LETTERS

Saccharin Controversy

I am writing to express my deep disappointment in the cavalier commentary on the saccharin controversy published in the 11 April issue of *Science* (News and Comment, p. 154). Author R. Jeffrey Smith selectively quotes scientists who agree with the Food and Drug Administration's (FDA's) intent to ban saccharin. He relegates the majority dissenting view to the categories of misguided public, misguided press, misguided Congress, and a misguiding diet food industry.

Smith does not quote one scientist as opposing the FDA ban, creating an illusion of unified scientific support for the obsolete Delaney clause. That is FDA's absolute zero risk standard, which, if generally and sincerely applied to all synthetic and natural chemicals, would ban most of the food supply, most industrial jobs, going outdoors and staying indoors, and much of the rest of the universe. Fortunately, it only applies lawfully to food additives, though the Occupational Safety and Health Administration wants it extended to the workplace.

It was correct for Smith to report that Emmanuel Farber, and the National Academy of Sciences (NAS) panel which he chaired, both concluded that (i) "saccharin should be considered to be a carcinogen." It was deception (whether of him or by him) to omit that an 80 percent majority of the NAS scientific panelists also concluded that (ii) saccharin should *not* be banned, but that (iii) the food safety law should be amended to a basis of relative risk assessment.

It was correct of Smith to report that Frederick Robbins, as chairman of the second NAS panel, endorsed the FDA proposal at a hearing before the House Commerce Subcommittee on Health. It would have been more correct to point out that Robbins was expressing a personal opinion contrary to the consensus of the panel of scientists which he chaired, a fact made clear by NAS staff at the hearing.

For Smith to assert that NAS only wanted to remove saccharin from processed foods is to rewrite history. That tabletop sweetener proposal was their fallback position after the uproar from the real consumer movement (people who actually use the stuff). What's more it was a scam and a distraction because the FDA made no pretense that saccharin or any artificial sweetener would ever be approved as an over-the-counter drug, so the result would be the same as a total ban.

It was correct for Smith to clarify that there is value to maximum tolerable overdose testing, a "methodology made necessary by the difficulty of picking up a low level effect in a small group of animals." He should have added that there is growing evidence and concern that such biological extremism often is picking up not a low-level effect but rather only a high-level dysfunction. When you take a cancer-prone test animal and then overload what little renal function remains, or its hematologic or immunologic function or DNA repair resource, or whatever, you have not thereby proved anything other than your capacity for overwhelming biological defenses.

Finally, we get to the policy question. It is understandable that Smith would preen over the difficulty nonscientist legislators have understanding a complex scientific question, even as he adds to the confusion by crafting a one-sided summary of the issue. But if the credibility of the FDA is diminished, as it claims, the fault is the FDA's for being so dogmatic in pursuit of an outmoded absolute-zero risk concept. The Delaney clause was written by Congress in 1958, before analytical chemists extended the sensitivity of their tests a millionfold and before the rat breeders and rat feeders "perfected" their methodology. That clause and the food safety law of which it is a part need to be modernized to allow relative risk to be considered as well as benefits to the population at risk, as well as safeguards to verify that overdose testing is detecting low-level effects rather than high-level dysfunction. Smith's commentary is "an excellent example of [why] a difficult scientific issue might founder in the political and public arena." If the independent scientific leadership does not make an effort to help interpret these matters to legislators, it may be that we will never modernize the food safety law.

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Upwelling Agents?

I found the article by Beverly Karplus Hartline (Research News, 4 Apr., p. 38) on coastal upwelling very interesting, particularly "the exciting discovery that winds hundreds of thousands of kilometers away can disturb the local currents . . ." and lead to upwellings. Since

the earth has a circumference of only 40,000 kilometers and the earth-moon distance is on the order of hundreds of thousands of kilometers, I assume lunar winds are the upwelling agents referred to. This new earth-moon interaction is indeed an exciting discovery!

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The text should have read "hundreds *to* thousands of kilometers away."

—BEVERLY KARPLUS HARTLINE

"Retreading" Ph.D.'s

Like the weather, personnel shortages in engineering are discussed universally. I wish to discuss a short-term alleviation of the problem that we have demonstrated (locally) but which, I believe, has important national implications.

Since the minimum time it takes to create B.S.-Ph.D. manpower in engineering by means of the traditional high school stimulus, increased B.S. facilities, and Ph.D. programs requiring additional research support, is on the order of 5 to 10 years, one must look elsewhere. There is in this country a substantial pool of persons trained in theoretical physics, the more theoretical regimes of chemistry, and many subdisciplines of the biosciences. This set is at least underemployed. Our experience in our own interdisciplinary laboratory has been that, in 2 years, persons trained in any of the above named disciplines can become active teacher-researchers in fields of engineering and applied science.

I envisage a program funded by the U.S. government (or any combination of government and industry) to provide "retraineeships" for U.S. citizens (or any selected group) with at least a M.S. or Ph.D. in the above disciplines. A simple administrative mechanism is available:

University laboratories (departments and institutes in the relevant fields with the manpower deficiency) would be permitted to locate any suitable candidates whom they can put to work in an active research program. (Evidence must be provided about the quality and size of the research effort.) Such candidates will have two responsibilities: conduct research in the defined areas and either take or teach a couple of courses per year. These traineeships should be paid at the going local rate for nontenure postdoctoral positions or junior faculty. No overhead, supplies, and so forth should be involved, thus making it possible to pay the individual directly if necessary. This total immersion in an active research group in applied sciences or engineering "retreads" Ph.D.'s (and M.S.'s) so that they can become useful in new disciplines in 2 years. I cannot think of any other process that can come close. This kind of process also does not generate or continue the feast-or-famine syndrome in engineering schools. The retrained individuals could also contribute some new frames of reference to departments in industry or universities.

An increase of say $10 million to, say, the National Science Foundation Science Education Directorate could get such a program started immediately.

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The "Monster" Proof

Recently, Robert L. Griess, Jr., announced, in a private communication, that he could prove the existence of a certain finite simple group—the "monster" F_1 with order

$$2^{46} \cdot 3^{20} \cdot 5^9 \cdot 7^6 \cdot 11^2 \cdot 13^3 \cdot 17 \cdot 19 \cdot 23 \cdot 29 \cdot 31 \cdot 41 \cdot 47 \cdot 59 \cdot 71$$

Science reporter Gina Bari Kolata, in a provocative article (News and Comment, 25 Apr., p. 377), upbraids Griess for not having given her and another science reporter details or descriptions of his work over the telephone.

Griess presented a lecture on his construction of F_1 at the Institute of Advanced Study on 5 May, and at the group therapy seminar at the University of Chicago on 6 May. His penetrating and powerful conceptual methods will be eagerly studied.

There is a great difference between private communication between scientists reporting their activities and published reports in regular channels. In view of the great complexity of his work, we think Griess was quite justified in not discussing it with a reporter.

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Erratum: In the report by K. L. Webb and C. F. D'Elia (29 Feb., p. 983), the title should read "Nutrient and oxygen redistribution during a spring neap tidal cycle in a temperate estuary."