3 October 1975, Volume 190, Number 4209 **SCIENCE**

Support of Basic Research

A recent National Science Foundation report indicates that, in constant dollars, support for basic research in 1975 is expected to decline by 8 percent from the 1974 level. And, according to *The Chronicle of Higher Education*, "this is the sharpest percentage decline ever recorded by NSF." Other accounts from across the country indicate that industry and state expenditures for basic research, particularly in colleges and universities, are following the same downward trend.

However, what concerns me most is how the academic science community and the federal granting agencies react in this crucial period. During such times of fiscal and political stress, a psychology tends to develop which could do untold harm to the fundamentals of the nation's basic research activities. There is, for example, a tendency on the part of granting agencies to support only the "safe" research, and the scientific community more often than not capitulates to this practice. Part of the problem is that as public opinion shifts, research that seems "relevant," and hence safe, changes. For example, a few years ago the government was eager to support research on environmental problems. Today, environment is relatively "out" and energy is "in." Thus support tends to become erratic. These attitudes, combined with congressional pressures, can in time erode and destroy the quality of American science. We *must* continue to support our superior scientists steadfastly; at the same time we must urge administrators and program directors in granting agencies to encourage the unconventional approach to a problem—that is, be willing to invest risk capital.

One significant modification of the awarding of research funds would enable young scientists to be less inhibited and more creative in their thinking and approach to fundamental problems. Departmental grants could be awarded specifically to support research by junior faculty. In this way, our young scientists would have a 3- to 5-year period to prove themselves early in their careers. Upon receiving tenure, the scientists would then apply for a regular grant and would be judged by the normal peer review process.

Who is equipped to judge where a breakthrough is likely to occur—the Congress or even experienced science administrators? The answer is, of course, the scholar who is willing to gamble his time and career on following his hunches. In the process of such effort, he will work much longer hours and with far more energy and enthusiasm than if he is following dictums laid down by Washington.

The central, critical core of modern science is the body of work known as nondirected, basic research. In reality the "health" of a nation's science effort is a function of the quality of basic research being done. It is incumbent on those responsible for the nation's well-being to provide adequate support for research of high quality. In turn, scientists carry the burden of educating decision-makers as to the critical importance of basic research. Of course there are often charges that scientists cannot provide an exact definition of quality. However, I believe the important issue is not the *definition*, but the *recognition* of quality. Scientists are able to provide this recognition and have done so effectively through the peer review process. The validity of this process has been demonstrated by the application of basic knowledge for the betterment of our society.

What is at stake, then, is more than just a few research grants or contracts; it is the nature of American science itself. Our biggest challenge will be convincing decision-makers at all levels that a budget cut here or lack of support there, while insignificant individually, add up almost imperceptibly over time. Today's cries for across-the-board cuts or more applied "relevant" research will give way to tomorrow's "if only we had supported those efforts back in the '70's."

If we are to preserve our extraordinarily productive research operation, especially in our universities, we must understand that the more difficult the times become, the more critical it is to support our basic scientists at a steady, predictable rate.—WILLIAM D. MCELROY, *Chancellor, University of California at San Diego, La Jolla 92037*