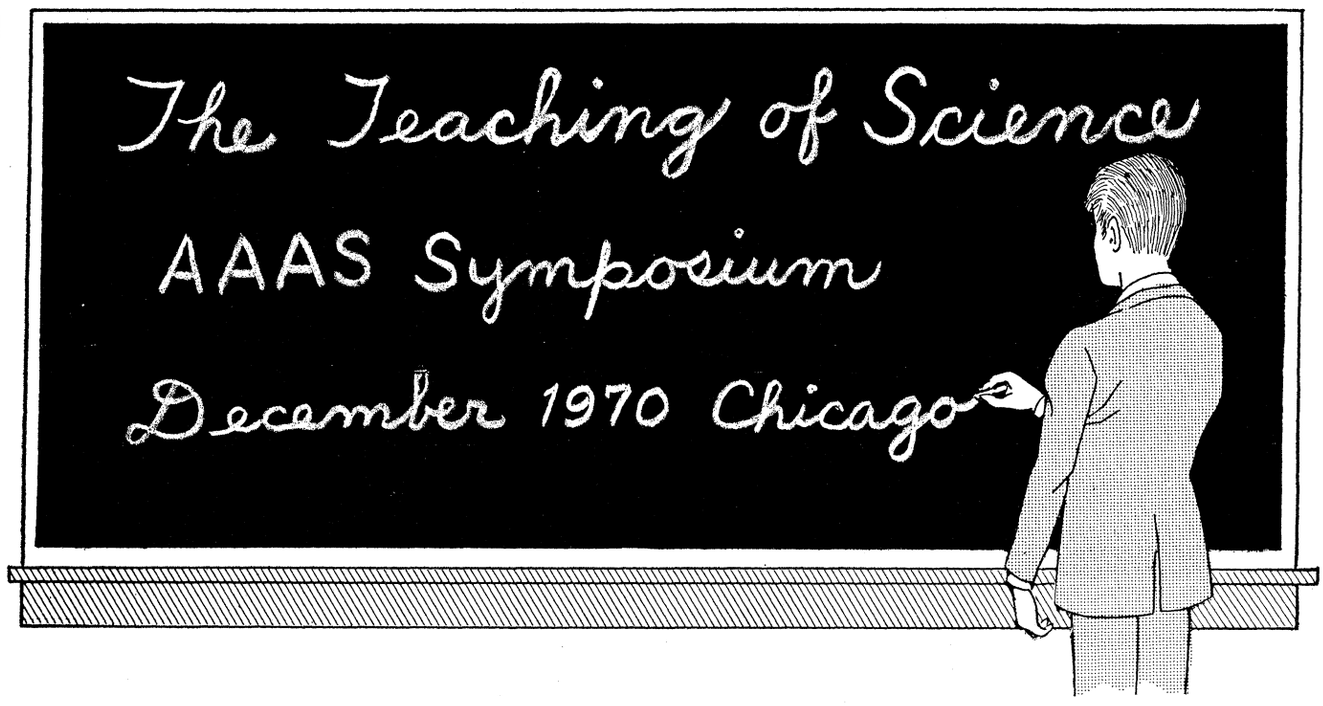


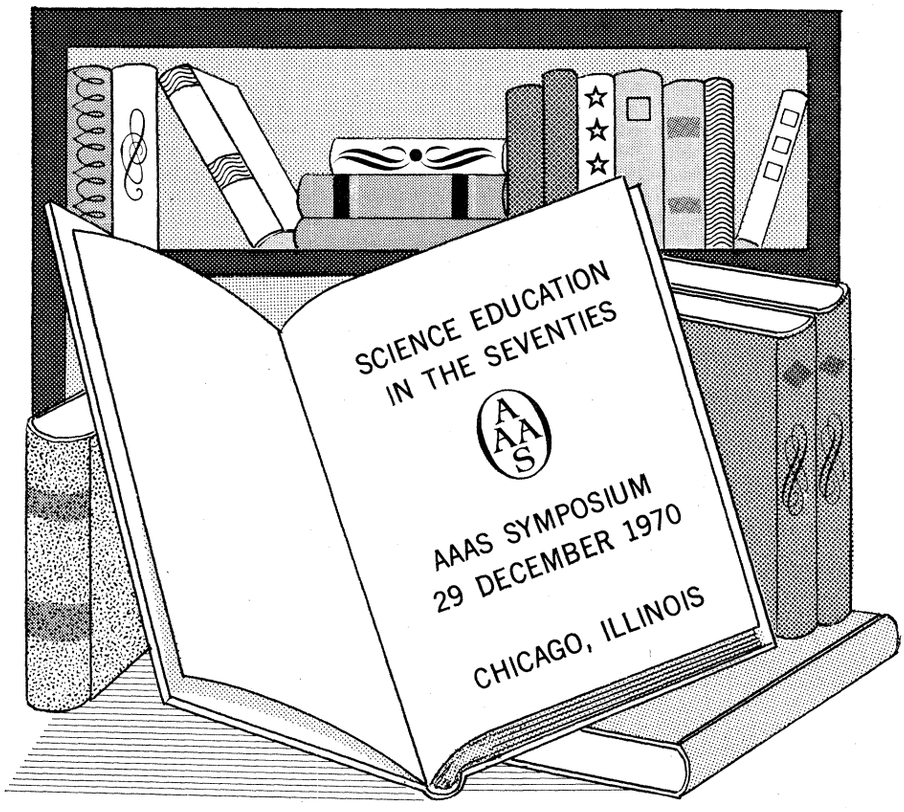
In the contemporary climate of opinion the public is losing confidence in the intrinsic "good" of science and in the extent to which scientific "progress" can contribute to the solution of mankind's most pressing problems. The loss that science is suffering in the public eye is already detectable in the growing antiscientific attitudes being expressed by high school and college students, by the decrease in numbers of students entering certain fields of science, as well as by the indecision and ambivalence being expressed by federal and state legislators for the further support of science and technology. The reaction of scientists to this radical and abrupt change in public opinion is predictable. On the one hand, many scientists regard the contemporary public outlook on scientific activity as unjustifiedly pessimistic and marked by fundamental flaws in understanding the motivations, rationale, and control of scientific inquiry. On the other hand, such lack of understanding that the general public exhibits is evidence of a failure of the processes by which science communicates with society.

In this light, the scientist is naturally reconsidering his role as teacher, since teaching is the principal way by which he communicates with the social community of which he is a part. As teacher, the scientist not only has the opportunity to transmit current understanding of natural phenomena, how it was acquired, and what possibilities it offers to man's social and cultural progress, but he also gains the vital opportunity to become familiar with social and individual needs, desires, and frustrations as expressed by the broad spectrum of students he serves.

The scientist is more concerned than ever with such questions as: In what ways are we failing to project a true image of the scientific enterprise? In what ways are we failing to serve as teachers and communicators? Are there modes of communication between science and society that are not being effectively used? Are there new projects for science teaching being planned or under way that deserve greater attention?

