LETTERS

ACS Election

Twice, now, *Science* has published articles (News and Comment, 29 Oct., p. 455; 3 Dec., p. 981) on the recent American Chemical Society (ACS) presidential election, and in each case the article reflected considerable input from the camp of my opponent, little from my supporters, and none directly from me. I do not consider this equitable and would like to take this belated opportunity to make these points.

1) In the second article it is erroneously stated that "Cotton's strategy was to play upon differences between academic and industrial members of ACS." That is a vile and irresponsible charge, and I think that either *Science* owes me a retraction and an apology or it owes its readers documentation—of which there is none to my knowledge. May I quote from my two official position papers, one published in *Chemical and Engineering News* and the other prepared for distribution to local ACS section magazines:

From the former:

> Although my own career has been based in academia, I have had, through consulting and otherwise, abundant and fruitful contact with industrial chemists in both research and production. I am keenly aware of their desire and their right to have truly professional status, and I will support them enthusiastically in this. . . . In whatever we do, we must strive for unity of purpose and a welding together of various subgroups—academic, governmental and industrial—of ACS.

From the latter:

> Chemistry is a science, a technology, a business, a profession and, in its impact on the life of the nation, a public concern, [it] can only prosper when all . . . of the above sectors work in harmony. . . . The majority of ACS members find employment in industry and the ACS should give attention to both problems and opportunities attendant thereon. The industrial-oriented doctorate program . . . covering topics . . . relevant to an industrial career is a step to be encouraged at all universities. We should also broaden all ACS programs to aid in the scientific development and continuing education of industrial chemists and chemical engineers. ACS should also encourage policies of continuity, with resulting job stability, in industrial research and development.

In the face of those formal, public positions I took, how does the *Science* reporter justify his vicious accusation? Perhaps the fact that I described my opponent in the so-called "harsh letter" as an "industrial chemist" is construed as a bias on my part against industrial chemists. I do not use the adjective "industrial" in a pejorative sense. If any industrial chemists chose to take it that way, perhaps they, as individuals, suffer from an inferiority complex. In any event, *honi soit qui mal y pense*.

2) A factional division within the ACS as to its proper policies and purposes did not just arise in this election; it has been there for a decade or more, and this election simply put a spotlight on it. It is not, I repeat not, a simple academic versus industrial division, and *Science* does the ACS a great disservice by implying such a simplistic interpretation. The problem has to do with how much the ACS should concern itself with what might be broadly described as the social and economic welfare of its members and how far it can act in this direction without concomitant losses in others. This is a serious and proper question, and there are both academic and industrial people on each side. What the ACS needs is rational and constructive discussion of the options. Attempts to polarize the issue falsely by blundering journalists are not helpful.

3) My opponent is quoted as saying he won the election by "the largest number of votes reported for anyone winning an ACS election." It is also likely that I got the largest number of votes reported for anyone who ever lost an ACS election. Both the scope and the character of the electioneering by supporters of my opponent were unprecedented in ACS history. Of course they turned out lots of votes. I and my supporters are impressed by their zeal but not by the righteousness of their cause.

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Cotton's point is well taken: it was overgenerous to refer to his campaign methods in terms of "strategy." Something less than strategy may have been at work when he sent out letters describing his opponent as an "indecisive," "defensive," "undistinguished, mid-level industrial chemist . . . supported by a small but politically hyperactive faction of the ACS whose primary interest is in employment conditions for industrial chemists."

This may have been, as Cotton says, an appeal for a "rational and constructive discussion of the options." But many construed it as an attack on ACS members interested in professional services, particularly industrial members.

—ELIOT MARSHALL

Trypanosomiasis and Meat Production

Donald E. Vermeer's letter (12 Nov., p. 636) about dwarf cattle and trypanosomiasis in Africa notes that many native West African cattle breeds are tolerant of this disease, which is transmitted by the tsetse fly (*Glossina* spp.). He suggests that these trypano-tolerant breeds might be used to enhance cattle production in areas of central southern Africa infested by the tsetse fly. Most of the few remaining humpless cattle breeds native to Africa (but descendants of European or Asian wild progenitor species) do possess a high degree of tolerance (not true resistance) to trypanosomiasis (*1*). They constitute valuable animal genetic resources that could be more extensively utilized to enhance meat production in African environments infested by the tsetse fly (*1–3*). In fact, the declining or endangered trypano-tolerant breeds, such as the N'Dama and West African Shorthorn of West Africa and the Nuba Mountain of Sudan (which reputedly traces its ancestry to humpless trypano-tolerant cattle), have frequently been singled out for conservation (*4*), especially since trypanosomiasis is one of the few serious cattle diseases that cannot be effectively controlled by veterinary practices.

