are far "stronger" than the next set, which would include (in alphabetical order) Case Western Reserve, Illinois, Northwestern, Ohio State, and RPI; they would be marginally ahead of the third set, California (Berkeley), Lehigh, and Stanford.

The quantification of quality is an extremely difficult task at best, worthy of as careful and meticulous a study as the most subtle semiconductor phenomenon. The NAS study is based on good data, careful analysis, and collective judgment, and can serve as a standard to be improved upon, if possible, but not equated to ad hoc comments which sometimes provide ammunition to those forces which resist any attempts at accountability.

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Job Safety

The labor movement, like other institutions in our society (including science), has been increasingly criticized for failing to solve the urgent problems of our time. Much has been written about the esoteric and narrow nature of science, especially in the area of job safety. Labor unions also have been criticized for not protecting the health and safety of their members; but we, as laymen, find ourselves at a severe disadvantage. We have occasionally contributed to the criticism of science and of some scientists whose denials and distortions have allowed serious health problems to continue on the job (see J. T. Edsall, 16 May 1975, p. 687). But we also realize that such individuals are few (and are, we hope, becoming fewer) and that science and scientists are important allies of working people as they battle against disease and death. We have been keenly aware of this in our trade, faced as we are with toxic chemicals, solvents, chromates, exotic new chemicals and paints, silica and sand blasting, asbestos, vinyl chloride, and so forth.

We have recently seen convincing evidence of the help that scientists are giving us, and particularly of that given by *Science*. For some years, we have been apprehensive about the clouds of dust containing asbestos in which our men have been working. This dust is derived from spackling and taping compounds which are used in drywall construction and in preparation for painting. We met with industry people and government officials, but nothing was done. Then *Science* published a report by A. N. Rohl *et al.* (15 Aug. 1975, p. 551) outlining the details of the problem. Apparently, making scientific knowledge pub-

lic, especially to your wide circle of readers, is important. Things began to happen. After being told that nothing could be done, we now have been informed by one company that "after extensive research," they "have developed an alternate formula, and within a month all spackle production will be free of asbestos." Another company expects "to eliminate asbestos fibers entirely in all [its] products by the end of this year." A third company which has long produced the material our men only knew as a "taping compound" has informed us that they "are adding a caution statement to [their] labels."

Without scientists, we would not have known what was giving our members lung disease and cancer, since, in our ignorance, and without being warned, we were using these materials with no precautions. Scientists made the analyses and gave us the information. This was one ingredient. The other was its publication, and we are grateful.

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Federal R & D Management

Raymond L. Bisplinghoff addresses a number of very timely questions in his editorial on federal R & D management (12 Dec. 1975, p. 1045). But in his call for new policies, he fails to ask the most critical question of all: Why should the federal government do R & D in the domestic sector at all? In the military and space sectors, it seems reasonable that federal agencies should at least do sufficient R & D to keep their industrial suppliers honest. But in the domestic sector, there is little evidence that significant R & D tasks are being left undone, and competition rewards effort quite adequately. All the factors that Bisplinghoff cites do indeed prevent federally funded R & D from being effective, but there is little evidence that its absence is being felt. The logical conclusion is to stop trying to provide expensive and unneeded services.

Bisplinghoff is perceptive in his recognition of the poor record of the private companies serving largely as purveyors of R & D to the federal government. Apart from their commercial shortcomings, these companies have a poor record as advisers to the government. This means that the government has gotten poor value for its money. But the impact of this inept advice is unfortunately far greater than that. In determining policy, the advice received from these politically pure but commercially negligible companies is weighed against the advice from companies that can actually deliver. These companies tend to be large, competent, and politically unpopular. As a result, the government often has to choose between good news from a pure source and the facts. The facts usually lose. No one can blame the bureaucrats involved. They are generally neither stupid nor venal. But who wants to be crucified for favoring Standard Oil, just because they were telling the truth? Even the advice business badly needs reorganization. And it's going to be difficult, because the best advice often comes from politically unacceptable sources.

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ERDA Research Programs

With the peer review process under intensive scrutiny, consider the comforting circumstances surrounding the research program at the Lawrence Berkeley Laboratory (LBL). With an operating budget in fiscal year 1975 at a level equal to that for research at a large university (approximately $42 million), increased by 13 percent over fiscal year 1974, with additional expenditures of about $4 million for equipment, LBL operates without the travail of having to generate about 1000 proposals each year, most subject to the long uncertain process of peer review. Only the wild grasses, the blue elderberry, the black-tailed deer, and the California poppies glowing golden in the sun (*1*) are around to cast a critical eye on LBL activities.

Closed systems such as those at LBL and at other research labs inherited by the Energy Research and Development Administration (ERDA) from the Atomic Energy Commission deserve more scrutiny and evaluation than they are presently getting. At the ERDA University Conference on 3 and 4 November in Washington, D.C., I and others, while grateful for ERDA's initiative in organizing the conference, shared the feeling that ERDA's capability for future support of the nation's colleges and universities is being preempted to a significant extent by the generous institutional support of their in-house research programs.

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