LETTERS

Public Involvement in Scientific Decision-Making

Philip H. Abelson is certainly right that, "Part of the difficulty in gearing up to meet future energy needs is that few people seem to grasp the magnitude of the problem" (Editorial, 15 Oct., p. 261). I would go further and say that ignorance is the major part of the problem, especially if we include our ignorance of the magnitude of health effects from nuclear fuel reprocessing for the proposed "plutonium economy."

Three articles in the issue of 15 October (News and Comment, pp. 301, 303, and 306) serve to bring into perspective the perilous heights to which rapidly advancing science and technology have inadvertently brought our civilization. Balancing somewhat dizzily on this high place, we are trying to weigh the short-term, obvious, and proven benefits of nuclear power, Mirex pesticide for fire ants, and recombinant DNA research against the long-term suspected but unproven dangers from these to future generations. The dangers might include cancer, genetic diseases, new pathogens, and other "potentially grievous risks" that Robert Sinsheimer fears may result from genetic engineering.

Philip M. Boffey's article in the same issue (News and Comment, p. 306) describes the "Science for Citizens" program of the National Science Foundation (NSF) and points out the real issue. Just as climbers on Mount Everest must continually question their own judgment and keep in communication with their supporting camps at lower levels regarding whether or not it would be safe to continue climbing, so also we scientists, eager to keep pushing higher, should question our judgment and keep in communication with the public who support our efforts. It is they and future generations who will have to suffer the consequences if our sins of hubris (overweaning pride and arrogance) result in having to pay up on the Faustian bargain. I fully agree with the letter to this effect from Philip Siekevitz (15 Oct., p. 256).

Crucial value decisions have to be made, and they should not be made only by involved scientists closeted with financially interested industrialists and governmental authorities. They should be made by unbiased and informed members of the general public after hearing all sides of the questions, with balanced input from scientists, humanists, historians, philosophers, theologians and, most of all, from ordinary citizens. For this we need the public education of the NSF "Science for Citizens" program, and we need much more.

We need new ways of getting an informed public consensus on issues of vital importance; some methods have been suggested (*1*) that would be more effective and quicker than our present haphazard approaches. We also have to have checks and balances on public education programs to ensure that they are truly presenting all sides of the questions.

The "Science Court" idea is perhaps useful, as far as it goes, for establishing questions of scientific fact. But for decisions involving value judgments, we need more diversified input and a more representative and adequately informed jury. Our criminal courts utilize the trial-by-jury process whereby a group of peers, after hearing both sides, decide the fate of a man accused of a capital offense. Could some development of this process help in deciding life and death issues for society?

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References

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Mailing Labels on *Science* Covers

Why do you spend thousands of dollars each year to produce exciting cover photographs for *Science*, and then week after week allow your mailing department to obscure the most important parts of these photos. I like to refer these covers to students, use them on bulletin boards, or just enjoy them myself. Yet each week I find my first reaction to the current issue is anger that you have once again spoiled the current cover. Can't you put the labels on the back of the magazine or at least on the title part of the cover? Your readers certainly are intelligent enough to know that the magazine is *Science* if a portion of one of the letters is covered.

Stop frustrating your readers, please, and find some solution to the mailing label problem quickly.

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Labels must be applied to magazines by machines of specific mechanical con-

figurations in accord with postal regulations that are intended to facilitate sorting and delivery by post office personnel.

One postal regulation tells us where to place labels: "Individually addressed, unfolded periodicals mailed in bundles without separate wrappers should have the addresses placed upside down in the lower right corner of the front cover page. An alternate position on periodicals is lengthwise along the bound edge, near the top of the publication." This regulation is not rigorously or consistently enforced by local postmasters where publications are mailed.

A second postal regulation makes weekly and more frequent second-class publications of general interest eligible for "newspaper treatment" in the Postal Service—that is, speedier handling than that given to monthlies and quarterlies, or to third-class mail such as advertising circulars. *Science*, however, has not yet achieved sufficient recognition as a weekly to obtain the same treatment accorded the national weeklies of far greater circulation. We believe we can achieve better recognition by placing our labels on the same side as the logo than we can by placing them on the back, which would tend to make *Science* indistinguishable from an advertising circular among those whose main concern is delivery to an address.

