Letters

Did Adam Marry Eve?

We would like to comment on the Research News article by Roger Lewin (2 Oct., p. 24). The existence of a "mitochondrial Eve" relies on a strict female-to-female genetic transmission. Similarly, because of the strict male-to-male genetic transmission of the Y chromosome, one should expect to find a "Y chromosome Adam" by studying the polymorphism of the restriction enzyme cleavage pattern of Y chromosome–specific DNA sequences (provided they were not involved in either meiotic recombination or rearrangement events with the X chromosome) (*1*). A paradox may result from such studies: "Adam" and "Eve" may have belonged to distinct populations that intermixed a long time after the putative "Adam" and "Eve" came into existence.

This potential paradox can be illustrated by studies establishing the mitochondrial and Y chromosome ancestors of laboratory populations of the inbred house mouse. The mitochondrial DNA of all strains tested show restriction enzyme cleavage patterns identical to those of the wild mice, *Mus musculus domesticus* (*2*), whereas most classical laboratory mouse strains appear to carry a *Mus musculus musculus* Y chromosome (*3*). A similar disparity in the distribution of the Y chromosome type and mitochondrial genotype has been observed in the wild European populations across the hybridizing zone separating the two *Mus musculus* subspecies (*3, 4*).

The biblical concept of Adam and Eve as founders of humanity (and as an illustration of a bottleneck in human speciation) may soon therefore be confronted with experimental data.

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3. C. E. Bishop *et al.*, *Nature (London)* **315**, 70 (1985).
4. F. Vanlerberghe *et al.*, *Genet. Res. Camb.* **48**, 191 (1986).

Fraudulent Science

The proposed guideline of the National Conference of Lawyers and Scientists (NCLS) for "bringing charges anonymously" (AAAS News, 6 Nov., p. 813) against those presumed guilty of scientific fraud is almost as disturbing as the ethical transgression with which it attempts to cope. It suggests McCarthyism redux and contraverts the basic principles of our legal system which protect the right of the accused to face his accuser and which presume innocence until guilt is proved. Sophistry aside, the question arises as to whether NCLS must not also consider a mechanism to determine whether an allegation of fraudulence is not in itself false, made for reasons as varied as envy, vengefulness, perverseness, self-aggrandizement, or even emotional-mental instability.

The *why* of fraudulent science may be as ephemeral as "simple" moral flaccidity, or it may be rooted in substantive and (for the perpetrator) intolerable pressures such as those generated by the competitive quest for funding or the attainment of academic tenure, or perhaps an unbridled need for recognition and kudos. But whatever its origin, survival of the community demands that the noxious practice be prevented if possible and, where found, extirpated root and branch. Clearly, NCLS's goals and burdens are critical to the nation and to science. But with equal clarity, endorsement of what amounts to a Star Chamber proceeding flies in the face of decency, of good law, and, ultimately, of good science.

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In the AAAS News article about fraud in scientific research, the quote by Benjamin Lewin, editor of the journal *Cell*, in which he states it is sometimes impossible to print a retraction, is of note. Corrections are "dependent upon other researchers in the field to correct the record."

This brings up a more significant and everyday problem, particularly in the medical fields. Many authors come into print, with no intent of fraud, as enthusiastic advocates of certain procedures or medications. Further experience may prove that the glowing expectations did not materialize. However, it frequently takes years before the literature proclaims this fact. Unless, of course, one happens to have corralled the author at the bar and found that he had abandoned the procedure some time ago.

I have proposed that editors promote a "Section of Recantation" in their journals. This would give authors an opportunity to state, in simple fashion, that their anticipations had not been fulfilled. It would require only a few paragraphs at the most and would save us and the patients from needless expense, time, and inappropriate, if not harmful, procedures.

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The Union Movement

While Henry S. Farber (Articles, 13 Nov., p. 915) controls for shifts in the employment sector in his analysis of declining unionization, controls for changes in the rules of the National Labor Relations Board seem lacking. The grounds accepted for unfair labor practices claims have expanded during this period, so the increased rate of filing such claims cited may signify little or no change in employer behavior. Certainly an analysis of the nature of claims filed is in order before the conclusion is drawn that employers resist unionization more strongly now than in the past.

Farber confines himself to considering workers' job satisfaction and expectations of union ability to gain improvements. This unfortunately ignores worker resistance to the political and other nonwork-related baggage that comes with most union organizations. In recent years, unionization has fared better in those states where agency shop contracts are not allowed, which implies that under "right to work" conditions unions succeed in shedding their irrelevant baggage and more accurately represent workers' aspirations.

Changing union behavior may be more effective in reversing the decline in unionization than changing employer resistance or worker attitudes.

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Response: White makes a point regarding an oversight in my original presentation. I report (p. 919) that the number of unfair labor practice claims against employers has increased dramatically and that this is evidence that employer resistance to unionization has increased. However, it is possible that the increase in claims is simply a result of an increased litigiousness by unions with no increase in the number of claims with actual merit. I should have presented evidence I have which shows that the number of claims that the National Labor Relations

Board found to have actual merit increased even more rapidly than the total number of claims. Thus, I believe the increase in claims does represent an increase in employer misbehavior regarding unions. White correctly points out that my conclusion is inadequately supported by my evidence, but my conclusion is correct.

