ments, there are about 20 articles of a general nature on related subjects such as "Periodic Law and Periodic Table," "Noble Gases," "Lanthanide Elements," "Transuranium Elements," "Isotopes," "Electronic Configurations," "Origin of the Elements," "Prevalence of the Elements," and "Electrode Potentials." A short reference list accompanies each article. An index facilitates the location of material not readily evident from the alphabetical arrangement of topics. The entries in the book have been prepared by 104 knowledgeable individuals of outstanding reputation in their respective fields.

Despite the large number of authors, there is a reasonable uniformity of treatment of each element. The book is recommended strongly.

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EXPENSIVE EXPOSITION

Title Fast Breeder Reactors

Editor P. V. Evans

Publisher Pergamon Press, Inc., 1967

Pages vii + 951

Price $37.00

Reviewer Joel H. Ferziger

The volume under review is of a type which seems to be displaying the highest rate of population increase these days—the conference proceedings. In particular, it is the proceedings of the Conference on Fast Breeder Reactors held in London in May 1966.

The content is what might be expected: reviews of various national programs by officials in charge of the programs, experience with existing systems, systems planned for the future, and then detailed papers in the important problem areas, i.e., physics and fuel sodium technology. Reflecting, I suppose, the British bias for sodium cooled reactors, this reactor type receives much more attention than all others combined.

One question I have been unable to resolve is that of for whom a book of this type is intended. The price puts it out of the range of most potential individual purchasers, and the content is such that only a few academic libraries will find a need for it. This leaves then only the libraries of laboratories and industrial groups currently working with fast reactors. Furthermore, since fast reactors are currently progressing at something like the pace of thermal reactors ten years ago, the material will be out of date within a few years. One wonders whether such a book merits a printing job designed for a considerably longer lifetime, especially when this results in a price that destroys some of its current usefulness.

There are far too many papers to attempt a review of each here. Rather, I shall limit myself to a few general comments and, reflecting a personal bias, some specifics on the papers in the physics and design areas. All of the papers are reviews; most of them review progress in a given area made within the author's country, and several are written by authors from more than one laboratory (one has authors from five separate groups). The quality of the papers (and I will admit to not having read all of them) is generally very good, and, since in a short review one cannot give many details, I merely say that they are amply provided with references in which the interested reader can find further information.

In the physics papers, one finds a considerable amount of duplication in the various national programs. The topic of major current interest is the effect of fluctuations in the cross sections on a fine energy scale and heterogeneity on gross reactor behavior. Since the codes needed to handle this problem are rather expensive to develop (especially the cross-section libraries for them), greater emphasis on international cooperation would seem to be indicated. Perhaps conferences of this sort will promote the needed cooperation.

The impression that one gets is that the gross characteristics and design features of fast reactors are reasonably well understood and agreed upon and that work now centers on specific physics effects, detailed design, and hardware development. As with thermal reactors several years ago, fast reactor development is rapidly becoming a question of technology rather than physics.

Joel H. Ferziger (PhD, University of Michigan, 1962), is associate professor of nuclear engineering at Stanford University, where he has been since 1961. His main interests are in neutron transport theory nad the kinetic theory of gases. He has been involved with fast reactor physics and design through consulting work with General Electric.

BWR BURNUP METHODS

Title Fuel Burnup Predictions in Thermal Reactors

Publisher United Nations Educational, Scientific and Cultural Organization, 1968

Pages 243

Price $5.00

Reviewer George A. Sofer

Besides being the biggest collection of nuclear codes name dropping, the book offers the reader the broadest and deepest insight published to date on burnup calculation methods in thermal reactors. Of paramount interest to the American reader is the comprehensive dissertation by R. L. Crowther on large BWR burnup methods. This is perhaps the best that has been published on BWR core physics since the 1963 San Francisco Conference.