the project, that "it was killed because the laboratory yielded to influence from the oil and automobile industries." After noting that the energy lab had been the recipient of two unrestricted grants from the Ford Motor Company Fund and from Exxon, Hammond states that "In addition, the laboratory's advisory board includes 7 oil and automobile industry people among its 24 members." He also addresses the question of "whether the energy lab's industry money and contacts have made it susceptible to influence." He concludes by noting that the "incident is troublesome because it raises the specter of universities adjusting their perspective as to what is important and their research programs to mesh more smoothly with government and industry."

These are serious charges that should not be casually accepted. Although Hammond does not comment directly on any Ford involvement, he notes that the grants received from Exxon and Ford "put the termination in an ambiguous, and perhaps suspicious, light." He does not mention that he talked with me by phone about these matters and that I assured him that I personally knew nothing of the energy lab's decision nor, to the best of my knowledge, had anyone else at Ford expressed any opinion to them about the fleet test, much less sought its cancellation.

I also provided Hammond with information about the extensive research on methanol-gasoline blends, pure methanol, and dual-fuel concepts of methanol and gasoline that has been conducted by the joint petroleum and automobile company Inter-Industry Emission Control Program, of which Ford is manager, and independently by Ford (*1*). While I noted that disadvantages exist with each of these systems, I told Hammond that I saw no unsolvable technical problems with them. Contrary to the view expressed by Reed, I believe the principal issue is economic, not political. Methanol will find a use as a fuel when the economics dictate it.

Hammond's article raises issues that go far beyond my own concern about the misleading implications and omissions I have mentioned, for it questions the propriety of industrial involvement in the academic world. Must universities be branded as handmaidens of industry when they seek and receive its financial support and know-how? Should the integrity of an eminent professor such as John Heywood be automatically questioned because he receives supplemental research support from industry? Is government support inherently more desirable than industry support? Are there to be no honest differences of opinion on technological and economic issues between the academic and industrial worlds? What is the proper relationship of the university and industrial communities?

I believe these issues transcend the current controversy over the methanol experiment at MIT. They are issues that must be resolved if the university and industrial communities are to work together more effectively. I strongly urge *Science* to pursue these important issues more thoroughly—and fairly—than appears to have been the case in Hammond's article.

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There are obviously two points of view regarding the MIT Energy Laboratory's sensitivity to potential conflicts of interest and independence of judgment, both reflected in the article. White does not contest the facts. But it is worth pointing out that the subject of the article was the way in which the energy lab handled its industrial relationships, rather than the propriety of industrial involvement in the academic world or the scope of industrial methanol research. It is also relevant that representatives of oil and automobile companies have testified against the use of methanol-gasoline blends at federal and state legislative hearings.

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Gas Chromatographs: Health Effects

In response to inquiries about the potential health effects of using gas chromatographs insulated with asbestos, we have examined by light microscopy oven insulation from several gas chromatographs manufactured by five companies. Two instruments contained asbestos, either chrysotile or amosite, as woven tape or in block form. The remaining three brands of instruments were insulated with fibrous glass or rock wool. The asbestos block is compacted, but it is not sealed, so that dust can be generated from the surface. After temperature-programmed operations, when the oven lid shuts forcefully, or during maintenance and repair procedures, visible amounts of dust can be produced from these materials.

There is considerable evidence associating amosite and chrysotile asbestos with cancer in occupationally exposed persons (*1*). The carcinogenic potential of such fibers has been repeatedly demonstrated in animals (*2*). Recently, it has been suggested that environmental, household, and bystander exposures, which are low-level, may account for the asbestos-related disease mesothelioma (*3*).

Daily use of gas chromatographs with asbestos-containing insulation may expose personnel to asbestos fibers, and asbestos disease risk may be involved. Either substitute material or asbestos block in which fiber has been sealed into place should be used by the manufacturers. Furthermore, instruments which have exposed asbestos insulation should be so labeled, with appropriate warnings permanently and prominently displayed. Protective respirators should be worn during dust-releasing operations.

