Letters

Duke: Repressive Labor Policies

In Carter's article ("Duke University: Students demand new deal for Negro workers," 3 May, p. 513), I was quoted as suggesting that private economic motives were influencing the decisions of the university's trustees. The quotation was, in fact, both accurate and in context. However, since the statement was not adequately documented—and this is in no way a criticism of this clear and balanced report—and since this has subjected me to considerable criticism, I would like to identify the members of the Duke trustees' Special Committee on Non Academic Employees. They are Henry E. Rauch, chairman of the board of Burlington Industries; Charles B. Wade, vice president and a director of R. J. Reynolds Tobacco Company; P. Huber Hanes, president and a director of Hanes Corporation; Marshall I. Pickens, a director of Duke Power Company; Walter M. Upchurch, senior vice president of Shell Company's Foundation; and K. Brantley Watson, a director of McCormick and Company. Rauch, Wade, and Hanes are associated with companies whose reputations in the area of labor relations are notorious, to say the least. Their own opposition to the principles of collective bargaining and fair grievance procedures has been unremitting. Upchurch was, himself, personnel director at Duke, and at a time when the exploitation of Duke's nonacademic employees was at its height. I submit that the records of these men, as judged by the behavior of the companies they lead, give every reason to believe them unwilling if not unable to judge the needs of the university fairly and impartially.

A university is, principally, a collection of scholars: the faculty and their students. Its successful functioning depends upon many things, but not least the cooperation of technical and maintenance employees. Thus, faculty and students have a direct interest in seeing that such persons are fairly treated. It is a fearful realization that even in so great an institution as Duke, the decisions affecting their lot are solely in the hands of entrepreneurs whose imagined private interests dictate repressive policies toward employees. "Veritas," "Eruditio," "Religio," and similar mottoes have a hollow ring under such circumstances. No university can maintain its integrity when governed by an autocratic and self-serving clique of businessmen. The Duke trustees' committee, in a report issued 15 May, has, in effect, rejected the pleas of the university faculty, its academic council, and the students, for just treatment of the nonacademic employees. Ironically, it will be these same trustees who will then complain loudest about the "undemocratic" behavior of student demonstrators should the virus of "direct action" infect this campus.

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Bioengineering Contracts Slight Universities

In his article ("Government, medical research, and education, 9 Feb., p. 604), Alexander Leaf referred to the problems related to the development of bioengineering groups outside the university framework and pointed out that "only the universities have the personnel necessary to make such enterprises flourish." He suggested some solutions for developing such groups within the university framework which would strengthen both the programs and the educational role of the institutions. I agree with his views and hope that they will receive wide publicity. The magnitude of this problem can be appreciated by reviewing a list of new grants and contracts recently awarded by the Artificial Heart Program of the National Heart Institute [*Med. Res. Eng.* **7**, 9 (1968)]. Out of approximately $3 million awarded, less than 20 percent of the funds went to university laboratories. The major fraction was awarded to engineering firms. Whether this reflects a lack of interest in this program by university laboratories or other factors is not entirely clear. However, considering the extensive resources available in universities and medical schools in cardiovascular research, it was very surprising to find that even in the case of contracts for *evaluation* of the *physiologic effects* of circulatory assist devices, only one out of three grants went to university laboratories. One factor may be related to a limited dissemination of information among universities, most of which, unlike many of the major engineering firms, do not maintain Washington offices whose major role is to gather information regarding the availability of federal research contract funds. In any event many of the organizations receiving the largest contracts do not appear to have any outstanding record of achievement in the bioengineering field as far as can be determined from research reports available in the open literature. It is more likely that the federal funds are in fact used to develop the bioengineering capabilities of these organizations. While this may be a desirable goal, it is of secondary value compared to the development of such groups within the university framework for the reasons outlined in Leaf's article. Furthermore, I understand that many engineering and electronic companies have recently organized bioengineering groups for the sole purpose of taking advantage of the availability of NIH, NASA, and other federal research contracts in this field. Such arrangements are not likely to promote quality and can divert funds from the development of bioengineering laboratories within the university structure where funds can provide not only more meaningful immediate results but also extensive long-term benefits. Considering the conservative nature of universities, greater efforts are needed by enlightened federal officials to secure more participation by university laboratories in such national efforts. Without it, progress will be slow and temporary.