I find no evidence that workers resist "the political and other nonwork-related baggage that comes with most union organizations." In addition, I find no evidence that "unionization has fared better in those states where agency shop contracts are not allowed. . . ." Indeed, even if there were such evidence, I would not draw the same inferences as White.

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Acid Rain Report

The recent editorial "Ozone and acid rain" by Philip H. Abelson (9 Oct., p. 141) appears to give a stamp of approval to the Interim Assessment Report of the National Acid Precipitation Assessment Program (NAPAP), while ignoring serious criticisms of the report that have been expressed by numerous scientists (News & Comment, 18 Sept., p. 1404). The report, especially the widely distributed Executive Summary (volume 1), is misleading and minimizes the seriousness of the ecological effects of air pollution. To choose one example, the report used a *p*H of 5 as an arbitrary definition of lake acidification. Many published studies have shown significant biological damage to lakes that are acidified to *p*H levels well above 5 [for example (*1*)], so using a cutoff of *p*H 5 seriously underestimates the number of lakes suffering damage by acidification. This kind of selective reporting demeans the efforts of the many conscientious researchers sponsored by NAPAP.

Abelson's editorial may also confuse some readers by discussing in a vague manner the role of naturally emitted hydrocarbons in the forest damage process. While it is true that organic volatiles produced by plants can participate in reactions that form airborne oxidants, these oxidants only reach potentially phytotoxic levels because of the presence of anthropogenic pollutants. It is misleading to imply, as Abelson does, that "natural organic chemicals" are responsible for forest damage.

In our view, opinions published in *Science* on issues of national importance should be based on a rigorous evaluation of available information and should be presented clearly. Ableson's editorial fails on both counts.

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Increased Energy Efficiency, 1978–1986

U.S. energy data indicate that far more energy is being made available to the American economy through increased energy efficiency than from increased use of nuclear power and coal.

From 1978 to 1986, the official economy [measured by real gross national product (GNP)] grew 19% (*1*), while energy consumption fell 5%, from 78.1 quads in 1978 to 74.3 quads in 1986 (*2*). Had U.S. energy efficiency stayed at the 1978 level, the economy would have required 93.1 quads in 1986. Accordingly, improved energy efficiency, measured as the decline in energy per unit of GNP since 1978, contributed 18.8 quads to the U.S. economy in 1986 (1 quad equals 10^{15} Btu's; 1 quad per year equals approximately 500,000 barrels of oil equivalent per day). Without the improvement, which was accomplished through increased efficiencies in automotive fuel economy, building heating and cooling, home appliances, and so forth, the economy would have required 25% more energy than was actually consumed.

Over the same period (1978–1986), annual U.S. coal production increased by 2.9 quads, and nuclear power output by 1.5 quads (*3*). The combined increase, 4.3 quads (after rounding), is less than one-fourth the 18.8-quad contribution from improved energy efficiency. (All other supply sources declined by 2.9 quads from 1978 to 1986, offsetting the increase in coal.)

The overshadowing of supply increases by efficiency gains was slightly more pronounced in 1985–1986 alone than for the entire period from 1978 to 1986. Efficiency gains in those 2 years totaled 5.1 quads, versus 0.7 quads added by nuclear and coal combined—a 7-to-1 ratio in favor of efficiency. Similarly, 27% of the efficiency gain over the 8-year period from 1978 to 1986 occurred in the most recent 2-year period (1985–1986).

Two years ago I wrote that "Efforts to exploit our Saudi-size reserves of inefficient energy use will provide the greatest payoff among our energy options, as they have since the 1970's" (*4*). The above data confirm this for the mid-1980's.

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REFERENCES AND NOTES

1. U.S. Energy Information Administration, *Mon. Energy Rev.* (August 1987), table 1.7, p. 12.
2. *Ibid.*, table 1.4, p. 7.
3. *Ibid.*, table 1.3, p. 5. Coal production data for 1978 are taken as the average of 1977 and 1979 to avoid overstating growth from artificially low 1978 output due to a coal strike.
4. C. Komanoff, *Science* **229**, 1038 (1985).

Personality Measures

I wish to thank *Science* for a most stimulating Research News article on "The genetics of personality" (7 Aug., p. 598). Its challenging contents, notably the important case study of the identical twins Oskar Stöhr and Jack Yufe, reconfirmed my old conviction that the important personality measure "mustache" should get more attention. Thus I have set upon myself to locate and sequence the MG (Mustache Gene), as well as the ESG (the Elevator Sneezing Gene), hoping by that to do my share in rendering more methodological the personality selection in my society.

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Erratum: In the report "Similarity of synthetic peptide from human tumor to parathyroid hormone in vivo and in vitro," by N. Horiuchi *et al.* (11 Dec., p. 1566), the caption for figure 1 was inadvertently omitted. The figure is reprinted below with the caption.

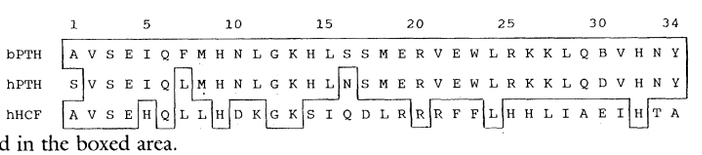

Fig. 1. Amino acid sequence of bovine and human PTH-(1–34) and hHCF-(1–34)NH_2. Identical amino acids are enclosed in the boxed area.