LETTERS

Organ Donation

Gina Kolata's article "Organ shortage clouds new transplant era" (News and Comment, 1 July, p. 32) gives the impression that I favor shifting from the present "opting-in" system for organ donation under the Uniform Anatomical Gift Act (UAGA) to an "opting-out" system, under which organs are taken unless people have registered their objection during their lifetimes. In fact, I said that the UAGA and the Uniform Determination of Death Act provided "an excellent legal framework for donations." Further, I told a House subcommittee:

> I would, therefore, urge you to lend your support to efforts by private, state and federal groups to publicize the UAGA so as to preserve the great ethical as well as social values in voluntary donation.

Moreover, I doubted that adequate legal justification could be found for a system of mandatory organ removal even if donation continues at its current inadequate levels, so in saying that at most I could see an amendment to the UAGA to shift to opting-out, I was certainly not favoring this position. Data presented at the hearing—indicating that people are more willing to donate their relatives' organs at the time of death than to commit their own during their lifetime—suggest to me that opting-out laws might actually backfire.

Finally, the thrust of my testimony, as reported in news accounts and editorials at the time, was to say that the greatest problem we face now is an uncoordinated system, without adequate encouragement to physicians on a routine basis, which leads to a very inappropriate, undignified, and unfair situation in which transplants occur for those patients whose families are able to capture public attention through the media.

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Crop Germplasm Conservation

D. L. Plucknett *et al.*, in their article "Crop germplasm conservation and developing countries" (8 Apr., p. 163), provide a useful overview of the development and status of national and international gene banks. However, the article does not address a number of important issues that are encompassed by its title. These relate to dissatisfactions with the current system and to recommendations for a broader conception and approach to crop germplasm conservation.

While everyone agrees that, in principle, crop germplasm should be made available to all bona fide workers, there have been examples of selective national embargoes from major collections. This, combined with the perception on the part of many developing countries that the most important gene banks are located in the developed countries, led to the passage of two controversial resolutions at the November 1981 meeting of the Food and Agriculture Organization (FAO). These called for (i) the preparation of a draft international convention to guarantee the availability and free exchange of crop germplasm and (ii) a plan to establish an international gene bank under the auspices and control of the FAO, which is seen to be more responsive to the needs and demands of the developing countries than the World Bank and the Consultative Group on International Agricultural Research.

Many developing countries fear that agriculturally related developments in genetic engineering will be monopolized by large multinational corporations. Their combination of scientific and technological expertise, the extensive purchases they have made of private seed companies over the past decade, and their successful efforts in a number of developed countries to obtain patent-like protection for new seed varieties make this a possibility to be carefully watched. In addition, these developments make the establishment of any international system for the full and free exchange of crop germplasm much more difficult.

While gene banks are a clear necessity, they do entail various risks, such as disease infections or even losing a collection through loss of power or other technical failures. Other weaknesses include the removal of seeds from the selective pressures of naturally mutating plant diseases and pests, genetic drift, and the loss of invaluable information on the habitats and cultural practices associated with particular cultivars (*1*). *World Conservation Strategy* (*2*), while recognizing the great importance of gene banks, sees them as only the tip of the genetic conservation iceberg and calls for extensive in situ programs (where traditional cultivars and their wild relatives would be maintained on site or in protected areas). Finally, *World Conservation Strategy* stresses that, to conserve biological and genetic diversity adequately, both development priorities and their implementing land and water use plans will have to be rethought and reworked.

While the International Board for Plant Genetic Resources (IBPGR) has recognized the need to conserve the wild relatives of agricultural crops in natural preserves (*3*), the authors of the study which IBPGR commissioned on this matter suggest a broader approach that would also include the conservation of various land races and their weed relatives in traditional agroecosystems (*4*). In spite of the difficulties that would be involved, this is consistent with the comprehensive approach called for by *World Conservation Strategy*. It is to be hoped that the international community will devote proportionally as many resources and as much effort to these larger in situ needs and issues as to ex situ approaches to crop germplasm conservation.

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1. K. A. Dahlberg, *Mazingira* 7, 14 (1983).
2. International Union for Conservation of Nature and Natural Resources, *World Conservation Strategy* (Unipub, New York, 1981).
3. J. T. Williams, *Nat. Resour.* **18**, 14 (1982).
4. R. Prescott-Allen and C. Prescott-Allen, *ibid.*, p. 15.

