

Book Reviews

Nuclear Propulsion for Merchant Ships. By A. W. KRAMER. Division of Technical Information, U. S. Atomic Energy Commission, Washington 25, D. C. 600 pp. \$2.25.

This book is an extremely comprehensive review of the background as well as the past and present developments regarding the application of nuclear power for the propulsion of merchant vessels. The stated purpose of the book "is to set forth in one volume and in as simple language as possible the essence of the information [on the nuclear ship program in the United States] contained in . . . many highly technical publications." Inasmuch as the book was written for "anyone interested in the subject" it was not possible to go into much depth in any area. The book does, however, cover with considerable clarity not only the stated subject but also many of the peripheral areas associated with the nuclear ship program in the United States, including the legislative history of the program, status of nuclear liability and indemnity, actions by international bodies, negotiations with foreign governments, programs of other countries etc.

As is not unexpected, approximately half of the book is devoted to the N.S. Savannah. Included are chapters as follows: Chapter 4, The N.S. Savannah (design and description); Chapter 5, Hazards Analysis; Chapter 6, Operating and Environmental Characteristics; Chapter 7, Servicing Nuclear Ships; Chapter 8, Training of the N.S. Savannah Crew; and five appendices consisting of 40 pages of additional design details. The author did not intend (nor in the pages allocated was it possible) to go into any great detail on any one feature or consideration, but the review presented is a good qualitative review of the subject. However, the book is not without some omissions. Nowhere is it made clear that the "containment" provided with the power plant depends upon the vented reactor compartment as well as the pressure containment vessel. Furthermore, while the subject of environmental exposures is discussed, no concentration or exposure data are presented—possibly in deference to public reaction. It is also unfortunate (though hardly the fault of the author) that the book does not contain information on port criteria and harbor evaluation, but it would appear that this information was not fully developed until after the book was completed.

Several chapters of the book are related to comparative design and cost studies of various reactor and ship types. There have been so many such studies both here and abroad that it is indeed difficult in any such compilation to interpret or even to fully comprehend all the conflicting data. This portion of the book is thus somewhat confusing, although there seems to be general agreement that the nuclear ship propulsion will be more economical than conventional ships—someday.

With so much material to cover one cannot help but question the need for 60 pages on the basic principles of nuclear

reactors (Chapter 3). It would, of course, have been quite appropriate to have given greater emphasis to the U.S. Naval Program and the USSR Lenin, although one may presume that this information is harder to come by. Actually, the book is a must for anyone associated with the nuclear ship business as the author has well effected his stated objectives.

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(About the Reviewer: Mr. Cottrell is currently Supervisor of the Nuclear Safety Section of the Reactor Division of the Oak Ridge National Laboratory. He is responsible for the safety analysis of a number of reactors with which the Laboratory is concerned. In this capacity he not only participated in the N.S. Savannah safety review undertaken at ORNL but was co-author of the original harbor safety analyses report. Mr. Cottrell has also been editor of Nuclear Safety since its creation in 1959.)

Space Research II: Proceedings of the Second International Space Science Symposium, Florence, April 10-14, 1961. Edited by H. C. VAN DE HULST, C. DE JAGER, AND A. F. MOORE. Interscience, Division Wiley, New York, 1961. 1241 pp. \$29.50.

When conferences-by-invitation-only first mushroomed in the postwar years the proceedings, if any, were usually crude mimeographed reports privately distributed to chosen recipients who guarded them more zealously than classified documents. There were, however, a few voices raised protesting against such an irresponsible, almost immoral, procedure which closed off the majority of the scientific community from the benefits the conferences were supposed to bring. In time these protests began to have some effect, and the justice of their point of view is now almost universally subscribed to. But some of the original protesters must begin to have regrets over the Pandora box they helped open, for our library shelves sag under the accumulated weight of conference and symposium literature.

The volume under review shares most of the shortcomings of the species. It is bulky (1241 pages), prohibitively priced for the private pocket (\$29.50), and only became available a considerable time after the conference involved (eleven months in this case). Its contents are made up of a large number of highly specialized research papers (105, count 'em) aimed by and large at the workers in the immediate field. The articles are of widely varying significance and quality (one of the papers emanates from the private observatory of an apparently highly affluent amateur astronomer). The symposium reported here differs from most of its neighbors in that many of the topics discussed