The reviewer is of the opinion that neutron physics has been so much more difficult than corresponding experimentation with charged particles, that exceedingly clever and beautiful work has been done to overcome these difficulties. Even a cursory examination of this volume will emphasize the point to the reader and even if this were the only reason for existence of the book, it would be sufficient especially for pedagogic purposes. A new Ph.D., well versed in the theory and experiment displayed in both volumes, would certainly have an enviable background training.

Now to attempt some slightly more detailed comments on the two general subdivisions of Vol. II; first as to theory, Emmerich covers Optical Model, and Austern, Direct Reaction theories. Interestingly enough, a brief section on the application of the Optical Model as a Source of Data for Reactor Physics is included by Emmerich. Unfortunately, the more recent success of the non-local potential approach could not be included. It is, of course, a difficulty in any book written about a still active field that the most recent gains are not covered. In the case of Austern's fine paper, the relationship to neutron physics is not nearly so evident as one can now recognize in view of direct-capture experiments and the distorted-wave Born approximation. The fast-neutron resonance theory is covered by Willard, Biedenharn, Huber and Baumgartner in a comprehensive and readily understandable paper, while polarization is discussed by Welton in a carefully detailed presentation of a most involved subject. Wheeler's paper on Channel Analysis of Fission will, in the reviewer's opinion, become a classic for its clarity of presentation of the almost completely up-to-date situation in this still rapidly changing subject. Gammel gives an excellent presentation of the basic nucleon interaction of neutron physics, the n,p scattering.

The remainder of the papers cover essentially experiment or data analysis, and no major branch of the field is omitted. Most of the new approaches to solving difficult problems are reported, but usually only some of the preliminary data were available at the time of writing. For instance, the tank method of obtaining capture cross sections was just beginning to provide data, the Moxon-Rae gamma-ray detector had not been applied systematically, nor had the magnetic and other bunching techniques provided results on neutron inelastic scattering comparable to charged-particle spectroscopy. It is impossible in a brief review to make detailed comments on individual papers here reported other than to commend their uniformly high quality.

All in all, this is an excellent compendium of fast-neutron data and theory which should be on the shelf of every practicing neutron physicist, but take care to be aware of the price before ordering. Typography, format and illustrations are excellent, but perhaps it would be possible to dispense with some quality for a lower price.

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About the Reviewer: Richard F. Taschek is the division leader of the Los Alamos Scientific Laboratory's P-Division. He has been associated with the Los Alamos-located portion of the atomic energy program since 1943. His research interests there have been primarily concerned with fast neutron physics problems, and nuclear reactions of light elements.

He has also been a member and sometime chairman of the U. S. NCSAG, the TNCC and the EANDC (reflecting a concern with problems relating to neutron cross sections and reactor physics).

Nuclear Fuel Handling. By A. D. Wordsworth, Butterworth Inc., Medical and Scientific Publishers, (April, 1963). 378 pp. $15.00.

Mr. Wordsworth is the editor of the British magazine, Nuclear Power. He has written this book, as he states in the preface, "to provide industry as a whole (or the individual who may be desirous of entering the field) with a general insight into the overall requirements of nuclear fuel handling procedures and equipment, and to give as much detail as is at present available on some of the systems now in use at, or proposed for, various installations throughout the world."

The book is written in two parts: Part 1—Design and Operational Requirements for Nuclear Fuel Handling Equipment, and Part 2—A Survey of Existing and Proposed Installations.

The first part deals with the requirements of fuel-handling equipment in a general way. Seventeen chapters cover the subject from Handling New Fuel Elements to Debris Removal Equipment.

The second part describes the equipment in eleven British installations and eight other installations including Shippingport, Piqua, Hallam and the EBWR in the United States and NRU and NPD in Canada.

The chief merits of the book are that it must be one of the first texts on the subject, it treats it in some breadth, it is well organized and well illustrated. Its chief fault is that the author has tried to generalize too much from the specific, the specific being the British type of gas-cooled,

graphite-moderated reactor installation. The generalizations may be warranted for reactors of that type but some of them tend to be inaccurate when applied to other types described in the second part of the book. "The individual who may be desirous of entering the field" would be advised to take the generalizations with a grain of salt.

