Edward E. David, Jr., President-Elect

John R. Pierce

Readers of *Science* should know what sort of man the president-elect of the AAAS is and what he has done. About what sort of president he will be, I only say—a good one. He is a man who will tackle anything that seems to him useful and doable, and he will do it if that lies within his power.

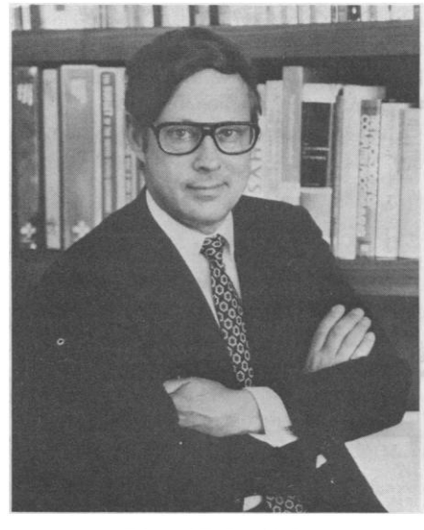
I met Ed David while he was at Bell Laboratories, long before he became the President's science adviser and director of the Office of Science and Technology in September of 1970. I have seen him in that difficult role and in a subsequent position as vice-president for research, development, and planning for Gould, Inc., a firm in the Chicago area, and in a variety of other capacities. In all of these he demonstrated flexibility and firmness.

Edward Emil David, Jr., was born in Wilmington, North Carolina, on 25 January 1925, but he grew up in Atlanta, Georgia, as did his wife, Ann. Both have all the cordiality and consideration that we like to associate with the South; both are strong-minded and determined, although they do not make this unnecessarily apparent. They have an agreeable and healthy regard for the good things in life. Both ski; Ed plays tennis and Ann rides. They manage to keep work from interfering with such things, but they do not let such things interfere with work. Often the result is a happy mixture. Their daughter Nancy rides, skis, and studies statistics at Princeton.

David received his B.S. from the Georgia Institute of Technology in 1945, and his S.M. and Sc.D. degrees from the Massachusetts Institute of Technology in 1947 and 1950, respectively. Since then he has acquired honorary degrees from Stevens Institute of Technology (where he also served as a visiting professor), the Polytechnic Institute of Brooklyn, Carnegie-Mellon University, the University of Michigan, Lehigh University, and the University of Illinois at Chicago Circle. He has received a number of awards, including the George W. McCarty Award of Georgia Tech and the Harold Pender Award of the Moore School, University of Pennsylvania.

David's doctoral thesis, "Analysis of Beginning of Oscillation of a Magnetron," was associated with the synchronization of magnetrons driving a linear accelerator. But when he went to Bell Laboratories in 1950 he became a specialist in underwater sound, and contributed to then highly classified work pertinent to undersea warfare.

In 1956 he was put in charge of all acoustics research at Bell. This included fundamental work on speech and hearing. Because neither he nor I knew much about this, we wrote a book, *Man's World of Sound* (Doubleday, Garden City, New York, 1958), which taught us a good deal. Revised substantially by Willem A. van Berjeick, a zoologist, this became *Waves and the Ear* (Doubleday Science Study Series, New York, 1960), which has had a very substantial circulation. David also edited *Human Communication: A Unified View* (McGraw-Hill, New York, 1972).



Edward E. David, Jr.

Together with Henry S. MacDonald and Max V. Mathews, David was instrumental in the earliest exploitation of the computer as a means for simulating complex sound-processing equipment, such as vocoders. This work has saved a great deal of time and money in psychoacoustic and communication research and application. One now builds complicated processing equipment only after a simulation shows that it works and how well it works.

Having made substantial contributions in several areas of acoustics and having become a Fellow of the Acoustical Society of America, David was put in charge of computing science work at Bell Laboratories in 1962. In this role he directed and contributed to the development of time-sharing systems. In 1965 he was made executive director of the communication systems division and supervised some 200 scientists who were engaged in research in computer science, communication, and switching. Throughout this period, he continued to publish important papers, mostly in the field of acoustics.

In 1963, in association with John Truxal of the Brooklyn Polytechnic Institute, David undertook the development of a course that would teach high school students to understand and use intelligently man's artifacts, rather than fearing them. This was a radical departure from teaching basic mathematics and physics. The Engineering Concepts Curricular Project led to a text, *The Man-Made World; A Course on Theories and Techniques That Contribute to Our Technological Civilization* (McGraw-Hill, New York, 1968). The course has been taught in approximately 200 high schools.

When David left Bell Laboratories to become President Nixon's science adviser in 1970 he had this background in education; his accomplishments at Bell Laboratories in communication, computers, acoustics, and underwater sound; membership in the National Academy of Sciences and the National Academy of Engineering: and a substantial acquaintance with government needs in the area of national defense, both through some of his work at Bell Laboratories and through his service on various government advisory groups.

