

Annual Report of the Executive Officer

My 12th and last annual summation of the state of the AAAS finds the Association preoccupied with an array of activities in 1986 that belies its 138 years. Thanks to willing support from our members, strong direction from a tireless elected Board and the Council, and a conscientious staff, AAAS is positioned to take still higher ground in the 1990s as a responsible and effective advocate for the advancement of science. Its strongest assets are its partnerships with nearly 300 affiliated scientific and technical societies, its influential weekly journal, its open membership, its capability for quick response, and the exceptional resources upon which it can call.

Four decades of postwar scientific and technological expansion are behind us. The fifth and sixth decades will not be years of coasting on past accomplishments. More probably, they will exert even more strenuous demands for scientific and technological productivity. What is not certain is that this larger demand, in the absence of proportional reinvestment in education and the research infrastructure and acceptance of some marginal risks from technology transfer, can be managed within the terms of a healthy relationship between government and the research enterprise. It is not too soon to begin airing these matters within the framework of science and in dialogues with government. In that process, the leadership of AAAS will have to play a role.

For the great majority of our members, the weekly arrival of *Science* continues to constitute their bond to AAAS. In a way, that is good and bad news: bad only in the sense that other equally important activities are less appreciated than they should be. It should mean a great deal that in recent weeks AAAS, at the request of President Corazon Aquino, has led a team of forensic scientists, headed by Dr. Clyde Snow, to the Philippines to demonstrate methods for identifying the remains of victims of politically motivated violence, and to know that the team included Argentine participants previously trained in forensic techniques by experts assembled by AAAS for a similarly grim assignment in that country. Hardly less impressive, I suggest, is the work of Dr. Shirley Malcom and her associates in creating and energizing new networks of support

to strengthen science and mathematics education for youth in the inner cities. Both examples speak to the range and variety of AAAS's work at home and abroad in linking the resources of science to contemporary human needs.

The question of what, and how much, AAAS should set itself to do henceforth in the name of "advancing science" is answerable only if there is consensus regarding ends and means; a consensus that connects the elected officers with the membership and one that holds steady long enough to launch, execute, and finally assess benefits and costs. As a case in point, 7 years ago AAAS opted for a major publishing initiative anchored to its constitutional objective of fostering public understanding and appreciation of science. A magazine called *Science 80* was launched with a modest initial investment and it quickly won a huge and appreciative subscribership as well as awards for editorial and design quality. As circulation shot upward, so did costs which had to be met from subscriptions and consumer advertising (not including cigarette ads, which were turned away). For 5 years the magazine did reasonably well on a direct cost basis, though it neither made money nor met indirect costs. In terms of what it was intended to do, namely to communicate about science and technology in an understandable way to an educated but nonscientific readership, there could be no question as to the benefits achieved. Then, 2 years ago, advertising sales began a downward slide that gained momentum, resulting in an accumulation of red ink. By the spring of 1986 the fiduciary problem facing the Board and management had reached the acute stage. It was clear that subscription income alone, lacking reinforcement from robust advertising revenues, could not cover the magazine's cost structure. Comparable advertising losses were afflicting other general science publications as well as *Science 86*. The Board reluctantly concluded that AAAS had to consider offers of purchase, and in June decided to enter into a sale of assets with Time, Inc., whereby the circulation of *Science 86* was folded into Time's science magazine, *Discover*. It was a decision driven by serious financial exposure on AAAS's part, and the economic effect of the transac-

tion was to recover the Association's losses and terminate its risks. The ensuing outcry of grief from the readers of *Science 86* was a spectacular testimony to the merit of the magazine as a model of responsible science writing for a general readership.

The brighter side of the year reflected impressive progress in the other elements of our agenda. Across the spectrum of initiatives in science education; arms control and national security; cooperation with scientific institutions of the Western Hemisphere, Asia, Europe, and Africa; congressional symposia and seminars; national science policy; public communication through print and broadcast media; opportunities in science for women, minority groups, and persons with disabilities; linkages among scientists and lawyers, human rights of scientists and engineers; interactions of population growth with resources and the environment; and a broad range of fellowship programs, AAAS did what it set out to do. It met its objectives despite an operating budget in some trouble because of *Science 86*'s adversities, and with the help of generous and growing program-related support from private foundations and industry.

