

(AEC) issued a report, "Environmental Survey of the Nuclear Fuel Cycle." Dissatisfied with the viewpoint of that document, The Union of Concerned Scientists launched what the Preface calls an "independent, parallel study intended to illuminate defects and important omissions" of the AEC report. The present text is described, rather grandly I think, as "the conclusions of the major technical review that was carried out." What we have, in fact, is a collection of eight essays of quite variable quality; in my opinion, half of them could have been omitted with little loss.

The opening chapter, "An Overview of Nuclear Power," states the central problems of implementing nuclear energy as reactor safety, waste disposal, and safeguards. These in turn imply understanding and solution of the associated technical and managerial problems. The writers believe that the U.S. nuclear program is not adequately dealing with these problems, or in their words, "mismanagement of the U.S. nuclear program has become so pervasive that there are now serious questions as to whether the nation can, in fact, manage such a technology with the required care . . . the technical and managerial issues must be fully resolved and the construction of new nuclear plants must be restricted until this is accomplished." The purpose of the book is then "to set forth the technical problems in the nuclear program so as to help move toward that full public understanding which is at present lacking." The book falls far short of this aim, in my opinion.

Of the seven remaining chapters, I thought the best was on the problems of storage and disposal of high-level radioactive wastes by Thomas C. Hollocher of Brandeis University. My only objection is that he fails to point out the difference between the *toxicity* of plutonium and the *hazard* therefrom. Aside from that, I thought the essay a sound general discussion. The chapter entitled "Catastrophic Nuclear Reactor Accidents" was an interesting but incomplete discussion on the loss-of-coolant accident. Unfortunately, the authors of this chapter (Daniel F. Ford and Henry W. Kendall) preferred to spend more time on the spectacular features of the accident than on a balanced presentation of the issues. The reader gets no impression of the defense-in-depth philosophy of both reactor design and operating practices that make a core meltdown in a commercial power station an extremely improbable event, nor of the extent of experimental and analytical reactor safety research. The chapter left me with an impression not of an attempt to inform, nor even of advocacy, but of propaganda.

The remaining chapters are of descending interest and quality. I found the chapter on safeguards reasonable in tone but not very informative. The reader already knows that safeguards problems exist; if he wants to know what is being done about them and if the measures are likely to be effective, he won't find out here. The discussion of fuel reprocessing is obsolete because of its concentration on the dead issue of the original West Valley Plant; it should have been rewritten or omitted. The chapter on radioactive wastes suffers from a different deficiency. The author has chosen to create a dubious issue out of his own notions of the possibility of cesium release, and the major concerns of research in this field are never presented. The chapters on mining and milling hazards are likewise unconvincing. The historical discussion of the gradual recognition during the 1920's and 1930's of the connection between an unmistakably high incidence of lung cancer and airborne reactivity was interesting. However, I was more concerned with *present-day* mining conditions and the adequacy of *current* regulations. I found the discussions of these matters

vague; to lower current dose rates by a factor of 100 at a cost of \$2 million per mine seems to me a gross distortion of priorities on the basis of the evidence given. The demands for "remedial action" concerning uranium mill operations appear equally ill-founded.

In sum, the pretentious claims of the opening chapter are simply not fulfilled, and very little has been contributed toward that "full public understanding" of which the authors spoke.

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July 29, 1976

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**Stress Transients in Solids.** By John S. Rienhart. Hyperdynamics, Santa Fe, New Mexico (1975). 230 pp. \$8.95. Paper.

This book presents an introduction to the fundamental aspects of elastic wave propagation. The text is well illustrated, and the mathematics level is not too advanced. The wave equation is derived in detail, but most other equations and solutions are stated without proof. The physical significance of the various mathematical relations are discussed in detail.

The subjects covered include definitions of stress, linear strain, the generalized Hooke's Law, derivation of the wave equation, spherical and cylindrical waves, surface waves, and momentum transfer. Much attention is given to boundary effects. These include normal and oblique incidence, reflection, corners, notches, and spalling.

A brief discussion of experimental procedures is included, but other important topics are omitted. Among these are elastic-plastic waves, visco-elastic materials, and numerical analysis methods. An adequate bibliography is included but contains no specific references on the latter topic. The book would be useful in an introductory course where the professor supplies the missing mathematical rigor.

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August 26, 1976

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