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American Energy Choices Before the Year 2000, E. Bergman, H. Bethe and R. Marshak, Eds.

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AMERICAN ENERGY CHOICES BEFORE THE YEAR 2000

E. BERGMAN, H. BETHE and R. MARSHAK, Eds.
Lexington, MA: Lexington Books. 1978. Pp. 150. $14.50.

These edited presentations from a conference held January 13-14, 1978, in New York City, and sponsored by the City College of New York in collaboration with Americans for Energy Independence, suggest that we must depend on conservation, coal, and nuclear energy in the next two decades to relieve our energy problems, because solar and geothermal energy will supply too little in this time frame, and fusion's developmental time scale is too long.

While some of the solar cost figures used are open to argument, Hans Bethe declares that only solar hot water heating can be expected to be economical in the near term, neglecting to acknowledge that passive solar heating in fact also is economically attractive.

Several presentations deal with conservation. One, on a yet to be evaluated public education program, leaves the reader with the feeling that rhetoric alone will not convince the public to conserve. A second discusses redistribution of wealth resulting from national conservation policies. Generally, agreement is voiced on a possible 25 percent reduction of energy use to be achieved by industrial conservation, use of available technology in generating power from refuse, and improved efficiencies of cogenerating electricity and heat. The important point is made that conservation only buys time, and is no substitute for enhancing production technology. One provocative chapter asks if we should conserve oil for the future: "What has posterity ever done for me?"

Several articles discuss the difficulties we are encountering in digging and burning coal. Environmental concerns and the increased costs resulting from longer construction times are presented as preventing a rapid increase in coal generating plants and the issuance of federal coal reserves. A good case is made for taking a second look at burning coal in small distributed systems based on the availability of environmentally acceptable boiler designs. However, this approach suffers from being on the wrong side generally of "economics of scale" arguments.

Two chapters are devoted to discussions of the predicted increase in demand for growth of electrical generating capacity, citing four factors which will be responsible for this increased demand:

1. Population growth for at least several more decades, and growth due to immigration for as long as we allow it;

2. Increasing total employment, as dictated by government po and population growth, that will require additional energy;
3. The switch from gas and oil to electric energy, which must occur as the former resources are depleted;
4. Energy expended to accomplish cleaning of the environment, as desired by large segments of the population.

Conservation should relieve these upward pressures somewhat, but no one believes that conservation will be able to offset the demands for more electric power.

Alternative nuclear fuel cycles are described briefly in an effort to assess nuclear power options in terms of the recognized exhaustible uranium supply. Not surprisingly, some form of fast breeder reactor clearly is the best choice. Unfortunately, no discussion is provided of the impact that any of the reactor options have upon disposal of nuclear waste. More specifically, the chapter on disposal of nuclear waste is disappointing because of its brevity and resulting superficiality. The brief discussion of fusion hybrid reactors gives the only indication that nuclear fusion might play a role in energy choices before the year 2000. One concludes from the material presented that, although possible, fusion power should not be a part of our serious planning, due to uncertainties in technology and costs.

The final chapter, one of summary, observes that our nation is moving in directions which are far from encouraging, insofar as industrial capacity and capabilities are concerned, and makes an emotional plea for action by the leaders of our country.

The book provides a broad perspective and emphasizes that many, if not most, of the problems with our energy options are political and social rather than technical. We believe the editors should have brought out more forcibly that our immediate problem is liquid fuels to keep transportation, the lifeblood of our nation, available. More electrical capacity is not a first order answer to this problem.

The closing sentence of the book bears repeating: "So far, the progress that has been made is very small relative to the magnitude of the challenge."

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