LETTERS

Prophecy

In his editorial "The support of science" (1 June, p. 909), Arthur Kornberg quotes from the Book of Proverbs: "Where there is no vision, the people *perish*" (italics mine). This quotation is from a secondary source (Old Testament, King James Version) and is incorrect. The Hebrew text (Torah, Nevi'im, Ukhtuvim) reads: "Beain hazon ipara am," and the correct translation of this verse is, "Where there is no vision, the people become *unruly*" (italics mine). Thus, if Proverbs 29 : 18 applies to the consequences of limited support to biomedical research, the prophecy of the original text is not as catastrophic as that of the King James Version.

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Energy Efficiency

In his article "Energy conservation" (13 Apr., p. 155), G. A. Lincoln mentions only briefly the most energy efficient forms of urban transportation available—walking and bicycling. For an 84-kilogram person (about 185 pounds), walking requires about 264×10^3 joules per passenger-kilometer; with a 10-kilogram bicycle, bicycling requires only 59.4×10^3 joules per passenger-kilometer (*1*) compared to 450×10^3 joules per passenger-kilometer for the most efficient type of mass-transit reported by Lincoln (*2*). Of course these figures do not account for the low thermal efficiency of modern agriculture, which provides the human energy, but no doubt the figures for petroleum-powered vehicles do not include the energy needed for extraction or conversion to electricity.

Increasingly bicycles are becoming a viable and prominent commuting mode. In congested urban areas, bicycles provide door-to-door convenience with shorter trip times than those in automobiles (based on personal experience). Last year more bicycles than automobiles were sold (*3*), and at least two companies have developed enclosed pedal-powered vehicles designed for urban transit. In spite of the legal barriers and physical hazards of bicycling in an automobile-oriented urban transportation system, this efficient and pollution-free commuting mode continues to expand and should play a role in future urban planning.

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References and Notes

1. S. S. Wilson, *Sci. Amer.* **228**, 90 (March 1973). The figures were converted to the International System following B. B. Barrow [*Science* **179**, 1181 (1973)].
2. The efficiency of a suburban train is 200 passenger-miles per gallon of fuel. Approximate conversion factors are: 42 gallons = 1 barrel; 10^{15} British thermal units = 172×10^6 barrels; 1.609 kilometers = 1 mile; 1055 joules = 1 British thermal unit.
3. According to *Environ. News* (*Reg. 1*) X, No. 3 (March 1973), more than 11 million bicycles were sold in 1972, compared with 10.3 million automobiles. For the first time in the history of the industry, most of the bicycle sales were to adults.

Peer Review Appeal Mechanism

Rather than totally dismantling the peer review system (News and Comment, 25 May, p. 843; 8 June, p. 1035), the National Institutes of Health (NIH) might well consider reforming its procedures to allow for the establishment of an appeal panel. To me, the most serious problem with the existing study sections is the lack of effective means of appealing their unfavorable decisions. If a reconsideration is requested, it is made by the same group that made the rejection. Most areas in academia provide for appeals in cases of tenure, promotion, and other matters, and there would be great value in having the same safeguards for NIH grants. In spite of all efforts to keep personalities out of grants, there are cases, however rare, when something other than scholarly or scientific judgment intervenes.

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Cost of Environmental Quality

Luther Carter (News and Comment, 30 Mar., p. 1310) hails the success of the Sierra Club and its allies in forcing the Columbia LNG Corporation to modify its plans for a receiving terminal for Algerian natural gas at Cove Point, Maryland.

Quite aside from the merits of the environmental arguments, I must protest the tactics of the Sierra Club, which can be viewed as little better than thinly disguised blackmail by the gas users of the Washington, D.C., area who ultimately will have to pay the additional costs of the modified plan. Let no one be deceived; it is the consumer who will pay the added bill, not Columbia LNG.

This decision was arrived at by attorneys for Columbia LNG and the Sierra Club without the benefit of consultation with responsible public officials of the area concerned, and certainly without the public hearings that usually precede such decisions.

In this brave new world of environmentalism, who speaks for the taxpayer and consumer? Certainly neither the Sierra Club or Columbia LNG can claim to in this matter. It is time that the public and their responsible officials had a voice in environmental matters of long-range concern to the area affected. Personally I don't want the Sierra Club deciding my gas bills for the next few decades, and I strongly protest the undemocratic, elitist flavor of this whole affair.

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Radiation Standards

Robert Gillette's review (News and Comment, 1 Dec. 1972, p. 966) of the National Academy of Sciences's report on "The effects on populations of exposure to low levels of ionizing radiation" was by and large accurate and helpful in emphasizing the implications for radiation protection. However, an impression of establishment influence was unfortunately created by the manner of reference to the fact that about a third of the parent academy committee of 20 are members of the National Council on Radiation Protection and Measurements (NCRP). Normally this would be trivial, but, because of previous controversy and especially because the value of the report will depend in large measure upon public confidence and acceptance, I should like to clarify this matter and reemphasize points of departure.

The academy report as a whole represents the thought and effort of some 50 members of the committee and its subcommittees, who were carefully selected to bring individual competence, judgment, and balance to the undertaking. They were exhorted to represent their personal views rather than those of any institution or organization with which they may have been affiliated. Naturally, careful study was made of the publications of various organizations, especially those of NCRP, because of its responsible role in radiation protection over the years. The interested scientist can read the report itself and make judgments as to varying points of view. However, for the benefit of those not familiar with radiation protection literature, I should like to generalize about the differences between the academy report and previous official documentation. These differences arise not so much from new data or new interpretations but rather from a philosophic approach to radiation protection generated by changing conditions and public attitudes.

The major differences I conceive to be as follows: (i) Numerical risk estimates for human populations exposed to low levels of ionizing radiation are presented together with the assumptions and compilations of the data on which they are based. (ii) Consideration is given to implications of possible effects of radiation on the environment—on organisms other than man. (iii) It is suggested that radiation protection standards not be set on an arbitrary basis, such as related to background levels (even though all agree that such levels will not produce observable effects), but rather should be established in terms of minimal exposures required to fill society's needs. Hopefully, it will be possible to make meaningful risk-benefit assessments, then to make cost-effectiveness assessments so that logical decisions can be made as to the worth of any given effort to reduce the risk, and finally to choose among the options by comparing the biological and environmental costs.

Ultimately, these techniques for dealing with radiation protection (actually estimating the risks and the worth of reducing them) may provide guidance in the case of other pollutants, since the time is coming when priority decisions will have to be made in the allocation of limited resources for the maintenance and improvement of the quality of life.

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