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Grade Inflation

I completely agree with Amitai Etzioni's editorial (10 Oct. 1975, p. 101) regarding the inflation of college grades. There is no doubt that it is occurring, that it is serious, and that it makes no sense.

In line with Etzioni's suggestion that statistics about grading practices be widely circulated, I propose that these statistics be put exactly where they belong: on students' transcripts. This could be done if, along with a course's title, the transcript included the two grades received by both the 25th and the 75th percentiles of the students in the class. This system would at least give those professors who follow traditional grading patterns the privilege of reporting in some way the meaning of their grades. It might also place some pressure on other professors to keep statistics and to use a broader palette of marks in evaluating their students.

There are, naturally, very good reasons for not tampering with the traditional format of college transcripts. However, we must recognize that the system is breaking down. The transcript is failing to provide the information it was intended to convey, and a revision is in order.

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Etzioni's editorial, "Grade inflation," does not consider a position toward grades which is becoming increasingly prevalent: namely, that teachers structure their courses so that low grades rarely occur because the vast majority of students learn the specified material. Recent advances in behavioral technology, based on rigorous scientific research (*1*), have rendered this position a very reasonable alternative to both the "progressive" and the "traditional" positions mentioned by Etzioni. One should not censure any professor for being among those "contributing most to skewing the grading curve upward" without first establishing that his or her pattern of high grades is not due to the use of highly efficient teaching methods.

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1. See, for example, J. A. Kulik, C.-L. Kulik, K. Carmichael, *Science* **183**, 379 (1974); J. M. Johnston, Ed., *Behavior Research and Technology in Higher Education* (Thomas, Springfield, Ill., 1975); B. A. Ryan, *PSI: Keller's Personalized System of Instruction: An Appraisal* (American Psychological Association, Washington, D.C., 1974); J. G. Sherman, Ed., *Personalized System of Instruction: 41 Germinal Papers* (Benjamin, Menlo Park, Calif., 1974); B. F. Skinner, *The Technology of Teaching* (Appleton-Century-Crofts, New York, 1968).

In his editorial on grading, Etzioni neglects to mention one serious problem with the current (lack of) system. At many schools students grade the professors, only the reports are called "evaluations." Students tend to reward professors who are generous with A's, and school administrators often consider the students' evaluations before granting tenure or promotion.

While I do not think the student evaluations should be discontinued, I have seen this positive-feedback loop in action and consider it a major contributor to the grade inflation Etzioni discusses. As long as students are under pressure to get good grades and professors are under pressure to get good evaluations, can we really expect the two groups to do other than trade good marks?

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Etzioni's editorial on grade inflation stops short of the basic issues. The controversy over grades is pointless unless the purposes grades are to serve are examined. Presumably, the open discussion Etzioni calls for would start with an examination of purposes, but that seems to be rare among faculty committees on grading.

The two dominant reasons for grading are to inform students about their progress in learning and to certify student accomplishment for the benefit of graduate schools, fellowship award committees, and employers. A faculty committee looking for ways to accomplish these purposes might arrive at the present grading system, but it seems unlikely because the two purposes have different requirements. Information that will help students learn must be specific, timely, and frequent; it should provide a model of the desired learning; and it should reflect the goals of the professor and, if possible, the student. Information valuable to persons making selection decisions about students must usually be comprehensive, reflect general competences, and pertain to the needs of the selection agency. That graduate and professional schools, employers of all kinds, and committees awarding honors or fellowships should all be concerned with the same kinds of accomplishment seems unlikely.

If the energy devoted to arguments over the form or desirability of grading were spent developing ways to accomplish the purposes for which grades are currently used, the controversy over grading might subside to the mutual satisfaction of most of those concerned.

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Ozone Healing

In our report on the possible effects of tropospheric-stratospheric feedback upon the stability of stratospheric ozone (26 Dec. 1975, p. 1294), after we had corrected and submitted galley proofs, a major printing error was generated. The first sentence of the fifth paragraph on page 1295 should state that the CH_4 feedback will result in an approximate 10 (ten) percent recovery in atmospheric O_3. Reference 18 in our report will discuss this healing process in more detail.

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