

BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



The Coal Era in the United States: A Study of Our Viable Alternatives

<i>Author</i>	C. B. Reed
<i>Publisher</i>	Butterworths, Woburn, Massachusetts (1981)
<i>Pages</i>	92
<i>Price</i>	\$9.95
<i>Reviewer</i>	Gerald A. Schlapper

The Coal Era in the United States: A Study of Our Viable Alternatives presents an analysis of an energy system based on coal. Synthetic fuels and conversion systems are discussed in addition to facts pertinent to the use of coal for production of electricity. The ideas presented in this book are controversial. In fact, the publisher has chosen to state that the viewpoints of the author do not necessarily coincide with those of the publisher. Many readers of *Nuclear Technology* will disagree with some of the author's opinions as presented in this text.

Accepting the fact that the petroleum era has ended, Reed reviews possible interim and long-term energy sources. He notes that the choices for a long-term supply are limited by the availability of necessary technology, economics, and political problems. He references statements by Gofman and Tamplin that the concept of the liquid-metal fast breeder reactor is frightening to some. With respect to energy production from fusion sources, Reed states that many physicists doubt that any net power output will be achieved. He endorses the possibility of assistance from solar power energy production in the long term, but notes questions that arise concerning hardware availability. Although he states that to his knowledge no solar power plants are planned for the immediate future, Reed comments that electric power plants utilizing heat produced by direct sunlight can be built today.

He concludes that when the problems with all possible energy sources are analyzed, an inescapable decision is that reliance must be placed on coal or its derivatives or light water reactors. He then states his opinion that due to the cur-

rent *defacto moratorium* on nuclear reactors, emphasis must be placed on power derived from coal and its derivatives.

The remainder of the text discusses the fundamental questions of how much coal is available, where it is located, and how much it will cost. A substantial amount of numerical data on available resources and costs is presented. Based in part on data generated in the early 1970s and updates based on more recent findings, the author provides his own estimates. With respect to plant capital and operating costs, Reed admits that the basis for cost estimates is somewhat limited, especially for synthetic fuel production facilities. However, using his best estimates, he notes (on p. 53) that synthetic fuels from U.S. coal can be produced at a cost less than the cost of imported oil and gas.

While Reed's primary thesis is dependence on coal and its derivatives for power, he clearly notes in the fifth chapter that we currently cannot produce the large amounts of coal fast enough, and so assistance will be needed from the entire energy spectrum to prevent a shortfall. He also notes numerous pessimistic studies and surveys that indicate that the United States will not take the actions necessary to solve our energy problems.

While one may disagree with some of Reed's conclusions, this text does present a summary to include cost estimates derived by the author of the employment of coal and its derivatives as a long-term energy source. As an admittedly biased reviewer, I tend to disagree with the statements on a long-term energy mix that limits the contribution of nuclear power. Recent expressions of concern over the emissions from coal-fired plants by groups that for years have opposed nuclear power plants may point to political problems for coal as well as for nuclear. Hopefully, the citizens of the United States, Reed notes, will awaken and reasonably assess our energy needs and take action before it is too late.

After receiving his MS in nuclear engineering from the University of Missouri at Columbia in 1970, Gerald Schlapper joined the reactor operations staff of the University of Missouri Research Reactor Facility. Dr. Schlapper received his PhD in 1977 and remained on the staff of the Research Reactor Facility until January 1981, when he assumed his current position as a faculty member of the nuclear engineering department at Texas A&M University. During his career, he has served as a consultant to various government and private organizations.