SCIENCE

EDITORIAL

Science Education: Who Needs It?

In a democratic society, the strong support of the general public is needed in order to maintain a strong base in science. It is essential, therefore, to show the public why that support is important. The direct relation between science and technology is often difficult to discern, except by hindsight, even though there are many examples of observable pathways to the use of newly understood or newly recognized phenomena—witness developments in molecular bioscience. There is also a strong strand in our system, that is, science, that ties together the gathering of all added understanding of nature's materials, forces, space, and time with the use of our biosphere for the support of the human race through technology. That strand is the steady stream of educated scientists and engineers that our educational system has provided over the years.

Science is an important part of our culture but it is vital to our continued existence—hence the educated stream of scientists and engineers must continue apace. However, in making sure of the continuing success of this important task, the community has taken to looking at students at the beginning of the educational pipeline only in terms of future professionals or of future major users of science. This posture has led the science and technology community to set aside the equally important aspect of public literacy in science. Although this was not a deliberate decision, it has had the effect of widening the gap between "us and them"—a totally undesirable effect.

At least part of the problem lies in our wish to make sure that every observable is understood in the best current thinking. This ignores the fact that 99+% of the population is not involved in science or engineering research, nor do they want to be. Yet many are likely to be interested in the observables of nature and the best lay explanation of them. This seems to be difficult for university science and engineering faculty to do, either because it is a difficult task, or it is not a priority task, or both.

Indeed, in our own best interest, as well as for the society as a whole, we should put our best creative efforts into solving the problem of how to fan the interest of nonscience majors in nature's phenomena. That means developing laboratory exercises and textbooks designed to enhance the interest of nonprofessionals in such phenomena without losing them in a sea of current explanations. Associated with this there should be exposure to such matters as science and technology considerations in societal policy as well as policy for science and technology. The latter items are fruitful areas of human activity that should also be useful to most scientists and engineers.

The net result of such a course or group of courses would be a major seeding in terms of public literacy with respect to science and technology with a consequent stronger foundation for public support of science in universities. Perhaps as important a reason for this approach is that this same group might well be the best source of teachers of science below the college level. It is a currently accepted proposition that improvement in kindergarten through 12th grade instruction in mathematics and science, preferably in terms of nature's phenomena, is necessary. Thus, the second reason is indeed a vital one.

There are clearly evident stirrings along the lines suggested here. A notable one is the September 1991 report of the Carnegie Commission, "The Federal Government in the Reform of K–12 Math and Science." Equally impressive are activities along such lines at the National Research Council and at individual sites throughout the country.

It is not only important that the community recognize the problem but that its best talent should set about to correct it. That means current motivational forces applicable to university faculty need to be modified to accommodate to this pressing need. It is, of course, equally important that such actions as are undertaken are not at the expense of the science enterprise itself.

Norman Hackerman
President Emeritus, Rice University, and Chairman, Scientific Advisory Board, The Welch Foundation, Houston, TX 77027