Letters

Systematics and Museums

Edward O. Wilson's editorial on needs in systematics (13 Dec., p. 1227) was read with great interest at the American Museum of Natural History. As the largest private museum supporting research in systematic zoology, we are all too aware of limitations in people and funds available for this crucial endeavor.

Equally important are the needs of museum collections, the essential tools for systematists. Many organizations unable to carry on the growing burdens of maintenance are turning their valuable collections over to museums such as ours and the Museum of Comparative Zoology at Harvard University, where the commitment to collections will continue. The concentration of that responsibility in fewer institutions makes it all the more essential that there be a thorough and well-thought-out national policy on collections maintenance and management. Fortunately, the National Science Foundation has long recognized the necessity for collections support as being in the national interest. Other federal organizations and many private foundations and individuals also support this essential work.

Museum collections of today, properly maintained, documented, and conserved for long-term use, will be the jewels of scientific research in the 21st century. The more quickly we acknowledge and act on that, the more secure these treasures will be in serving the needs of science and society today and tomorrow.

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Mutagenicity of Spy Dust

Much concern has been expressed about NPPD [5-(4-nitrophenyl)-2,4-pentadienal, "spy dust"] because of its purported use as a tracking agent and its reported mutagenicity in *Salmonella*, which, in the public mind, has been equated with a potential for causing cancer. Yet actual information on the biological properties and exposure levels to NPPD are either "classified" or unavailable (*1*).

Since NPPD is not generally available for testing and because we recently developed CASE, the Computer Automated Structure Evaluation system (*2*), an artificial intelligence system that can be used to predict the biological activity of chemicals on the basis of a learning set, we assembled a training set of nitroarenes and related substances and used CASE to predict the mutagenicity of NPPD. CASE predicted that NPPD would be mutagenic in *Salmonella*, but that its potency would be low, thus presumably confirming the "classified" data. It must be pointed out, however, that in the absence of additional information on the biotransformation and level of exposure as well as responses in other predictive assays, a finding that NPPD is mutagenic in *Salmonella* cannot be used to assess the carcinogenic risk of NPPD to humans.

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Graduate Students in Math

Science is reputed to be a severely edited production, yet I am continually amazed and amused by some of the things I read in it. The latter adjective applies to the letter (13 Dec., p. 1223) written by John A. Kidwell, who comments on an article by Gina Kolata entitled "Americans scarce in math grad schools" (News and Comment, 15 Nov., p. 787). Kidwell suggests that the reason so many foreign students are seen in math Ph.D. programs is that "American universities are the world's lowest-cost providers of advanced training in the mathematical sciences" and implies that we are making money by doing this. Furthermore, he intimates that Kolata's article implied American students avoid jobs in mathematics because they are "stoop labor."

Both of these assumptions are without basis in fact. There is no university, certainly not any public university, that does not subsidize each student. Certainly an American education is a bargain, but it will do nothing to correct the balance of payments. The idea that math is a low-image profession is also nonsense. Math is and has always been held in high academic esteem. Why, then, the poor representation of American students in math grad programs?

Those who have some experience with the field know that foreigners have always been prominent in our best math departments. Many of our leading mathematicians (and physicists) have been those who were foreign-born and educated. Why don't American students go into mathematics? Because it is hard and demanding work, not because it is stoop labor. American education tends to be permissive and undisciplined. American students do not learn the same amount of math in primary and secondary school as foreigners do and, therefore, cannot compete with foreigners at the college or the graduate level, except in rather uncommon instances.

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Adult Decisions

"New momentum for drug export bill" by Marjorie Sun (News and Comment, 22 Nov., p. 926) raised questions in my mind about the role that Congress has arrogated for itself, namely, in loco parentis for the entire world. As one with no personal vested interest in the pharmaceutical industry, I think it is patently absurd for the U.S. government to decide for other countries what drugs should or should not be used by their citizens.

It is the role of our government and the pharmaceutical industry to provide as much information as it can to our people and others about drug entities and their effects in humans. However, it is clearly inappropriate to prevent adults, certainly those in other countries, from making adult decisions about their own medications. The problem in our country today is the blurring between adults and children and the responsibility of our government to each. I can readily understand the need for our government and parents to protect children, but adults should be able to make their own decisions. A riskless society is not feasible despite the altruistic objectives of our Congress. Congress could require that any product for export not approved for use in this country by the Food and Drug Administration have a statement to that effect on its label.

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