It is not likely, however, that the book will attract many readers on this side of the water who are not already engaged in the business. Some of those who are, may find it interesting as a way of comparing notes and, because of its organization, it may adjust their focus on the interrelationships of all the phases of nuclear fuel handling.

As Mr. Wordsworth points out, "it is neither possible nor desirable to cover the precise technical design problems in great detail." As might be expected, the amount of detail is greater for the British installations than for the others. The descriptions for some, such as that for Piqua, are so cursory that they add practically nothing to the book. The initiated will, therefore, find parts of the book rather shallow but may uncover some helpful ideas.

The reviewer has referred "Nuclear Fuel Handling" to the fuelling-equipment design engineers associated with him. Mr. Wordsworth has put many of the common requirements of nuclear fuel handling in perspective and reading his book may throw another light on their own appreciation of the subject. Presumably, other fuelling-equipment designers could benefit in the same way and it is to this select readership, on the basis of one to an office, that I recommend the book.

J. S. Foster

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About the Reviewer: Mr. J. S. Foster is a graduate of Nova Scotia Technical College and holds degrees in both mechanical and electrical engineering. His association with the nuclear program began in 1953. When design work for the Nuclear Power Demonstration station was started by Canadian General Electric Company Limited in 1955, Mr. Foster was loaned by his company, Montreal Engineering Company Limited, to take the appointment as Head of the Design Engineering Group.

In 1958 the Nuclear Power Plant Division was formed by Atomic Energy of Canada Limited to carry out the design of a full-scale power plant. Mr. Foster was selected as Deputy Manager of this Division. With the decision in 1959 to build the 200,000 kilowatt Douglas Point Station, he became Manager of this project and is now General Manager, Power Projects in A.E.C.L.

Siting of Reactors and Nuclear Research Centers. Proceedings of a Symposium, Bombay, 11-15 March, 1963. International Atomic Energy Agency, Vienna. International Publications, Inc., 317 East 34th St., New York, N. Y. 509 pp. $10.00.

Probably no subject in the last 15 years has stimulated more scientific and lay debate than the one covered by the present volume. It is said to represent the first symposium under international auspices in which an attempt has been made to reconcile public safety with the practical desire for reactor installations to be near population centers.

That the issue is still very much alive in the United States and elsewhere is attested by the exchange between the first and present chairmen of the Atomic Energy Commission as to what is safe for the site of a power reactor. The tremendous heat generated in the press (almost matching the artificial kilowatts projected for the projects) in New York City and in California (on the sites at Pendleton, Malibu and Bodega Bay) make abundantly clear that site selection has not yet moved from the emotional art to the scientific or technologic formula.

It may be expected, therefore, that the interested bystander might well turn to this array of papers for intellectual guidance in the development of a public position. Do the papers provide such guidance?

Thirty papers, participated in by 120 authors and others attending the meeting, rehearse the atmosphere, ground and hydrologic environmental factors; the questions relevant to containment; the problems of criteria for site selection, and some experiences with actual site selections for both nuclear research centers and power reactors. Since the papers represent principles and practices in some twelve countries, it is not surprising that conclusions often reflect the restraints of geography and population density as much as they do the resulting philosophies of individual authors. General criteria, as is true in most of life, give way to the realities of the local scene. Principles become adjusted to the exigencies of the individual case, in the particular region of a particular country. Thus, positions vary widely from the comment of V. S. Rao: "it might conceivably be possible to establish a 5-20 mile (or other appropriate) zone around cities, from which nuclear reactors would be banned" (p. 165) to that of E. C. Watson (p. 163). The latter feels that frequent inversion conditions, per se, should not automatically rule out large regions for power reactor sites (suggested by F. Duhamel).

The conclusions of the participants, plus their views as to future criteria, are set forth in pp. 491 to 500 inclusive. Here pithy comments abound,