Magazines may be fed into a mailing machine lengthwise or sidewise. Labels are usually applied on the leading edge by a mailing head, which cuts the labels apart and pastes them down. Efficiency appears to be greatest when the mailing head does not have to be repositioned for different magazines and when copies are fed bound edge first. Feeding by the bound edge also helps avoid the delays that occur when a leaf of one copy catches the edge of the label on the copy beneath as the copies move along a belt, labels exposed, for zip-code sorting. If labels are put on the back, all copies must be turned over before they are fed to the mailer. This entails extra hand work (to prevent scrambles, magazines are stored face up in the printing plant) and increases the risk that a mixup among magazines will not be detected before or after the labels are pasted down.

We have considered other alternatives. We could mail *Science* in wrappers on a slower machine and at a cost of 4.5 cents per copy instead of 0.9 cent, but with every wrapper stamped "newspaper." We could avoid allowing the cover pictures to run to the fold, thus decreasing flexibility of design. We could offer reprints of cover pictures, or even loose-leaf collections of reprints. (We do send

tear sheets to those who ask for them until supplies run out.)

We hope we are taking the best course that is allowed by a number of different, changing, and sometimes conflicting pressures.—EDS.

New York Bight Project

The Marine EcoSystems Analysis (MESA) Program of the National Oceanic and Atmospheric Administration is establishing a panel to designate the 20 or so most serious chemical contaminants (or classes of contaminants) in the New York Bight and to rank these contaminants, on the basis of current information, according to their existing or projected threat. Emphasis will be placed on adapting existing ranking schemes or devising a new one for coastal marine ecosystems, in general, and for the New York Bight, in particular.

Information is being sought by the panel from all possible sources to guide its study. Reports on recent work dealing with ideas or approaches, as well as applicable data, would be of great assistance. Published reports will be readily utilized. However, the panel would also appreciate knowing about unpublished work. Reports describing such work can be sent to the undersigned for transmittal to the panel.

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"Petroleum Plants"

The Research News article of 1 October (p. 46) by Thomas H. Maugh II on the possibility of growing some little-known species of plants to produce a substitute for petroleum is interesting and may prove to be significant. By all means, let us explore and test new and untried methods and approaches to supplying our energy needs.

But let us not neglect or downgrade proven, economically practical paths to the same end. The existing forests of the United States can be made to produce vastly more wood than they now do. After setting aside liberal acreages for conservation, recreation, watershed, wilderness, and other forest uses and for outputs other than wood, there still remain many millions of acres of highly productive forests, from which wood, especially softwoods, can be produced as cheaply and as permanently as anywhere in the world. In my judgment, the gap between what is and what might be is wider for timber than for any other natural resource in the United States today. In a recent report (*1*), the National Research Council estimated that the annual production of wood could be doubled in this country.

Direct conversion of this wood into energy is not necessary, and probably not economical. But the export market for United States wood products—notably paper and notably to the developed countries of the world—is growing rapidly and will almost surely continue to grow. Exported wood produces foreign exchange, with which we can buy oil; thus indirectly wood can supply needed energy. Everyone genuinely interested in energy supply at the least environmental cost should focus his or her attention on the potentials of our forests.

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1. Committee on Renewable Resources for Industrial Materials, Board of Agriculture and Renewable Resources, Commission on National Resources, *Renewable Resources for Industrial Materials* (National Academy of Sciences–National Research Council, Washington, D.C., 1976).

Maugh reports on the proposal of Melvin Calvin that plants in the genus *Euphorbia* be grown to produce a hydrocarbon substance similar to gasoline. Calvin need not look far for *Euphorbia tirucalli*. It has been grown in California for many years as an ornamental, "in any soil, irrigated or not, requiring no attention whatever" (*1*). Unfortunately it is common in south Florida, where it is not infrequently a cause of acute injury, especially severe keratoconjunctivitis when the sap has come into contact with an eye (*2*).

Both *Euphorbia tirucalli*, the pencil tree or spurge tree, and *Euphorbia lathyris*, the caper spurge, are noted for the acridity of their milky sap. Exploitation of these species as sources of energy might expose workers to serious hazards in harvesting, transporting, and crushing operations.

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References

1. R. S. Hoyt, *Check Lists for Ornamental Plants of Subtropical Regions* (Livingston, San Diego, Calif., 1958), p. 295.
2. J. F. Morton, *Plants Poisonous to People in Florida and Other Warm Areas* (Trend House, Tampa, Fla., 1971), pp. 70–72; J. I. Crowder and R. R. Sexton, *Arch. Ophthalmol.* **72**, 476 (1964).