"human vegetables" alive when there is no longer hope for them. Many permanently impaired individuals become monuments to the dubious therapeutic triumphs of medicine. It is obvious then, that a modified or controlled euthanasia program should be instituted. The theory that someday, somehow, these patients may permanently recover, of course, overlooks basic physiologic and biologic facts of the central cerebral nervous system tissue which never recovers from permanent damage. The expense and misery associated with these prolonged vegetative states which the geriatric patient survives are dehumanizing in themselves and pose a question that is far more thorny than that of contraception and procreation at the other end of the life scale . . . such nonproductive "medical triumphs" should be curtailed stringently. Domiciliary care homes throughout the United States, with their increasing geriatric census and ability to extend life, condone a "population body count" ethic. . . .

HAROLD HANZLIK
1154 Montgomery Drive,
Santa Rosa, California 95405

I heartily wish Spengler success in his initiative against overpopulation, but he should not ascribe to Dr. Johnson Oliver Goldsmith's couplet from the conclusion of *The Traveller:*

How small, of all that human hearts endure,
That part which laws or kings can cause or cure.

A. GORMAN HILLS
University of Miami School of Medicine, P.O. Box 875, Biscayne Annex, Miami, Florida 33152

Energy: The Ultimate Raw Material

Berkowitz, in his response to Sporn's editorial (Letters, 19 Dec.), overestimates by about a factor of 10 the energy released artificially by man. Global fuel consumption each year is the equivalent of about 5.5×10^9 tons of coal (*1*), or a heating rate of 4.9×10^9 kilowatts, all of which reaches the atmosphere. The atmosphere rejects heat to space at a rate of 1.24×10^{14} kilowatts [solar flux $\times$ (1 $-$ albedo)], which is 25,000 times the artificial output, not 2500, as Berkowitz claims (*2*). The earth's surface receives and returns a total of 2.72×10^{14} kilowatts, mostly by blackbody exchange with the atmosphere, but the atmosphere-space exchange is the significant quantity.

Berkowitz rightly states that the "environment cannot support the unlimited growth of power generation," but the *overall* heat production rate is not likely to be the limiting factor. Even 20×10^9 people, each producing 20 kilowatts of heat (twice U.S. average), would add only 1/300 of the present atmospheric heat load. This would raise the average temperature of the earth by about 0.25°C. *Local* thermal effects are a much greater problem and are already noticeable. For any great increase in energy consumption we will have to disperse the heat produced more carefully.

The point of this letter is not so much to correct the error quoted by Berkowitz as it is to remind Sporn's critics that energy is the ultimate raw material. It alone is convertible into most of man's other material requirements. At an energy budget of 20 kilowatts per person, we could maintain a worldwide living standard near the present U.S. level even when we have exhausted our high-grade mineral resources. We could do this without placing an impossible heat load on the earth for a very large population, but not for an "unlimited" one. I conclude, with Sporn, that (i) energy increase and environmental control are possible and compatible; (ii) other factors than energy will soon limit population growth; and (iii) concern over population growth and the environment is beneficial if it leads to constructive study and action. Our technology can buy us time to make the right choices.

R. PHILIP HAMMOND
Oak Ridge National Laboratory,
Oak Ridge, Tennessee 37830

References

1. *Minerals Yearbook, 1967* (U.S. Bureau of Mines, Government Printing Office, Washington, D.C.), vol. 4, p. 6.
2. P. A. Sheppard, in *Encyclopaedia Britannica* (Benton, Chicago, 1969), vol. 15, p. 277.

Drug Quality: Whose Responsibility?

Louis Lasagna, in his article "The pharmaceutical revolution: Its impact on science and society" (5 Dec., p. 1227), attributed to me the opinion "that the main trouble [with therapeutic equivalency not guaranteed by chemical equivalency] lies in failure [of manufacturers] to adhere to USP and NF criteria, not with the criteria themselves." In a 1961 talk I said: "The existence of inferior quality drugs or subpotent drugs sold under a USP or NF label is a reflection of inadequacies and shortcomings on the part of the manufacturer of the drugs, not on the part of the compendia." Later in the same talk I commented: ". . . the inescapable fact is that the USP and NF are completely adequate to assure good quality drugs by any manufacturer who really *wants* to make good quality drugs." These comments, taken out of context, easily lend themselves to being paraphrased as in the above instance.

My position is that while good quality, biologically active drug products comply with compendial standards, the reverse is not necessarily true; that unless biological activity is actually demonstrated on the specific formulation before it is marketed, and unless the factors responsible for the biological activity are "locked into" each manufactured batch by effective in-process controls, that, compliance with compendial specifications notwithstanding, biological activity can be questionable.

A. E. SLESSER
Smith Kline & French Laboratories,
1500 Spring Garden Street,
Philadelphia, Pennsylvania 19101

Privacy Invasion

On two occasions in the last month, I have been asked to supply my social security number, first on an application for a government grant, and second on a questionnaire for the *1970 National Register of Scientific and Technical Personnel.* Perhaps I am wrong, but I understand that the social security number was established to keep track of social security benefits. I can see no reason why it should be used for other purposes except for the convenience of computer interchange of information. Since there are serious possible dangers to individual privacy and freedom in computer interchange, I believe that the use of the social security number should be eliminated for purposes other than social security. Perhaps those who disagree with me will reply publicly to this letter so that I and others can think more deeply on this matter.

JOSEPH V. SMITH
Department of Geophysical Sciences,
University of Chicago,
Chicago, Illinois 60637