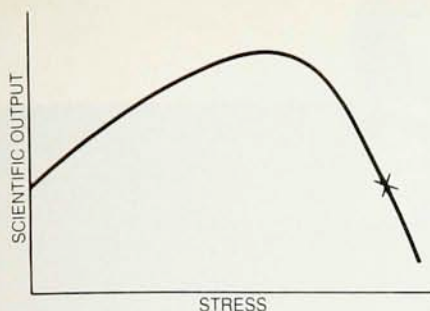




cist, but we are referring to an average over physicists), but it is legitimate to suppose that with some external pressure (a need to feed children, say) he or she would produce more. So we can construct a curve in which the vertical axis represents productivity and the horizontal axis represents the pressure to which the physicist is subject. Like the Laffer curve, of course, the shape of this curve is unknown, but I suspect that the shape is at least approximately like that in the figure above and that in the US physicists operate well beyond the maximum—indeed, probably beyond X, the point at which productivity is lower than if there were no pressure at all. [I thought I had invented the Laffer curve for productivity in physics, but a recent report suggests that this is an example of a much more general law of performance (*Newsweek*, 25 April 1988—I don't have time to track down the original reference; I have to write a proposal).]

Now some of this excessive pressure comes from the general mores of the environment in which we work. The United States, after all, is a very competitive society. However, I believe that a major part of the pressure on physicists and the main contribution to the inefficiency that besets our work comes from the structure of the funding of research.

What I am saying is that by establishing an elaborate procedure to monitor and control the spending of Federal money on physics research, the government has produced a situation in which it gets less for its money than if it just distributed the funds more or less at random. I think that a complete overhaul of the mechanisms of research funding is called for. I do not have a concrete proposal for an alternative, but it must surely be possible to change the means of distributing funds so that it is less traumatic without its becoming either unjust or corrupt. I believe that developing and implementing such a system should be considered one of the highest priorities for science in the United States.

This letter is, regrettably, not as clear and forceful as I would wish, but the writing of a good letter, like good research in physics, requires two things that are in short supply: concentration and peace of mind.

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6/88

$\alpha \nu \gamma$. How About You?

As mentioned in our article in the August issue of *PHYSICS TODAY* (part 1, page 24), we are in the process of writing a book on the history of early work on Big Bang cosmology. We already have a good deal of anecdotal material on the cosmological activities and interests of George Gamow, but would be pleased to hear from *PHYSICS TODAY* readers about anecdotal material we might use.

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Halley: A Name That Lives On in Mortality

The article by Michael Evans (February 1988, page 41) brought to our attention the remarkable diversity of the fundamental contributions of Edmond Halley in the astronomical, mathematical and geophysical sciences. It may be less well known that even had Halley made none of the contributions noted by Evans, he would still have left us an important legacy as the father of actuarial science.¹ The beginning of actuarial science is often traced to Halley's paper "An Estimate of the Degrees of the Mortality of Mankind, Drawn from Various Tables of Births and Funerals in the City of Breslau," published in 1693 in the *Philosophical Transactions of the Royal Society*.² For this great scientist a mortality prediction seemed to be as natural as a prediction of the return of a comet!

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1. J. C. Hickman, in *Actuarial Mathematics* (Proc. Symp. Appl. Math., vol. 35), American Mathematical Society, Providence, R. I. (1986), pp. 5–15. N. L. Bowlers Jr., H. U. Gerber, J. C. Hickman, D. A. Jones, C. J. Nesbitt, *Actuarial Mathematics*, Society of Actuaries Publishers, Itasca, Ill. (1986).

2. E. Halley, *Philos. Trans. R. Soc.* **17**, 596, 654 (1693).

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3/88

Corrections

October, page 9—The third sentence of the first paragraph should have said that the range of validity of quantum mechanics had been extended to systems with radii on the order of 10^{-13} cm. The equation in the second paragraph should have been given as $i\hbar\psi = H\psi$.

August, part 1, page 43—The second sentence of the caption should have read, "Lines from iron with 16 electrons removed are also present." ■

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G. F. Gilbert, Treasurer