of abbreviations, units conversion table, and a text of the nuclear proliferation treaty.

The author approaches the subject of energy in a global rather than topical way. Because of this, his book will be of interest to the engineer and the researcher. In general, the book is very accurate and rigorous, although there are occasional mistakes in the translation of certain technical terms from German. The originality of the book lies in the fact that the author has compiled information from diverse fields to produce a unified approach to the solution of the energy problem.

Efstathios E. Michaelides was born in Thessaloniki, Greece, and 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 in the Department of Mechanical and Aerospace Engineering. His research interests are multiphase flow, energy conversion, geothermal energy applications, and irreversible thermodynamics. He has contributed about 40 papers to scientific and technical literature.

Advances in Non-Destructive Examination for Structural Integrity

<i>Editor</i>	R. W. Nichols
<i>Publisher</i>	Elsevier Science Publishing Co., Inc. (1983)
<i>Pages</i>	447
<i>Price</i>	\$90.25
<i>Reviewer</i>	Gerald A. Schlapper

This book is a compilation of papers from the Second International Seminar on Non-Destructive Examination in Relation to Structural Integrity held in Paris, France, during August 1981. The papers presented deal with the nondestructive examination of steel welds in relation to assessment of