budget for science and technology and its overall rationale in terms of national goals." I disagree: There is already a "framework" and there is already an "evaluation." It's called the ballot box.

Moreover, instead of trying to define priorities for funding science, there is already a top-priority job for the National Academy and for all of us, namely, public education. As Thomas Jefferson wrote in his 28 September 1820 letter to William Jarvis, "I know of no safe repository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion."

W. GEORGE N. SLINN
Richland, Washington
6/88

PRESS REPLIES: I would encourage W. George N. Slinn to actually read what I said. He would find first that I did not set out priorities in the sense I infer from his letter—namely, that one particular field of science be given priority over another. Rather, what I tried to do was to set out a framework for thinking about priorities in the context of increasing opportunities in science and constrained resources.

In response to the request from the budget committees of the House and Senate, a special panel of the National Academies of Sciences and Engineering and the Institute of Medicine recently completed a review of the science and technology budget process. The panel's report suggests categories for Congress and the executive branch to use in developing science and technology priorities, especially in those crosscutting areas that appear in the budgets of several agencies. It does not comment on what specific science and technology programs should be funded.

I agree with Slinn that it is ultimately the responsibility of the public, acting through its elected officials, to set the overall priorities for science, and indeed for all categories of public spending. I also agree that public education is a very important component of this process; the National Academy of Sciences is already helping to improve public understanding of science through its public-television film series with WQED in Pittsburgh and through major programs to improve mathematics and science instruction at all grade levels.

I disagree, however, with Slinn's implication that the scientific community has no obligation at all to help inform the Federal budget process—to set out for Congress where it sees the richest opportunities for the maximum payback on public investments in fundamental science. Working with the government in thinking about priorities is a difficult undertaking for the scientific community. However, it is one we can no longer evade. Therefore, my institution, when asked, will continue to offer its understanding of the nature and direction of science as an aid to the most effective use of public funds.

FRANK PRESS
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2/89 *Washington, DC*

Cost-Effectiveness of Physics Journals

My article "The Cost-Effectiveness of Physics Journals" (PHYSICS TODAY, July 1988, page 56) discussed a survey of the cost of physics journals published in the *Bulletin of The American Physical Society*,[1] where the methodology used in the survey was explained. For the benefit of readers of the PHYSICS TODAY article who did not have access to the companion article in the *Bulletin*, the following explanations may be helpful:

▷ Differences of 20% in the calculated costs presented are not significant because journals differ in the use of blank or partially blank pages; in the amounts and sizing of graphic, tabular and mathematical materials; in sizes of print in tables and references; and in other practices.

▷ The subscription prices given were those applicable to academic libraries in the US. Some publishers charge higher rates for libraries at government and industrial laboratories. Subscription prices and hence cost per character outside the US may be higher or lower than those listed.

▷ The cost per character was calculated for 1987. When only part of a volume was published in 1987, no attempt was made to assign different parts of the volume to different calendar years. All prices and numbers of pages refer to complete volumes. This procedure does not affect the determination of the cost per character, since in all these cases the cost per volume was given in the volume.

▷ My coauthor on the *Bulletin* article, John Arrington, and I did not consider additional material distributed free to subscribers, such as separate author or subject indexes or advance abstracts, but we tried to include supplements that contained regular articles. We did not attempt

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to take into account different practices with regard to copying fees or licenses.

Reference

1. H. H. Barschall, J. R. Arrington, Bull. Am. Phys. Soc. **33**, 1437 (1988).

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2/89

Bubble Chamber Photoomission

In our article "Pions to Quarks: Particle Physics in the 1950s" (November, page 56), through an oversight, we failed to mention that the photographs on page 61 of Donald Glaser's notebooks were taken from Peter Galison's contribution, chapter 14, to the book *Pions to Quarks*, which we edited (Cambridge U. P., New York, to appear in 1989), and from Galison's more extensive treatment, "Bubble Chambers and the Experimental Workplace," in *Observation, Experiment and Hypothesis in Modern Physical Science* (P. Achinstein, O. Hannaway, eds., MIT–Bradford P., Cambridge, Mass., 1985).

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12/88

Gibbs and Mandelbrot at Yale

In his Opinion piece (January, page 71) Benoit Mandelbrot offers a non-Gibbsian approach to the definition of temperature and its fluctuation. He notes that "for small systems the statisticians grant that a fog of uncertainty is simply unavoidable." This limitation creates difficulties for chemistry and all of semiconductor physics, because these sciences and others often deal with single particles in thermal and diffusive contact with an appropriate reservoir. That is why the Gibbs approach is so widely followed.

Josiah Willard Gibbs gave us a brilliant and elegant logical structure suitable for the treatment of single- (and many-) particle problems in statistical mechanics: Here the chemical potential and the temperature make their natural entrance. The