The Association, as it enters 1987, is running an operating budget of roughly \$25 million, net of grant or contract support of some \$3 million. The balance sheet of the Association, at the close of 1986, is estimated to show a total fund balance of about \$17 million, indicating a decidedly positive financial base. This is no accident. It is the result, in great part, of the exceptional voluntary service of William T. Golden over the last 17 years as Treasurer and member of the Board of Directors in managing our investments with diligence and striking success. The operating budget, on the other hand, is funded from members' dues, advertising income, product sales, subscriptions, voluntary contributions, and interest and dividends. Like all planned budgets, it oscillates between surplus and deficit over time, enhanced or victimized by such factors as inflation, recession, interest rates, or dues income. As noted earlier, a catastrophic shift in one revenue element can turn a planned budget into a shambles in the space of half a year. For 1987, the Board has decided not to raise the dues of members even though a temporary operating budget deficit may result from shrinking interest yields and carried over costs of the discontinued magazine.

A topic of rising debate and perplexity for the past few years has been our Annual Meeting. This 5-day extravaganza of science, technology, and scientific controversy has been drawing smaller diminishing crowds in the 1980s compared with the

1970s or the argumentative and confrontational 1960s. All kinds of "explanations" abound, few of them readily amenable to verification. Is it the content of the program, tight money, the dates chosen for the meeting, the economics of big urban settings, the prior claims of disciplinary society gatherings, or poor promotion? Is the tradition of a large and unfocused annual meeting going out of style? We hope to find out. What is still clear is the unmatched value of the AAAS meeting as a lode of public information about the state, opportunities, and dilemmas of contemporary science and technology in the United States. It comes as close to an "Annual Retreat" for the scientific community (and its critics) as any meeting can be, and no one can seriously lay the charge that it is establishment-run. But it is painful to go through all the preparation and design of symposia, lectures, youth seminars, exhibits, and special events only to have between 2000 and 3000 paid registrations in contrast to 6000 or 9000 in past years. Hand-wringing being unproductive, the Board is seizing upon the Chicago meeting to build much stronger scientific content into the heart of the program as an initial step, with more changes to follow in future years.

Selected Program Highlights of 1986

■ In November, under sponsorship of the Committee on Scientific Freedom and Responsibility, an international team of forensic scientists conducted a training program in the Philippines on applications of forensic anthropology in identifying human skeletal remains, the use of forensic medicine to detect signs of physical torture, and the preparation of medico-legal reports.

■ The editors of *Science* introduced a complete redesign for our journal together with such new editorial features as a debate-oriented Policy Forum and a Software Review column. Strong efforts were launched, with encouraging results, to improve the balance among the social, physical, and biological sciences, and engineering in lead articles. The News Section increased its emphasis on short news breaks to complement longer features, added to its coverage of social science news, and assigned a full-time writer to European coverage.

■ International activities continued to grow. AAAS convened eight seminars on major topics for the foreign embassy science counselors and attachés posted to Washington. In the eighth year of the Science, Engineering and Diplomacy Fellows program 12 fellows were selected in an intense

national competition. The multinational Continuing Committee on the Role of Scientific and Engineering Societies in Development was hosted in Beijing by the China Association for Science and Technology. The Western Hemisphere Cooperation program, for which AAAS provides the secretariat, held five symposia in as many countries, continued publishing the journal *Inter-ciencia*, and launched a program of faculty development courses in Central America. The beginnings of an African academic computer network came about with a commitment by IBM Europe for establishment of a regional information center in Abidjan, Ivory Coast. Delegations from the People's Republic of China took part in the 1986 Annual Meeting and attended the annual AAAS Colloquium on R&D Policy. A delegation from the Hungarian Federation of Technical and Scientific Societies participated in the AAAS Annual Meeting. A "Spacebridge" Teleconference on "Chernobyl and Three-Mile Island: Implications for International Cooperation in an Interdependent World" was cosponsored by AAAS with the Academy of Sciences of the U.S.S.R. AAAS's Committee on Climate undertook a comprehensive study of climate and U.S. water resources, while the Committee on Population, Resources and the Environment proceeded with key multidisciplinary projects and arranged well-attended seminars for members of the House and Senate.