Although a free exchange policy for crop germplasm is the ideal, occasionally materials do not move as freely as would be desired. In some cases, this is because accessions are held in long-term gene banks where materials are rarely disturbed. There is a common misconception that all gene banks, even those designed for long-term storage, are involved in germplasm exchange. Often budgetary constraints result in shortages of seeds for exchange or in reduced staff for handling. Also, samples of tropical cash crops are sometimes not exchanged freely because of restrictions placed on their movement by local governments. On the other hand, accessions of food crops in short- and medium-term germplasm collections are rarely held back, and food crop germplasm generally moves freely between scientists. The gene banks of the Consultative Group on International Agricultural Research are apolitical, and the international agricultural research centers attempt to fulfill all requests for materials. The issue of whether a gene bank should be operated by the Food and Agricultural Organization of the United Nations is under study by various international and national organizations, and we prefer not to comment on the matter.

Breakthroughs in genetic engineering are eventually likely to improve crop

performance. Many failures are to be expected, however, and those enterprises that succeed, whether they be private companies or publicly owned organizations, should reap the rewards for their efforts.

We certainly agree that gene banks are vulnerable to destruction, and we discuss the reasons and remedies for this elsewhere (*1*). It is important to maintain duplicate collections in different locations to reduce the chances of crop germplasm loss. As much of the genetic diversity of crops and their wild relatives as possible should remain under natural conditions. In the case of wild species, parks and reserves are needed to ensure the survival of crop relatives. In situ conservation of crop varieties, though, is likely to prove more difficult. Farmers are not likely to resist adopting high-yielding varieties for long and will probably continue to abandon land races. Giving subsidies to farmers would be one way of prolonging the planting of traditional varieties, but the administrative costs would be high; we consider this approach impractical. Planting varieties on stations is artificial, as they would no longer be integral parts of agroecosystems.

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1. *The Role of the CGIAR in Plant Germplasm Conservation* (Consultative Group on International Agricultural Research, Washington, D.C., 1982).

Nuclear Test Yields

In his briefing about the American Geophysical Union session on the Threshold Test Ban Treaty (News and Comment, 17 June, p. 1254), R. Jeffrey Smith misquotes us as saying that, since 1976, two U.S. nuclear explosion tests have exceeded the 150-kiloton limit of the treaty "by 33 and 75 percent, respectively." We certainly did not say this. On the contrary, we were careful to point out that very accurate radiochemical measurements show that no U.S. test has exceeded 150 kilotons since 31 March 1976. What we did say is that there is imprecision in the yield estimates based on seismic signals recorded at great distances and that occasionally 150-kiloton explosions will produce signals larger than expected for that yield. Recognizing this, we compared the largest 40 U.S. and Soviet explosions with magnitudes determined by the U.S. Geological Survey and found that only two U.S. events, but nine Soviet events, had signals larger than expected for 150 kilotons. This asymmetry raises serious concern that many of these tests have actual yields well over 150 kilotons. Our analysis included a fairly large adjustment (reducing the Soviet yield estimates) to correct for suspected geophysical differences between the test sites. To give some perspective on how large this adjustment must be for the Soviet yields to be less than 150 kilotons, we point out that the largest Soviet explosions produce signals that, in U.S. experience, have only been seen for yields of more than 600 kilotons and usually more than 800 kilotons. An adjustment this large is inconsistent with the best available geophysical evidence. Another important point conceded by nearly all involved is that the yields of the larger Soviet tests increased abruptly by about a factor of 2 in recent years. Thus, those concluding that the Soviets have not exceeded the 150-kiloton nuclear testing limit are also saying, by implication, that the Soviets did not test above 75 kilotons or so for the first several years of the treaty (when the United States was testing up to 150 kilotons). Why would they stay so far below an agreed limit? The question is not one we can answer but certainly is added cause for concern.

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David Emery, the new deputy director of the Arms Control and Disarmament Agency, has consulted a variety of government seismologists and reached a different conclusion about the best available geophysical evidence. In congressional testimony on 17 May, Emery said that "by far and away the great majoriy of detonations that have occurred have been in a range which leaves little or no doubt that those particular shots have been within compliance. . . . I am convinced that there is no conclusive proof [that] the Soviets have violated" the treaty.—R. JEFFREY SMITH

Erratum: In table 1 of the report by M. Essex *et al.*, "Antibodies to cell membrane antigens associated with human T-cell leukemia virus in patients with AIDS" (20 May, p. 859), the heading for columns 4 and 5 should have read

"Cells positive
(> 40 percent)"