30 March 1984, Volume 223, Number 4643 **SCIENCE**

Education for an Age of Science

A report issued by President Dwight Eisenhower's Science Advisory Committee in 1959 had the title *Education for an Age of Science*. That report identified four tasks for the nation, and these tasks remain today:

- To build well-rounded curricula and in each subject to stress intellectual content,
- To recognize that teaching is a task of primary importance in modern society,
- To recognize that our society needs human talents of a wide variety and that it is essential that every individual be given the maximum opportunity to develop his or her particular talents to their utmost, and
- To understand that the advances of science and technology need special attention to the end that (a) all citizens of modern society acquire reasonable understanding of these subjects, and that (b) those with special talents in these fields have full opportunity to develop such talents.

Even before the report was released, the federal government had begun to provide substantial support to an unprecedented series of programs whereby the mathematics and science education available to highly gifted students improved dramatically. Yet, only this past September, the National Science Board's Coleman Commission, in a report entitled *Educating Americans for the 21st Century*, stated: "The Nation that dramatically and boldly led the world into the age of technology is failing to provide its own children with the intellectual tools needed for the 21st century." Similar conclusions were reached in reports by Secretary of Education Terrel H. Bell's Commission on Excellence in Education, the Education Commission of the States chaired by Governor James B. Hunt, Jr., of North Carolina, and the Carnegie Foundation for the Advancement of Teaching.

Why has the nation failed to meet the quarter-century-old imperative to devise an educational system that can provide our children with the tools needed in the 21st century? The answers to this question are complicated. But they all point to what the Coleman Commission referred to as a misperception by the American public that science should be left to the experts.

The first step in obtaining a public consensus for educational change is to convince ourselves that the task must be accomplished. We must also convince students—as well as their parents—that, in the words of the Coleman Commission, the " 'basics' of the 21st century include communication and higher problem-solving skills, and scientific and technological literacy—the *thinking* tools that allow us to understand the technological world around us."

The second step will be to convince ourselves that the Coleman Commission's objective of providing "mathematics, science and technology instruction that is the finest in the world" can be provided to all students. At the heart of this commission's report are a series of recommendations designed to achieve that objective. In view of the renewed interest in education at the grass-roots level and the leadership role being assumed by the governors of several states, there is a good chance that some of these recommendations will be carried out.

It will not be sufficient, however, to provide more and better mathematics and science courses. Rather, mathematics, science, and technology must become part of the very core of a liberal education. Money spent on education will be wasted in the long run unless we also alter public attitudes about what constitutes an adequate education in an age of science.

The centrality of science and technology to American life is now almost universally realized. Recognition of the importance of scientific and technological knowledge for all citizens is in our best national tradition, and it is essential for our future.—RICHARD C. ATKINSON, *chancellor of the University of California at San Diego, La Jolla 92093, is a former director of the National Science Foundation*