■ Public Sector accomplishments featured AAAS's 11th annual report and analysis of Research and Development in the Federal Budget and a successful Washington Colloquium on R&D Policy. A new *AAAS Congressional Bulletin* was launched to track the status of R&D-related legislative matters and made available at no cost to members who requested subscriptions. A "West Coast Colloquium" on budgets for research and development was held in cooperation with the Pacific Division. A study was carried out to document and describe academic programs focused on science, engineering, and public policy. The Congressional Science and Engineering Fellows Program matriculated its 14th class of Fellows, most of whom are financially supported by affiliated societies. Thirty-five Fellows, including 12 Diplomacy Fellows, took part in the orientation program, while the Environmental Science and Engineering Fellows participated in a 10-week summer program. Led by the Committee on Public Understanding of Science and the AAAS Communications Office, AAAS conducted a packed symposium in Philadelphia on media coverage of the Challenger disaster. With the assistance of the National Science Foundation, a total of

12 science centers and museums now comprise our Science and Technology Centers Project in which individual AAAS members are taking part in the education and outreach activities of the centers. AAAS, in cooperation with the National Science Foundation and the National Academy of Sciences, sponsored the third annual Benjamin Franklin Lecture in Washington, featuring Robert D. Ballard's presentation on the undersea discovery of the wreckage of the *Titanic*. For the 12th year, the AAAS Mass Media Science and Engineering Fellows Program, generously aided by financial contributors from the industrial sector, was able to place 20 advanced students with major media outlets as reporters, researchers, and production assistants. Finally, the AAAS-American Bar Association National Conference of Lawyers and Scientists, in its 13th year, focused attention on scientific fraud and misconduct, negotiated rulemaking, and polygraph testing, and in addition spent a day with a delegation, studying law-technology-science problems, from the People's Republic of China chaired by Wu Mingyu, Vice Minister for Science and Technology.

■ The Association's work on behalf of disabled scientists and engineers, led by our committee and staff for Opportunities in Science, was recognized in 1986 by the President's Citation Program for Private Sector Initiatives. In addition, the office sponsored workshops with the National Urban League to review mathematics/science and early childhood activities of League affiliates. Equity and excellence in science education has become a major AAAS commitment reflected in linkage strategies, regional and community networks, and congressional seminars. In the area of women's needs, AAAS cosponsored regional meetings on "Gender in Science" and "Interventions" in preparation for the 1987 national and international meetings on the status of women in science and technology. AAAS also sponsored the Research Conference of Precollege Science and Mathematics Education for Disabled Students, drew attention to issues bearing on the education of American Indians, and organized a symposium on health care issues affecting black and Hispanic communities.

■ AAAS held its first annual Colloquium on Science, Arms Control, and National Security on 4 and 5 December with an outstanding and well-balanced panel of speakers. During the year, two Congressional Seminars were sponsored on "The Search for Security in Space" and "Arms Control Possibilities and Pitfalls: The Strategic Con-

text." A videotape on verification in arms control, "Fear of Cheating, Fear of Spying," was completed. Eight symposia on problems and issue of arms control and national security were held during the 1986 Annual Meeting with excellent attendance. The AAAS Science, Arms Control and National Security Fellowship Program was initiated. Three briefs on test ban issues are in preparation, together with one on biological weapons. Published work in 1986 included *The Verification Challenge*, written by Richard A. Scribner, Theodore J. Ralston, and William D. Metz and published by Birkhauser, Boston; *The Strategic Defense Initiative: Some Arms Control Implications*, by Jeffrey Boutwell and Richard Scribner; *Science and Security: The Future of Arms Control*, by W. Thomas Wander, Richard A. Scribner, and Kenneth N. Luango; and proceedings of a Congressional Seminar, *Arms Control and the Strategic Defense Initiative*.

■ With unabated concern for the state of precollege education in science and mathematics, AAAS gave priority to its *Project 2061: Education for a Changing Future*, a formidable inquiry designed to identify the core knowledge in science, mathematics, and technology that should be basic to the education of all students. Five specialized panels (Mathematics, Biological and Health Sciences, Physical Sciences and Engineering, Social and Behavioral Sciences, and Technology) tackled their tasks in intensive meetings during the year under the guidance of a 28-member National Council on Science and Technology Education. When the findings are made public, a second phase of the project will consider how these fundamentals can best be learned. On a related front, the AAAS Forum for School Science held its second meeting with nearly 500 in attendance, addressing issues in data generation, collection, and use; the future of school science curricula; and the influence of structural considerations on achieving quality curricula. AAAS also continued distribution of packets of school materials through its Science Resources for Schools Project, supported by the Standard Oil Company of Ohio, in nine states. In addition, under the Challenge of the Unknown project, financed by Phillips Petroleum Company, a series of seven videotapes designed to help teachers capture students' interest in mathematics and problem-solving are available at no charge and have been requested by more than 10,000 schools.