A symposium on The Teaching of Science will deal with these questions at the meetings of the American Association for the Advancement of Science to be held in Chicago 28–29 December 1970. Broadly conceived, the symposium will focus on three principal themes: The Exposition of Science; Communication between Science and Society; and The Making of the Scientist. There will be two sessions at which speakers will address themselves to subjects related to these themes and answer questions posed by members of the audience. In addition, a session is planned in which the entire panel of speakers will have an opportunity to exchange views, comments, and ideas with other guests and interested members of the audience. Among the speakers who will attend are Frederick Reif who is developing, at the Berkeley campus, a new doctoral program for the training of college teachers of science; Garland Allen of Washington University in St. Louis who has been introducing the approaches of history and philosophy into college science courses; Milton Hildebrand of the Davis campus of the University of California where he has been involved in an extensive survey of methods of evaluating teaching; and Benson Snyder of the Education Research Center at M.I.T. where research has thrown considerable light on the ecology of teaching and on the conditions conducive to effective teaching and learning. In addition, Jay Lemke, a Ph.D. in physics at the University of Chicago, will present a critique of the scientist-teacher as viewed by the graduate student about to embark on an academic career. David Hawkridge of the Open University in England will describe the progress being made in establishing the novel educational enterprise known as the Open University. Dr. Arnold W. Ravin, organizer of the symposium, will also describe some recent ventures in providing a general education course in biology at the University of Chicago where every college student regardless of eventual field of concentration must take two year-long courses in the sciences.

