productions of complex economic or natural systems, the question arises as to how we should use the results of the DICE model for policy purposes. Schneider presents an intuitive argument that more ambitious policies might be warranted. He refers to a policy of stabilizing emissions at 80% of 1990 levels, which would have a present-value cost, relative to the efficient path, of $11 trillion (3). Annuitizing this at a discount rate of 4% would yield an income reduction of slightly over 2% of global income. Schneider suggests that this might be justified as a "premium to pay for planetary environmental insurance." I demur. Before laying out $11 trillion, shouldn't we inquire into the risks and the payoffs? Stabilizing emissions only slows the rate of climate change by about one-third. Moreover, while it would cost "only" 2% of our income, this outlay should be weighed against other claims on our insurance and investment dollars—declining educational attainment, crumbling science laboratories, hazardous Russian nuclear reactors, and dangerous American streets—at a time when net investment in the United States is only 4% of national income. In light of our tremendous needs and our meager means, the modest but real restraints on emissions suggested by the DICE analysis are a reasonable goal for the next few years.

The three previous letters caution against taking the numerical results literally—a caution that I would endorse. Quantitative economic models are useful in developing a menu of choices. These should not replace reasoned value judgments that weigh economic growth, distributional considerations, and environmental concerns. But Oppenheimer is too nihilistic in arguing that quantitative approaches like the DICE model "bear little relevance to policy decisions." Ironically, he would have us accept the numerical findings of the climate models while rejecting the calculations of the economic models. The point of empirical economic analyses is to include as fully as possible all costs and benefits so that competing objectives, like living standards and the value of environmental services, can be sensibly balanced.

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References

1. W. D. Nordhaus, *Managing the Global Commons: The Economics of Climate Change* (MIT Press, Cambridge, MA, in press).
2. National Academy of Sciences, Committee on Science, Engineering, and Public Policy, *Policy Implications of Greenhouse Warming: Mitigation, Adaptation, and the Science Base* (National Academy Press, Washington, DC, 1992).
3. W. D. Nordhaus, *Resour. Energy*, in press.

Priority Envy

Au contraire, Professors Cohen and Bickart (Letters, 6 Nov., p. 876)! I retain some class preparation notes from October 1969 that positively and irrefutably establish my priority in the use of the term "physics envy" as it is applied to biological scientists and to the supposed inferiority of that science to physics. I used the term in a general biology class at the University of Utah and was so proud of my perception and originality that I must have used it several times later that day in my coffee group at the Student Union. I suppose that other claimants listened from the next table or subsequently heard the term through the grapevine.

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Corrections and Clarifications

In the Perspective "Glowing avalanches: New research on volcanic density currents," by Greg A. Valentine and Richard V. Fisher (19 Feb., p. 1130), the photograph credit line should have read, "[Courtesy Richard P. Hoblitt, U.S. Geological Survey]."

In the article "An optimal transition path for controlling greenhouse gases" by William D. Nordhaus (20 Nov., p. 1315), equation 5 was misprinted. It should have read $c(t) = C(t)/P(t)$.