Book Reviews

The Economics of Nuclear Power. Including administration and law. Series VIII of *Progress in Nuclear Energy*. J. Gueron, J. A. Lane, I. R. Maxwell, and J. R. Menke, Eds. McGraw-Hill, New York; Pergamon, London, 1957. 513 pp. Illus. $17.

The International Conference on the Peaceful Uses of Atomic Energy, held at Geneva in August 1955, is unparalleled in the history of scientific conferences. It is unlikely that there can be a comparable conference in the foreseeable future; even the 1958 sequel which is now being planned is not likely to be of such significance. This conference marked the reopening of scientific communication in an area which had been largely classified for over a decade. The information collected and presented for the conference provides a base point for following and participating in future developments in the field of nuclear energy.

The series of publications entitled *Progress in Nuclear Energy* is based largely on the Geneva conference. The series has the benefit of an impressive editorial staff, representing leading figures in the field of nuclear energy throughout the world. The book *Economics of Nuclear Power* is the eighth volume in this series. Its contents actually are somewhat broader than the title may suggest. The book is divided into five chapters with selected papers on each of the subjects: "Needs and Resources," "Nuclear Power Economics," "Nuclear Fuel Cycles," "Reactor Programmes and Reactor Economic Data," and "Administration and Law."

The papers selected for each of the chapters listed above are selected primarily from those prepared for the Geneva conference. On the other hand, the editorial job was not merely one of selecting papers, nor are the papers selected strictly limited to those presented at Geneva. The book contains composite analyses of world-wide data on world energy requirements, taken from various sources, and of post-Geneva nuclear power economic data. The editors, in their selection of papers and in their preparation of special material, have tried to give perspective to a subject which is relatively new and which presents many problems that are as yet unsolved.

While the field of nuclear energy is developing rapidly and there is little experience on which to base judgments on the economics of nuclear power, the book must be considered as being of much more than historical significance. It is a useful reference book on the world energy situation and on the crucial technical and legal problems which must be solved in order for nuclear energy to become an important economic force.

The organization of material provides a continuity which is better than might be expected in a book composed of selected individual papers which were not written for continuity. There is unfolded a story of the importance of energy to man's industrial growth and improved standard of living, with an appraisal of energy resources which indicates that many countries already have inadequate resources of fossil fuels or hydro potential and many others look to a future within the next few decades in which new energy resources must be tapped. It is reassuring in this situation to learn that nuclear energy resources—uranium and thorium—already are known to be adequate to provide a basis for continued industrial expansion. This adequacy in terms of tons of raw material and potential energy content of that material is significant only if supported by suitable technological and economic prospects for utilization of the energy. The promising nuclear fuel cycles—involving both uranium and thorium raw materials—are well described in papers which reflect honest differences of opinion and different local circumstances. These differences in opinion and circumstances are also reflected in the summaries of reactor programs and reactor economic data.

One factor weakens the book in its endeavor to provide factual answers to the questions raised by its title but, at the same time, introduces a certain mystery which adds to the interest of those who are inclined to project into the future: authors of the selected papers and editors of the book were faced with total absence of operational experience in nuclear power plants designed specifically to optimize nuclear power economics. Nevertheless, there prevails an optimistic attitude that such plants, when built and operated, will become economically competitive and will provide a justification for rapid expansion in the nuclear power industry.

This projection of an expanding nuclear power industry clearly shows the importance of paying immediate attention to the administrative and legal aspects of nuclear energy. These administrative and legal problems are unique and complex as a result of the military importance of special nuclear materials and of the long-term potential hazards of the radioactive materials involved in the production of nuclear energy. The chapter on administration and law clearly identifies the problem areas and summarizes experience pertinent to their solution. One is left with the realization that there is much which remains to be done, not only in the development of technology for economic nuclear power but also in the education of the public and in the adaptation of national and international law to the new problems which its utilization imposes.

The fact that the book consists of a collection of individual papers has both advantages and disadvantages. Individual articles of special interest at a particular time can be singled out without concern about dependence upon previous articles. In this sense the book is a reference document which should be useful for some time to come. The fact that different attitudes of different authors from different countries are included also provides a good basis for the reader's own evaluation of what the future holds. On the other hand, the fact that the book relies almost entirely on the selection of articles for reproduction makes for a certain amount of unbalance in overemphasis of some situations and duplication of certain thoughts in several different articles.

The editors have done a commendable job in their selection of papers and in supplementing them with special commentary. The reader should be warned, however, that the principal subject of economics of nuclear power is one which requires continuing reappraisal and updating. With that word of caution, the book is recommended as a valuable addition to the library of anyone active in the energy field and interested in the possible role of nuclear energy in the future.

U. M. STAEBLER
U.S. Atomic Energy Commission