ARNOLD W. RAVIN
University of Chicago, Chicago, Illinois



In a statement published in the *Newsletter* of the AAAS Commission on Science Education (July 1970), John A. Moore of the University of California, Riverside, a member of the Commission, wrote:

> The spectacular growth of science during the 1960's was a source of ernormous gratification to its practitioners. Science in the laboratory became far more mature, rigorous, and satisfying to the intellect. There seemed to be a clear mandate, therefore, to modify courses in science in this same direction. The overwhelming importance of science in the modern world was so apparent that more and better science, the purer the better, should be introduced into the curriculum.
>
> As the decade closed, however, a new concern became widespread; it became apparent that the existing trend of more science plus more technology plus more people would make life far less satisfying in the immediate future and possibly intolerable a little later. These fears seem to have been felt most deeply by scientists and they have been in the forefront of concern. . . .
>
> The generations now living will have to make some of the hardest decisions that have ever faced mankind and, if they are to be effective, they must gain widespread support. These decisions will be human decisions but they must be founded on, and often deal with, science. It is not unreasonable, therefore, to regard science classes as one possible forum for preparing our citizens to make these decisions.

The *Newsletter* statement and a working paper prepared by John A. Moore for the Commission constitute the starting point for the Commission's study of the needs of science education in the seventies. This symposium is one of the first steps taken by the Commission to seek the counsel of the community as a major part of the study. Moore will present some of his ideas on what science education can and should be and on the responsibilities that scientists must accept if the needed changes are to be brought about. He recognizes the importance of the environment in the education of the future and that the task before us in education "is a task for the schools, and the world, not the former alone."

Clifford Swartz, like Dr. Moore, has been one of the leaders in the development and implementation of the new science education in the sixties. Speaking from the point of view of a physical scientist, Swartz will look into the future to determine what changes must be made in science education for a new decade with an entirely new set of problems. It remains to be seen in the symposium whether the biological scientist and the physical scientist see these problems and their solutions in the same light.

Another dimension of education will be reflected in the paper by Fred S. Keller, formerly of Columbia University, who identifies his research interests as human and infra-human learning and behavior theory. The participation of psychologists in curriculum development during the past decade, their increasing concern about education, and their contributions to educational innovation are among the hopeful signs pointing to educational progress in the seventies. One of Keller's achievements has been the development of a new teaching system in psychology.

Livingston, chairman of the Commission, is widely known for his scientific research and for his achievements as a scientific and educational administrator. Under his guidance a new approach to medical education has been introduced in the Medical School of the University of California, San Diego, at La Jolla. Among Livingston's contributions to other educational interests have been his imaginative contributions to an outline for junior high school science on which the Commission has worked for a number of years.

The symposium is planned for scientists and for those who are active participants as teachers, administrators, and advisers in school science programs. The papers to be presented will have wide interdisciplinary interest and interest for both school and college personnel. The papers and discussions of this symposium will suggest directions for the Commission's study of science education in the seventies.

JOHN R. MAYOR
American Association for the Advancement of Science, Washington, D.C.

Participants

Chairman: Robert B. Livingston (Professor of Neurosciences, University of California, San Diego, La Jolla)

Fred S. Keller (Adjunct Professor of Psychology, Western Michigan State University, Kalamazoo)

John A. Moore (Professor of Biology, University of California, Riverside)

Clifford Swartz (Professor of Physics, State University of New York at Stony Brook)