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LETTERS

Energy: The "Soft Path"

May I clarify a few points raised in Allen Hammond's stimulating account (News and Comment, 27 May, p. 959) of the reaction to my October 1976 *Foreign Affairs* article?

First the thermodynamically appropriate uses of electricity which, according to my article, make up about 8 percent of all U.S. (or European) end-use enthalpy, include not only those cited by Hammond—lights, motors, and electronic equipment—but also electrometallurgy, electrochemistry, and all other applications except electric heating and cooling.

Second, I did not propose making fuel alcohols by expanding the beer and wine industry but rather used an analogy with that industry's physical scale (volume of fluid output per year) to illustrate how big a bioconversion industry need be. Pyrolysis and enzymatic processes would be among its main methods, methanol probably its main product. The 12- to 17-fold discrepancy between my estimate and Daniel Kane's of the amount of alcohol required appears to arise from his misreading fluid output as alcohol output, despite my caveats.

Third, President Carter's speechwriters may have taken the incorrect cogeneration figure for West Germany from the same source I did (1). I am grateful to R. H. Williams for pointing out that 29 percent of German electricity is produced by industry but that only about 12 percent represents true cogeneration (the rest comes mainly from condensing stations).

Fourth, the fullest version of my work, combining and greatly augmenting the substance of my *Foreign Affairs* article and of its Oak Ridge companion piece, is a just-published book (2).

Finally, reports of my death are exaggerated. The many published critiques and my responses are collected in a U.S. Senate hearing record (3) in which I meet all the points raised. It thus seems premature to conclude that the soft-path thesis "seems certain to be discredited" by technical flaws. I tried to make my analysis explicit and fully documented, but I still await a critique that does the same and hence can show whether the analysis has merit. Encouragingly, after extensive correspondence summarizing data from my references, Hans Bethe has accepted my solar seasonal heat storage calculations, which he originally thought were wrong by an order of magnitude. A similar reconciliation, I believe, can occur with other critics if they will kindly verify my references.

My analysis is exploratory and undoubtedly imperfect. After long adversarial review, I published it so that it could be improved. But so far, regrettably, substantive criticism and refinement have scarcely begun. The jury will be out for a long time.

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References and Notes

1. R. L. Goen and R. K. White, *Comparison of Energy Consumption Between West Germany and the United States* (Stanford Research Institute, Menlo Park, Calif., June 1975).
2. A. B. Lovins, *Soft Energy Paths: Toward a Durable Peace* (Friends of the Earth-Ballinger, Cambridge, Mass., 1977). A book summarizing soft-path case studies in various countries is in preparation.
3. U.S. Senate, Select Committee on Small Business and Committee on Interior and Insular Affairs, *Alternative Long-Range Energy Strategies* (Government Printing Office, Washington, D.C., May 1977); *ibid.*, supplement, in press.

The Smithsonian Under Scrutiny

Art Buchwald once wrote an article in which he noted that nothing succeeds like failure in Washington, D.C. The Buchwald thesis should now be elevated from hypothesis to theory, if not law. The ascendancy of bookkeepers within the Washington hierarchy has caused greater and greater emphasis to be placed on form, not substance. It is now the successful programs that suffer. The contributory programs of first the National Science Foundation, and then the Smithsonian Institution (News and Comment, 20 May, p. 857), have been subject to scrutiny for the wrong reasons. The bottom line is no longer success or failure or achievement of goals or contributions; instead it is adherence to bureaucratic procedures. It appears that bu-

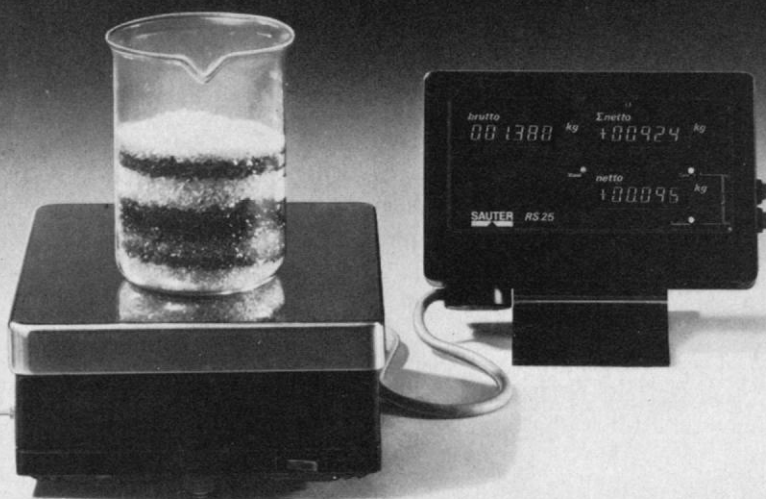
reaucrats would have Andrew Wyeth painting by the numbers and Salk busier taking inventory than proceeding with the polio vaccine. To be concerned with the hours a person works or the life-style pursued while ignoring the contributions made is bureaucratic badgering designed to ensure a mean of mediocrity.

Senator Proxmire (D-Wis.) gathers front-page publicity by holding up to ridicule what he considers to be absurd research projects. Even when he is right (and "right" and "wrong" are not absolutely determined), he is attending to projects that account for very little of the government's expenditures. One is reminded of the police department that bragged it had cited all drivers going 27 miles per hour in a 25-mile-per-hour zone, while it glossed over the increase in major crimes.

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