LETTERS

NSF Chemistry Funding

M. Mitchell Waldrop's article (Research News, 25 Oct., p. 427) about the National Academy of Sciences' report *Opportunities in Chemistry* states incorrectly that the National Science Foundation's support for chemistry currently stands at roughly $350 million per year. The NSF Chemistry Division's requested budget for fiscal year 1985 totals $92.1 million, as indicated on page 302 of the report. Even when NSF funding of the chemical sciences through its Materials Science Division (estimated at 20 percent of this division's total budget for fiscal year 1985) and through other support of chemical engineering is added, the request for fiscal year 1985 amounts to only $147.2 million.

MARTIN A. PAUL
1772 Horatio Avenue,
Merrick, New York 11566

References

1. Committee to Survey Opportunities in the Chemical Sciences, *Opportunities in Chemistry* (National Academy Press, Washington, D.C., 1985).

Mosher on Stanford Decision

The malicious personal gossip disseminated by Stanford University obscures, as it is intended to, the fact that Stanford lacks a credible reason for denying me the doctorate I have earned (News and Comment, 18 Oct., p. 298).

Stanford University President Donald Kennedy, despite an investigation lasting over 21 months, was unable to sustain the original allegations of illegal and unethical behavior during the period of my field research in China in 1979–1980. Indeed, I was able to demonstrate that the allegations, which included illegal travel, collecting secret documents, and bribing officials, were false.

The correct thing to do at this point would have been to award me the doctoral degree. Instead, still under pressure from the Chinese government, Kennedy levied a new charge against me under the guise of "candor." He alleged that I had failed to properly account for the purchase of a camera and used this clerical error as the basis for rejecting my appeal. Is this illegal and unethical activity in China? Is this sufficient cause to ruin my scholarly career?

The impropriety of introducing new allegations during the course of an appellate procedure is, I trust, evident. One appeals to a higher court to overturn a wrongful decision of a lower body—not to have new charges made against one. This cynical abuse of the appeals process does not reflect favorably on Stanford University.*

What has happened is best summed up by an ancient Chinese saying from the Tso Chuan: "If you desire to find someone guilty, you need not fear a lack of evidence."

STEVEN W. MOSHER
717 East Scott,
Fresno, California 93710

*Single copies of my rebuttal are available for $3 from the Steven Mosher Defense Committee, Post Office Box 1710, Clovis, California 93612.

Lethal Radiation Dose

In her article on the Institute of Medicine's (IOM's) symposium on the medical effects of nuclear war (News and Comment, 11 Oct., p. 156), Constance Holden attributes to me the estimate that an exposure to the equivalent of a short-term gamma radiation dose of 250 rads (2.5 grays) would result in half of the population dying of radiation illness within 60 days (LD_{50} = 250 rads). Actually, William Daugherty, Barbara Levi, and I did not propose a new LD_{50} level in the paper that we gave at the symposium, "Casualties due to the blast, heat and radioactive fallout from various hypothetical attacks on the U.S." Rather, we did a test of the *sensitivity* to this parameter of our estimates of the fatalities due to radioactive fallout. We found that dropping the LD_{50} from the usual 450-rad value to 250 rads would approximately double the number of fatalities due to the fallout from an attack on U.S. strategic nuclear targets (*1*).

The reason for our sensitivity test was the remarkably broad range of values of the LD_{50} that have been quoted. The 450-rad estimate dates back to the end of World War II (*2*). In 1960 Cronkite and Bond estimated a value of 350 rads in the absence of availability of antibiotics and blood transfusions or bone marrow transplants (*3*). At the IOM symposium, Rotblat estimated a value of 220 rads, on the basis of the latest recalculation of the radiation doses at Hiroshima (*4*). (This low value of the LD_{50} may reflect synergistic effects of the radiation doses with other traumas associated with the nuclear explosion and its aftermath).

The fact that casualties from radioactive fallout might be twice as high as official models would predict, along with similar findings by Postol about casualties from "nuclear superfires" (*5*) and the recent SCOPE (Scientific Committee on Problems of the Environment) projections of worldwide starvation after a nuclear war (*6*), suggests that nuclear weapons policy has been made in dangerous ignorance of the possible consequences. Most recently, the concern about the "window of vulnerability" of U.S. land-based missiles has been focused almost exclusively on the potential loss of U.S. nuclear capabilities that would result from a Soviet first strike.

Although an attack on U.S. strategic nuclear weapons systems could not eliminate the ability of the United States to destroy the Soviet Union, its blast, fire, and radioactive fallout effects alone could result in 15 million to 35 million U.S. deaths and a similar number of serious injuries (*1*). It is likely that the casualties due to a U.S. first strike on Soviet strategic nuclear forces could be similarly horrendous.

If nuclear weapons policy-makers understood these results, they would also understand that attacks on strategic weapons systems are no more thinkable than attacks on cities. This would reduce both paranoia and fantasies on both sides.

FRANK VON HIPPEL
Center for Energy and Environmental Studies, and *Woodrow Wilson School for Public and International Affairs,*
Princeton University,
Princeton, New Jersey 08544

References and Notes

1. W. Daugherty, B. Levi, F. von Hippel, in *The Medical Implications of Nuclear War: Proceedings of the Institute of Medicine Symposium, September 1985* (National Academy Press, Washington, D.C., in press).
2. C. C. Lushbaugh, in *The Control of Exposure of the Public to Ionizing Radiation in the Event of Accident or Attack* (National Council on Radiation Protection and Measurement, Bethesda, Md., 1982), pp. 46–57.
3. E. P. Cronkite and V. P. Bond, *U.S. Armed Forces Med. J.* **11**, 249 (1960).
4. J. Roblat, in *The Medical Implications of Nuclear War: Proceedings of the Institute of Medicine Symposium, September 1985* (National Academy Press, Washington, D.C., in press).
5. T. Postol, in *ibid.*
6. M. A. Harwell and T. C. Hutchinson, *The Environmental Consequences of Nuclear War*, vol. 2, *Ecological and Agricultural Effects* (Wiley, New York, in press).

Erratum: In the letter by M. F. Balandrin and J. A. Klocke (13 Sept., p. 1036), it was incorrectly stated that nabilone (Cesamet) has been approved for marketing by the Food and Drug Administration. Nabilone has not yet been approved by the FDA. The synthetic cannabinoid recently approved is in fact dronabinol (Marinol), a synthetic form of delta-9-tetra-hydrocannabinol. In the same letter, the affiliation of the authors should have been Native Plants, Inc., not Nature Plants, Inc. In the original article by Balandrin *et al.* (7 June, p. 1154), references 23 and 65 were incorrect. They should have been as follows: 23. Y. Aharonowitz and G. Cohen, *Sci. Am.* **245**, 140 (September 1981); 65. D. E. Eveleigh, *Sci. Am.* **245**, 154 (September 1981).