

## Foreign Students and U.S. Economic Health

John Deutch's editorial (2 Aug., p. 492) does not recognize that there are not enough U.S. students interested in graduate education to permit a significant reduction in the percentage of foreign students. At MIT and other top-rank institutions, many departments have an adequate supply of U.S. nationals. However, at the University of Illinois at Urbana-Champaign, where I was a faculty member in the departments of nuclear engineering and civil engineering, we had a major problem attracting a sufficient number of U.S. students, particularly those who were willing to take the time to obtain a Ph.D. At a smaller school like Clarkson, we have even greater difficulty obtaining high-quality U.S. applicants even with a significant effort to recruit them. Thus, if we are to perform research at the level of quality necessary to sustain funding, it is essential to take on foreign nationals.

A second critical point is that the vast majority of foreign students with whom I have interacted are not at all interested in going home. They have limited research opportunities in their home countries and see a graduate education in the United States as their way out. We do need to be careful not to overly exploit the talent pool of developing countries, but the United States has been built by enterprising individuals willing to leave their homeland and start fresh in a new culture. We should not cut off this source of energy and initiative.

I believe there are so many complaints these days regarding foreign nationals because we are unfortunately seeing a considerable amount of racism. Thus, I suggest that specific quotas on the percentage of foreign graduate students are discriminatory, are not the way to protect American economic interests, and are probably counterproductive in terms of the economic health of the United States.

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## International Congress of Entomology and Human Rights

Two opposing views have been expressed in *Science* about the propriety of attending

the next International Congress of Entomology, scheduled to be held in Beijing in 1992. In the 19 October 1990 issue (Letters, p. 360), 13 entomologists urged that, given the current restriction of human rights in the People's Republic of China (PRC), entomological societies should withhold approval of meeting in Beijing. The contrary view, expressed by two entomologists in the 28 June 1991 issue (Letters, p. 1768), is that the meeting should not be boycotted (providing the PRC grants visas to all planned attendants), because through "free discussion and exchange of ideas . . . attendants can show Chinese colleagues the importance of freedom in science."

In our view, entomologists cannot remain oblivious of the fact that there are scientists in the PRC today, including students, who are not at liberty to engage in "free discussion and exchange of ideas." In our judgment, entomologists who share a concern about the repression of scientific freedom in the PRC can help Chinese colleagues in distress either by attending the Congress or by staying away. If they decide to boycott the meeting, they should write to the organizers of the Congress, giving their reasons. If on the other hand they choose to go, they must see to it that the Chinese authorities do not misconstrue their participation as indicative of lack of concern for colleagues deprived of their rights and freedoms. They should speak to senior Chinese scientists, decrying the harsh sentences meted out to many of those active in the democracy movement, the ongoing detention of others without trial, the restrictions placed on freedom of movement, the interruption of the education of students forced to undergo political indoctrination, and the interference with the rights to teach and publish of those who have been released from prison. Participants should also make it clear that they expect to visit freely with Chinese scientists, including those in political difficulties, both in public and in private, with the understanding that these colleagues will not suffer repercussions for accepting such visits.

Documentation of human rights violations in the PRC, including lists of imprisoned students and scientists, is available from a number of organizations, such as the American Association for the Advancement of Science (Science and Human Rights Program), the Committee of Concerned Scientists, the National Academy of Sciences (Committee on Human Rights), Physicians for Human Rights, and Asia Watch.

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## Corn Power

We share Philip H. Abelson's enthusiasm (Editorial, 14 June, p. 1469) for the progress and prospects of biomass fuels from woody and herbaceous energy crops, but we believe that he denigrates the contribution of alcohol from corn in asserting that it "results in no net energy, no decrease in oil imports, or amelioration of the greenhouse effect." We are aware that our view is not unanimous, but the best data available suggest to us (1) that ethanol from corn yields positive net energy and probably a small benefit in reduced greenhouse gas emissions.

Both corn yield and conversion efficiency have increased dramatically over the last two decades, and more improvement can be anticipated. The exact numbers one would use for calculating the energy and greenhouse gas balances depend on how one treats the credit for by-products. The amount of carbon dioxide emitted depends greatly on the source of energy used for processing the corn. Regardless of whether one perceives a positive or a small negative yield of net energy, in the current U.S. economy there is considerable savings of liquid petroleum fuels (and hence of imported oil) because mostly coal and natural gas are used in the production of ethanol. We found that the production of ethanol from corn equivalent to 1 joule requires 0.78 joule of energy and that liquid petroleum fuels typically provide only 0.06 joule of this input energy.

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## REFERENCES

1. G. Marland and A. Turhollow, *Energy*, in press.

*Erratum:* The 21 June News & Comment article by Faye Flam "Still a chilly climate for women" (p. 1604) wrongly states that women were barred from graduate programs at MIT, Caltech, and Harvard as recently as the 1960s. Actually, it was the undergraduate programs that were closed to women. Several readers have pointed out that many women earned graduate degrees from those universities well before 1960.

*Erratum:* In Joseph Palca's News & Comment piece "The growing anti-HIV armamentarium" (19 July, p. 263), the anti-HIV agent "Uniroyal, Jr." was incorrectly said to come "from the tire manufacturer." "Uniroyal, Jr." (correct designation, UCC-38) was synthesized by the Uniroyal Chemical Company, Guelph, Ontario, Canada, which is not part of Uniroyal Goodrich, the tire manufacturer.

*Erratum:* In the second paragraph of the letter "Bacillus thuringiensis and pest control" by Marvin K. Harris (6 Sept., p. 1075), the name of the polyphagous insect pest *Helicoverpa zea* was incorrectly spelled.