

Spectroscopy on Localized and Cooled Ions

Peter E. Toschek and Werner Neuhauser

Spin-Polarized Hydrogen

Thomas J. Greytak, Daniel Kleppner, Richard W. Cline, and David A. Smith

Of this latter group of papers, I especially enjoyed the last two. They describe new techniques that offer prospects for interesting experiments.

The paper by R. Klapisch is the only one that involves research on the atomic nucleus. The author describes on-going work, carried out at the European Council for Nuclear Research, Geneva, in which an on-line mass separator is combined with an accelerator bombarded target to systematically produce and study many radioactive isotopes. The hyperfine structure and isotope shift of atomic spectra provide information on spins, moments, and nuclear charge radii. This paper should be of considerable interest to nuclear physicists.

In summary, *Atomic Physics 7* contains a wealth of information on current research in atomic physics. It is a very important and relevant source of information for atomic physicists. Some of the articles are likely to be of interest to physicists working in the area of elementary particle physics. In my opinion, the book would not be too relevant to a member of the American Nuclear Society, since, except for the article by R. Klapisch, there is very little discussion of contemporary nuclear physics or of nuclear technology.

Howard Grotch is a professor of physics at The Pennsylvania State University at University Park, Pennsylvania. He is a theoretical physicist whose research encompasses a variety of topics in atomic and elementary particle physics. He is also a co-author of a textbook, Physics for Science and Engineering.

The Necessity for Nuclear Power

<i>Author</i>	Geoffrey Greenhalgh
<i>Publisher</i>	Crane, Russak & Company, Inc., New York (1981)
<i>Pages</i>	260
<i>Price</i>	\$19.00
<i>Reviewer</i>	Frederick G. Hammitt

This book, written by a prominent British consultant on nuclear affairs, is designed to strongly argue the case for nuclear power as an essential energy source, leading up to the year 2000. While the author commenced his technical career in an oil refinery at Abadan, Iran, during World War II, he joined the nuclear staff at Harwell in 1948, and has held various positions in the British nuclear establishment until 1977, when he became a private nuclear consultant. Hence, he is particularly familiar with the nuclear side, but is not unfamiliar with fossil fuels and oil. The author bases his study on numerous up-to-date energy demand and avail-

ability forecasts, including both the utility need and also the possible eventual full extent of the nuclear option. The plethora of health, environmental, and proliferation factors, which have been in the forefront of recent energy/safety discussions, are considered. Topics treated include methods of power generation, nuclear safeguards, waste disposal, and Three Mile Island. Each topic is considered in relation to developing countries, Communist states, and also the United States and Western Europe. The book includes 18 chapters (too numerous to list here) with 60 figures and 78 tables.

In the Foreword, written by Dr. Sigvard Eklund, director-general of the International Atomic Energy Agency, it is stated that the only significant choices we have, at least until the end of this century, for the production of electric power are coal, nuclear, and, in some places, hydropower. It is stated that in 1979, 6% of the world's generating capacity was nuclear. This should increase to 16% by 1985. The book concludes with the statement that the consequences, should nuclear not eventually be needed, are minimal, but the consequences of a world plunged into a severe and widespread energy shortage would be catastrophic.

I strongly recommend the book to the general scientific community interested in the needed solution for our overall energy problems.

Frederick G. Hammitt, presently professor of mechanical engineering at the University of Michigan, was for several years professor of nuclear engineering at the same institute, and his PhD was in fact in nuclear engineering at Michigan. Hence, he is well qualified to review this book concerning the necessity for nuclear power, both as a specialist in that field, and also in conventional engineering (particularly polyphase fluid flow and heat transfer). At present, he is teaching a graduate course on large power plants, which closely involves the material of the book reviewed. He is professor-in-charge, Cavitation and Multiphase Flow Laboratory at Michigan, and has authored more than 300 papers and articles in this field in addition to two books on the general subject of cavitation.

Fast Breeder Reactors

(An Engineering Introduction)

<i>Author</i>	A. M. Judd
<i>Publisher</i>	Pergamon Press, Inc., Elmsford, New York (1981)
<i>Pages</i>	161
<i>Price</i>	\$12.50
<i>Reviewer</i>	Ronald J. Onega

The Preface of this book starts with the statement "This book is intended for the newcomer to the study of fast breeder reactors [FBRs], either as a student or at a later stage of his or her career." This book certainly is a good, brief introduction to liquid-metal fast breeder reactors (LMFBRs). Most of the chapters deal with LMFBRs rather than other fast reactor concepts, although other concepts are mentioned.