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DNA Discovery in Perspective

If history is the factual record and intellectual synthesis of past events, ideas, and men connecting the past with the present and future, it is a sad and surprising omission that in an otherwise

pertinent historical review of molecular biology ("That was the molecular biology that was," 26 Apr., p. 390), Stent makes no mention of the definitive proof of deoxyribonucleic acid (DNA) as the basic hereditary substance by O. T. Avery, C. M. MacLeod, and H. McCarty [*J. Exp. Med.* **79**, 137 (1944)]. The growth of the informationist school of molecular biology rests upon this experimental proof.

Historical recognition is due those whose work has stimulated an army of recruits to enlist in a new field of science. I am old enough to remember the excitement and enthusiasm induced by the publication of the paper by Avery, MacLeod, and McCarty. Avery, an effective bacteriologist, was a quiet, self-effacing, nondisputatious gentleman. These characteristics of personality should not prevent the general scientific public represented by the audience of *Science* to let his name go unrecognized.

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Even though my essay was not intended to be a definitive history of molecular biology and hence kept the number of names mentioned to a, quite possibly scurrilous, minimum, I do agree, in retrospect, with Lamanna's stricture that I really *should* have made explicit mention of Avery's proof during the Romantic Period that DNA is the hereditary substance. However, Lamanna's assertion that "the growth of the informationist school of molecular biology rests upon this experimental proof" is, in my opinion, quite untrue. As I shall set forth in more detail elsewhere, Avery's 1944 discovery made a surprisingly small impact on geneticists, both molecular and classical, for many years, and it was only the Hershey-Chase experiment of 1952 which caused these people to focus on DNA. The reason for this delay was neither that Avery's work was unknown to or mistrusted by them nor that the Hershey-Chase experiment was technically superior. Instead, Avery's proof had been merely "premature," in that the views generally held about the structure of DNA in the 1940's, particularly the "tetranucleotide" hypothesis, did not, as I trust Lamanna also remembers, provide any theoretical framework within which the role of DNA as carrier of hereditary information could be understood. By the time of the Hershey-Chase experiment, however, the notion of DNA as a long polynucleotide of variable nucleotide sequence had gained currency, and now, as demanded by Eddington's Rules of doing science, confidence could be placed in the experimental findings because they were confirmed by theory.

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Rice: Expansion, Not Explosion

Far be it from Rice University to squander a massive $33 million on the few projects mentioned in "News in Brief" (12 Apr., p. 169). We'll handle these projects with the $1-million grant from the Ford Foundation. Inadvertently *Science* gave its readers the impression that Rice had succeeded in squeezing a Saturn rocket engine into a Tin Lizzy.

Proceeds from our 3-year $33-million campaign are to be used for a major 10-year expansion program of Rice University. By the end of May, the drive had reached a total of $32.5 million in gifts and pledges. It will be concluded in December of this year.

Here's the correct breakdown of our $33-million campaign: $6 million for scholarships and fellowships; $6 million for faculty; $2.5 million for architecture and fine arts; $1.2 million for engineering; $600,000 for biology; $600,000 for mathematical sciences; $1.5 million for physics and chemistry; $2 million for our Fondren Library; $1 million for major equipment; $7 million for undergraduate housing; $1.3 million for graduate housing; $300,000 for health center; and $3 million for immediate working capital needs. Not included in the $33-million campaign are Rice University's long-range requirements, including a graduate school of management which may cost $8.5 million and a 3000-seat auditorium with a $3.7-million cost estimate.

The above clarification should give some measure of hope to those of your readers whose faith in the shrinking dollar is hanging by the thinnest of threads. To this I wish to add that even in Texas we still tend to be cautious with millions and would not think of forcing $33 million down the slender throat of a $1-million project.

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