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Letters

Fell Swoop

With Tom Brown safely underground for some 250-odd years, perhaps one may be allowed to adapt his famous lines, and to thank Honor B. Fell for her delightful "Fashion in cell biology" [*Science* 132, 1625 (1960)] as follows:

Well do I like thee, Dr. Fell,
The reason why I fain would tell;
Since fads in cells thou dost dispel,
Well do I like thee, Dr. Fell.

F. B. HUTT

*Department of Poultry Husbandry,
Cornell University, Ithaca, New York*

Statistics and Legalized Gambling

Your 23 December issue [*Science* 132, 1859 (1960)] contained an excellent editorial on the value of properly weighted and applied statistical evidence. Thornton Page had an article, "Recent statistical studies in astronomy" [132, 1870 (1960)] which illustrated fine use of the method.

Unfortunately, there appeared in the same issue [132, 1879 (1960)] a prime example of the ignorant and careless use of statistics, a news note entitled, "... More is spent on [legalized] gambling than education," which included a statement by the "Council for Financial Aid to Education" to the effect that Americans spend \$20 billion a year for legalized gambling while only \$4.5 billion goes for higher education, the \$4.5 representing only half the actual cost, the other half being found in various ways by the institutions.

Neither your editor nor the council, in their zeal for drama, caught the falsity of the figures and their statistical misuse.

1) At least 90 percent of legalized gambling is on horse racing, on which there was a turnover of \$1 billion in New York and no more than a total of \$2.5 billion for the whole country.

2) This money is not all "spent"; 85 percent goes back to the bettors. Even if \$4 billion were bet, all but \$600 million is retained by the public. Of the \$600 million, about \$350 million goes for state taxes, some of which is used for higher education. The remaining \$250 million goes for upkeep of the tracks and for salaries and purses, and much of it is subject to federal income tax, a fraction of which is included in university grants.

Racing is conducted on a nonprofit basis at all New York tracks—Delaware, Aksamens, Fairgrounds, and Keeneland. The profits are donated for higher education, research, and civic

causes. Many more millions are donated each year for the same purposes by the profit-making tracks. Racing and breeding provide employment for thousands who pay taxes to keep the wheels turning.

What did the council mean by "spent" money? Did they mean wasted money? Does anyone really know about "money"? On any basis, higher education does not suffer because of legalized gambling. If all money were put into education and the mere raising of potatoes (production of essentials), we would have the Puritan New England of 1750 (and about 60 percent of our people would be out of work).

Ordinary gambling needs no justification. Those who live in the world of reality realize that it is an established human urge and that even a small wager provides a bit of romance, however fleeting, in the drab life of millions of people.

The majority of the faculty members of our universities are well informed, but all professors are not necessarily intellectuals, and all scientists are not educated, as was readily admitted in his own defense by J. Robert Oppenheimer.

Fortunately we have only a few who deserve to be called eggheads and who would have made the mistake on gambling statistics. However, when they appear they are as conspicuous as the rare drunken son of a religious leader.

More and more academicians are in the spotlight, and more is expected from them than from any other group. Scientists, previously silent, are now articulate (sometimes vociferous) on public matters, and Kennedy has gone to the universities for many high-ranking appointments (and good ones).

For the sake of the students and of the nation, we hope for our educators and scientists a complete education in the "humanities," meaning not only the proper university disciplines but also the humanities of the world at large—knowledge of things in general and of the facts of life.

ESLIE ASBURY
902 Carew Tower, Cincinnati, Ohio

Naming Enzymes

Enzymes are usually named after the substrate used by the investigators who first describe them. The name is not necessarily stable, because further work may show that other substrates are attacked. For instance, tyramine oxidase is now called monaminoxidase because many amines besides tyramine are oxidatively deaminated by the enzyme. Such a change in name is desirable, as is any change which defines more precisely the activity of the enzyme.