As the President's science adviser, David faced a large number of problems. These included increasing the support for real science, fending off proposals for expensive but dubious initiatives, and trying to call attention to and obtain constructive action concerning the fall in the country's balance of trade in technological and other areas, the country's

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needs for energy, and various problems of health, housing, and transportation.

David did succeed in obtaining increased support for science in colleges and universities during a time of limited funding and inflation fighting. He persuaded President Nixon to send his first presidential message on science and technology to Congress in March 1972. However, the times were not propitious for tackling major problems effectively through science and technology (are they ever?), and, at the end of 1972, the post of Science Adviser and the Office of Science and Technology were abolished.

After this, and until this year, when he left to pursue consulting work, David was with Gould, Inc., an enterprising industry devoted to such diverse products as batteries, electric motors, metal foil, automobile parts, and torpedoes. There he brought his expertise and that of others to the eternal task of finding new markets and making useful things better and cheaper through research and development.

David's association with Gould did not end his involvement with scientific and technological matters of national and international concern, nor his close association with education. He is a member of the Corporation of MIT and serves the University of Chicago and Georgia Tech in various ways. He is chairman of the United States–France Cooperative Science Program of the State Department and of the State Department's United States–Japan Overview Panel on Cooperation in Science and Technology. He is a member of the White House Advisory Group on Contribution of Technology to Economic Strength, a member of the Demonstration Task Force, Energy Research, and Development Administration, a National Security Council consultant, and is a member of other advisory groups. He is also chairman of the board of trustees of the Aerospace Corporation. Both David's government and business responsibilities have taken him frequently to Europe, including the Soviet Union and other Iron Curtain countries, and to Japan, the Republic of China and Korea. His presidency of the AAAS will take him into few areas that have not been his concern at some time, in some way, before.

1976 Report to the Association

William D. Carey

As 1976 was a year of transition in national affairs, so it was with the AAAS. Forward movement in the AAAS was reflected by both the emergence of a strong and determined Committee on Scientific Freedom and Responsibility and new proposals by the Committee on Future Directions for the agenda of the Association. Our journal, *Science*, found its way into 127 countries and held its ground as a widely quoted record of scientific advance and opinion. New ground was broken with the first of an annual series of reports on "Research and Development in the Federal Budget," followed by the first annual Science Policy Colloquium in Washington. In the field of international cooperation, the Interciencia Association produced four issues of the first cooperative western hemispheric scientific journal, *Interciencia*, and a range of impressive symposia, while AAAS also was convening a network of 14 affiliates to undertake cooperative activities in international science. Among the most satisfying successes of the year were making the Boston Annual Meeting accessible to hundreds of physically handicapped scientists and launching a major new AAAS initiative on behalf of this group of colleagues. Finally, 1976 saw the start of a planned program of AAAS books and publications and a systematic program to increase membership, and the second successive year of budget surpluses cumulating to about $1 million, after several years of deficit operations.

But it was not all a rose garden. New Internal Revenue Service regulations affecting journal advertising of tax-exempt organizations have created a serious contingent burden which did not exist before, complicating future fiscal estimates. Inflation did not abate rapidly enough to forestall heavy additional burdens on operating costs for future years. Membership continued to slip, although less steeply than in the preceding 2 years. New legislation relaxing lobbying restrictions on tax-exempt organizations raised policy questions for the AAAS. Participation by members in the annual elections was disappointing: only 21 percent of members voted.

A principal matter for emphasis concerns the image of the AAAS as predominantly oriented toward science, with little interest in technology. If the AAAS is unable to change this image, it is very doubtful that we can have the necessary impact on either public understanding or public policy. Nor will we succeed in building effective working relationships with the engineering professions, which are only lightly represented in our membership, our principal publishing activities, our programs, and our annual meetings, although we work very well together in a few programs such as the Congressional Science and Technology Fellows Program.

For every dollar spent on basic scientific research, nine are spent on applied research and development. The critical national issues on the public agenda involve science to a degree, but they concern technology and its uses to a much greater degree: environmental acceptability, climate change, the uses of nuclear power, resource depletion, health and safety in the workplace, human settlements, technology for development, barriers to innovation, the economics of growth and full employment, and more. Here is where the physical and social sciences must interact with technology, and here is where the opportunity lies for an association of our breadth and openness to do things which the technological professions are less able to do by themselves. Through the journal, the annual meetings, the regional seminars, special colloquiums, joint studies, representation on the Board, Committee on Council Affairs, and standing committees—in all these ways, the AAAS must deliberately work to find a larger and more tangible part for technology in its affairs.

Another area of acute concern is the size and breadth of our membership. It is not news that our membership has been declining while our expenses have been increasing. This is a formula for big trouble for the AAAS. The membership trend must be turned around in 1977.