However, Vermeer does not mention a number of important points relevant to the issue of trypanosomiasis and meat production in Africa:

1) Nearly all of these native, trypano-tolerant breeds have not been substantially improved genetically for greater production of meat (or milk); although they can survive in environments infested by the tsetse fly, they are not especially productive as rangeland resources per se, and their principal value may well be for crossbreeding with more productive modern breeds.

2) Selective culling of wild, trypano-resistant bushmeat species or game ranching of semidomesticated stocks of such native wildlife species often provides more meat per unit area than does husbanding of nontolerant or even tolerant cattle breeds; game ranching is already well organized and has proved successful in parts of South Africa, Rhodesia, Kenya, and other African nations.

3) Preferential use of a mixed crop of trypano-resistant, wild, meat-producing species or use of such wildlife resources along with trypano-tolerant cattle breeds is also usually a preferable ecological option; overgrazing by domestic livestock has contributed to desertification

of semiarid regions where tsetse fly eradication programs have allowed the livestock biomass to exceed the carrying capacity of the rangeland environment, and habitat alterations that have resulted from conventional ranching practices have contributed significantly to the general plight of native African wildlife resources (*2, 5, 6*).

The presence of the tsetse fly has frequently prevented overstocking of livestock over much of semiarid Africa and in large part has been responsible for the establishment and present existence of many of Africa's sizable savanna reserves or national parks (*5*). These protected areas currently play an essential role in the conservation of the world's most unique and diverse assemblage of mammalian fauna, and any proposition for the use of trypano-tolerant cattle in regions of Africa infested by the tsetse fly should be tempered by these considerations.

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Small RNA

In the interest of historical accuracy, I would point out that the first well-defined function for a small RNA was described by Sidney Altman (*1*) long enough ago that the detection of the role of a small RNA in secretion, regardless of its biological importance, is hardly the first perceived function, as suggested in Roger Lewin's recent remarks (Research News, 19 Nov., p. 777).

Altman and his collaborators have shown (i) that the separate components are inactive but can be reconstituted (*2*) and (ii) that mutations in the RNA sequence affect its function in vivo (*3*). In addition, Altman and his colleagues have fully sequenced the gene and have shown that it contains a five-nucleotide sequence in the bend of a hairpin complementary to the invariant nucleotides of the TψCG loop of all *Escherichia coli* transfer RNA's.

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Natural Gas Exploration

In his editorial "Methane: A motor fuel" (12 Nov., p. 641), Philip H. Abelson states that methane can be obtained from biomass and from coal, that the American Gas Association is confident that much more natural gas will be discovered and produced, and "Thus, the nation has an answer to a prolonged attenuation of oil imports."

The maximum probable rate of methane production from biomass and coal in the next several decades is a small fraction of the approximately 20 trillion cubic feet per year that our nation currently consumes.

The American Gas Association for decades has expressed confidence that much more natural gas will be discovered, but such confidence has not prevented a 25 percent decrease in our nation's proved reserves of natural gas during the last 10 years, in spite of tremendous growth in rates of exploration for it. Drilling records reveal that the amount of gas discovered per million feet of exploratory drilling has continued to decline for 25 years. Is the American Gas Association telling us that we have saved our best prospects to drill last of all?

Geology, well drilling records, and oil and gas field discovery and production histories suggest that the probability of long-term increase in U.S. production of natural gas is very similar to that for oil.

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Erratum. The illustration that accompanied the review by C. C. Albritton, Jr., of W. H. Goetzmann and K. Sloan's *Looking Far North* (Viking, New York, 1982) in the issue of 10 December, page 1109, should have been credited to the Bancroft Library, University of California, Berkeley, as well as to the book under review.