These considerations are promoted by the following case history. Some years ago my co-workers and I described and partially purified an enzyme found in some plants and animals which hydrolyzes hydantoin to hydantoic acid [*J. Biol. Chem.* **163**, 683 (1946); **181**, 449 (1949)]. Since no substituted hydantoin were hydrolyzed, the name hydantoinase seemed appropriate. The enzyme is very active but its function is not clear, since nobody has been able to bring unsubstituted hydantoin into any metabolic scheme. This is always somewhat frustrating.

In 1957, Wallach and Grisolia [*J. Biol. Chem.* **226**, 277 (1957)] further

purified the enzyme, which they said we called hydantoin peptidase—a name we had not thought of. This preparation, which was 80-percent pure, hydrolyzed hypopyrimidines as well as hydantoin. They renamed the enzyme hypopyrimidine hydrase, and Dixon and Webb [*Enzymes* (Academic Press, New York, 1958)] rapidly made a further contribution by calling it dihypopyrimidinase.

The enzyme now has a respectability it did not have as a simple hydantoinase, since everyone is interested in pyrimidines and nobody in hydantoin. But, as Wallach and Grisolia showed, the turnover number for hy-

dantoin is 27,000; for hydouracil, 4300; and for hydrothymine, 420. The K_m for hydantoin is higher than the K_m for the pyrimidines, but these values have not been used as criteria for naming enzymes.

The question is this: Does one name an enzyme after the substrate most rapidly attacked, or after the substrate of most interest? Apparently the latter. One is reminded that some years ago certain towns in Russia changed names in accordance with the current political status of the leaders. Perhaps enzymes should be named in accordance with the current metabolic status of the substrates.

F. BERNHEIM

Duke University Medical Center,
Durham, North Carolina

Advancement of Scientists

Please accept my resignation from the AAAS in protest of your policy, which, in my opinion, fails to advance science because of your reluctance to aggressively push for the advancement of *scientists*. I am not denying that you do a good job in disseminating the facts of science, and you may even encourage a certain amount of research. But the fact remains that science will only really be advanced when the scientist himself has gained greater status, more recognition, and more acceptance by the average American as someone to look up to. The American Medical Association has accomplished this for physicians in the United States. What we need is a comparable association that will achieve this for America's Ph.D. scientists.

Whether or not you like this approach, or whether you feel that it goes against the grain of your organization to compromise the scientific ivory-tower tradition, the fact remains that the Ph.D. scientist is not generally compensated in our culture for the sacrifice, effort, and skill that his extensive training entails. I don't like the idea of unions being necessary, but if it takes a "union" (such as the AMA) to get the scientist his due, then any organization dedicated to the advancement of science must transform itself into a union.

My resignation is predicated on the fact that I believe that it is a hopeless task to try to influence the AAAS in regard to its obligation to the scientists. This is not the first correspondence I have had with your office on this subject. Therefore, I feel that I must resign. As a final request I will ask you to print this letter in *Science*.

THEODORE C. KAHN

United States Air Force Hospital,
Wiesbaden, Germany

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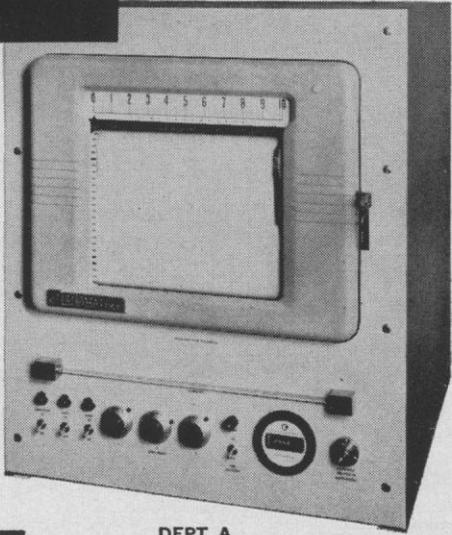
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