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■ **SCIENCE** is published weekly on Friday, except the last week in December, and with an extra issue in February by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005. Second-class postage (publication No. 484480) paid at Washington, DC, and at an additional entry. Now combined with *The Scientific Monthly* © Copyright © 1987 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$65. Domestic institutional subscription (51 issues): \$98. Foreign postage extra: Canada \$32, other (surface mail) \$27, air-surface via Amsterdam \$65. First class, airmail, school-year, and student rates on request. Single copies \$2.50 (\$3 by mail); back issues \$4 (\$4.50 by mail); Biotechnology issue, \$5.50 (\$6 by mail); classroom rates on request; Guide to Biotechnology Products and Instruments \$16 (\$17 by mail). **Change of address:** allow 6 weeks, giving old and new addresses and seven-digit account number. Authorization to photocopy material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$1 per copy plus \$0.10 per page is paid directly to CCC, 21 Congress Street, Salem, Massachusetts 01970. The identification code for *Science* is 0036-8075/83 \$1 + .10. **Postmaster:** Send Form 3579 to *Science*, 1333 H Street, NW, Washington, DC 20005. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

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COVER The bat *Pteronotus parnellii* detects, identifies, and catches flying insects by hearing variations in the echoes of the ultrasonic sounds that it emits. Auditory pathways to frontal cortex may play a role in this mammal's ability to use hearing as the chief sensory basis for spatial navigation. See page 824. [The photograph was taken in the laboratory of O. W. Henson, Jr., at the University of North Carolina, Chapel Hill, by Russell Hansen. The moth was tethered to a string for the purpose of the photograph]

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Information for contributors appears on page xi of the 27 March 1987 issue. Editorial correspondence, including requests for permission to reprint and reprint orders, should be sent to 1333 H Street, NW, Washington, DC 20005. Telephone: 202-326-6500.

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Ice Minus and Jobs Minus

The coincidence of an actual field test of a genetically engineered organism with the arrival in Washington of Prime Minister Yasuhiro Nakasone to discuss trade imbalances generated some cerebral turbulence. The field test occurred 4 years after a committee of experts of the National Institutes of Health had declared the experiment safe. The delay was caused by lawsuits, hearings, and court appeals in various localities. As Russell Baker commented, the country is "dying of terminal jurisprudence."

To be fair, scientists are not being discriminated against selectively. Litigious delays are inflicted with magnificent sameness upon baseball teams, malpractice cases, antitrust suits, and worker injuries, to name a few other examples. Moreover, any reader of newspapers is well aware that cases usually travel by multiple appeals through ever ascending courts until the Supreme Court settles the matter, at least temporarily. The testing of the "ice minus" organisms, however, is illustrative of the special problems of scientists. Of all organisms that scientists plan to release into the environment, this is probably one of the safest. It already exists in nature in a slightly different form, and the natural form has been shown not to take over in preference to existing species. The engineering involved the removal of a protein, not the addition of one. In the interminable legal delays, not one serious scientific fact was added to the initial body presented to the NIH committee. Judges can, and indeed do, throw cases out of court for lack of merit. But in these cases, presumably public outcry generated by mediawise groups convinced judges to consider seriously issues that had little scientific substance. The question arises whether that is a good way to proceed and whether in an increasingly competitive world, the United States can afford such leisurely undertakings.

Scientists have an obligation to inform the public, particularly when a new and mysterious technology is introduced. But the public also has some responsibility to make minimal efforts to learn. In some of the media accounts it was implied that local groups knew nothing about what was going to happen because the scientists had not come and personally explained the experiment. Yet, newspapers these days contain stories explaining the uses of recombinant DNA in a variety of medical, scientific, and agricultural advances. The need for the federal government to avoid multiple considerations of the same subject was discussed (Editorial, 2 May 1986, p. 561) and to a large extent Washington has done just that. The next question is whether the post-Washington period can be streamlined not just for recombinant DNA, but also for other complex scientific subjects.

The time may have arrived when specialized judges with scientific training are a necessity. We are living in an increasingly technological society, and increasing numbers of lawsuits involve matters in which a rudimentary knowledge of science is essential. Lawyers specialize in areas such as commercial law, family law, tax law, and patent law, and in certain cases judges with specialized knowledge can be requested by mutual consent of the litigants. The concept of a judiciary some of whom are trained in scientific methods and to whom cases are routinely assigned is even more appropriate to our times. The administration could have many forms, from a deliberate introduction of a certain fraction of scientifically oriented judges per state to a few central locations in which a scientifically trained judiciary was used as a referral service for scientific cases.

The argument that local conditions will require local hearings is reasonable if there are local specifics relevant to the case. The arguments made on television and in the newspapers by opponents of the "ice minus" tests were the usual ones of "this experiment represents the first step in biological warfare," "the chance of an Andromeda strain," and "danger of an uncontrolled spread in the environment." The particular environmental conditions of Monterey versus Napa Valley versus Contra Costa County were not factors and yet each locality required hearings. Public forums are desirable in all cases, but new legal actions are not a necessary concomitant of better education.

The introduction of new organisms into the environment is a serious matter, and some future ones will require much more serious deliberation than the "ice minus" debate. The NIH committee by law contains both experts and public representatives. But repetition of the same arguments at ever lower levels of sophistication cannot ensure additional safety. These litigious delays can only lead scientific industries to select more future-oriented countries. The hazards will go but so will the jobs.—DANIEL E. KOSHLAND, JR.