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efficiently than in the United States, largely because of higher relative fuel prices in Sweden, is supported by a large number of other American and Swedish analyses referenced in our original article and in a recent study (3) sponsored by the Electric Power Research Institute as well.

Our conclusions were also not very sensitive to the method of accounting for electric power, a topic we dealt with in considerable detail. In several tables we provided energy use totals that reflected both electricity use counted with and without real thermal conversion losses and imaginary losses allocated to hydropower. We also explained that allocating thermal losses to hydropower distorts the economics of energy use, both because the relatively inexpensive hydropower available in Sweden stimulates relatively higher use of electric-intensive processes and because the use of combined heat and electricity cycles makes the Swedish heat rate considerably lower than that in the United States.

We also dwelt at great length upon the subject of international comparisons of well-being and the difficulty of measuring living standards with the GNP. We are not familiar with the measure of well-being "total personal income per family" offered by Starr and Field and could find no economists who had used this. However, the difference in this index between Swedish and American incomes is almost exactly cancelled out by the difference in family size, Swedish families in 1971 being only 79 percent as large as American families. Furthermore a comparison based only upon material goods is unrealistic. The Swedish comprehensive health care and housing for the aged counts, as well as washers and dryers, in measuring well-being. In any case, the issue is not who is wealthier. Our comparison was based on "how well" energy is used, not "how much."

We share the optimism of Starr and Field over the international spread of conservation techniques. However, we do not find 12 inches of attic and wall insulation or automobiles with a fuel efficiency of 24 miles per gallon—ingredients in Swedish energy use—"unreasonable conservation targets" as Starr and Field imply. With regard to district heating, we questioned the overall effectiveness of this technique in Sweden and did not consider it a major factor in our conclusion. Elsewhere, however, the Swedes appear to share our enthusiasm for additional conservation, having embarked upon a national investment campaign that has already shown results. Thus international comparisons reveal both important techniques for using ener-

gy effectively, as well as the high degree of flexibility in long-run energy needs.

Leaders in the power industry have shown a great degree of skepticism toward suggestions that the United States could significantly improve energy-use efficiency. This skepticism is understandable if the basis for those suggestions is crude comparisons of energy/GNP ratios. The same skepticism should also be applied to industry forecasts of "needs" that use such aggressive measures [see (1) and articles in (4)]. We certainly agree that there are grounds for debate over what are "reasonable" conservation targets. The letter from Starr and Field, however, is founded primarily on generalizations, aggregations, and selective use of the available data. A careful reading of our article shows that there are indeed many promising Swedish techniques and policies that provide for more effective use of energy and other resources.

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### References

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2. B. Carlsson, in *IUIs Långtidsbedömning 1976* (Industrins Utrednings Institut, Stockholm, 1976), p. 270; lecture at Industrial Energy Day, Stockholm, May 1976.
3. J. Alterman, J. Dunkerley, J. Darmstadter, "How industrial societies use energy: A comparative analysis" (Resources for the Future, Washington, D.C., in press).
4. *The Transitional Storm* (Edison Electric Institute, New York, 1977).

### Controversial Grant Proposal

My editorial of 11 March (p. 939) refers to a move by the House of Representatives in April 1976 to shut off funds for a controversial National Science Foundation grant proposal. This is incorrect. It was a grant proposal to the National Institute on Drug Abuse (Department of Health, Education, and Welfare), rather than one to the National Science Foundation. The congressman involved, of course, was Representative Robert Michel (R-Ill.). A report on this action appeared in the 30 April 1976 issue of *Science* (News and Comment, p. 450).

I apologize for any embarrassment this inadvertent error might have caused the National Science Foundation.

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