■ The 1986 AAAS Award for Scientific Freedom and Responsibility was presented to Victor Paschkis, a leader in the field of social responsibility in science, and the Cole-

gio Médico de Chile in recognition of its professional efforts to halt the practice of torture in Chile. Under the direction of the Committee on Scientific Freedom and Responsibility, AAAS joined with the Illinois Institute of Technology in sponsoring a workshop on Professional Societies and Professional Ethics. With the Institute of Electrical and Electronic Engineers, AAAS conducted a congressional seminar on "Information Controls and Technological Competitiveness" with particular attention placed on restraints on unclassified technical data. In the course of the year, the AAAS Clearinghouse on Science and Human Rights worked with its 40 cooperating societies on behalf of 73 cases of foreign scientists, engineers, and health professionals whose basic human rights had been violated or who had encountered government restrictions in their professional work. In July, AAAS released its report, *Guatemala: Case Reports 1980-1985*, documenting the cases of 201 scientists, engineers, health professionals, faculty, and students who disappeared, were killed, or suffered violations of human rights. With generous support from the Ford Foundation, the Clearinghouse was able to move ahead in applying the forensic sciences to investigations of political killings, using medical science to detect signs of torture, and employing statistical and other quantitative tools to the monitoring of human rights issues. In October, the Public Broadcasting Service aired "The Search for the Disappeared," a NOVA science documentary about AAAS-sponsored efforts to assist Argentine scientists in locating missing children and identifying the remains of the "disappeared." And as part of a study on the relationship between torture, medical ethics, and medical practice, the Clearinghouse conducted research in Chile, Uruguay, South Africa, and the Philippines, resulting in articles in *The New England Journal of Medicine* (24 Oct. 1985), the *Journal of the American Medical Association* (20/30 May 1986), and *The American Psychological Association Monitor* (Nov. 1986).

■ The communication of scientific and technical information to the public is heavily dependent on the knowledge and skills of professionals employed in the print and broadcast media. In the interests of enhanced public understanding, AAAS has been working closely with the Scientists' Institute for Public Information (SIPI) and the Association of American Universities (AAU) to hold media roundtables, with foundation support. Two round tables in 1986 dealt with human gene therapy and the effects of regulation on the use of animals in biomedical research. Seeking to rec-

ognize excellence in science writing in newspapers, magazines, television, and radio, AAAS and the Westinghouse Foundation collaborated for the 28th year in a program of awards. The awards presented during our 1986 Annual Meeting went to Boyce Rensburger for three articles on "Star Wars" in the *Washington Post*; Robert W. Andrews for a series on Onondaga Lake in the *Syracuse Post-Standard*; Mark Harden for a special section on Puget Sound, for the Everett, Washington, *Herald*; Andrew C. Revkin for an article about nuclear winter in *Science Digest*; Rick McCourt for a series on aquaculture on National Public Radio; and Timothy Ferris, Larry Botto, and Geoff Haines-Stiles for a television presentation on "Creation of the Universe" for the Public Broadcasting Service. AAAS also continued to produce its annual *Public Information Contact Directory* for media professionals, listing contacts with some 300 colleges and universities and an equal number of scientific and engineering organizations, as an aid to science and technology writers and newsmen. AAAS's daily 90-second science news radio feature, "Report on Science," was carried through CBS Radio Stations News Service to an audience estimated at 5 million persons, while *Focus*, our 30-minute public affairs radio program, continued to air via satellite over National Public Radio stations. An important AAAS book, *Scientists and Journalists: Reporting Science as News*, was edited by Sharon M. Friedman, Sharon Dunwoody, and Carol L. Rogers.

■ Each of our four Regional Divisions (Caribbean, Arctic, Pacific, and Southwestern and Rocky Mountain) again produced a broad agenda of significant regional meetings, conferences, publications and activities appropriate to their unique geographic and cultural environments, to their lasting credit and to the advantage of the national Association.

■ With approval of the AAAS Council, a new Section (Y), "General Interest in Science and Engineering," took form while Section X, retitled as "Societal Impacts of Science and Engineering," made progress in redefining its charter and terms of reference.

A retiring Executive Officer eyes a recitation such as this with a troubling sense of how little he had personally to do with the accomplishments listed, but with forgivable satisfaction that so much was done on his watch. Though power and influence tend to coalesce around more muscular institutions of government, industry, and finance, it seems to turn out that nonprofit organizations mindful of their right uses can offer a

degree of added value to a society struggling to secure and capture the meanings of change on the large scale. We can never be absolutely sure that we have it right, but there is little to show that any of the other instruments on which an open society depends have learned to walk on water. As

long as the advancement of science is understood to be something other than a sheer drive for power, and something more than a mere fueling agent for the engines of military or economic nationalism, we will probably achieve a decent balance in the ends and the uses of the search for knowledge, at least

as far as we can look ahead. It is still worth reminding ourselves that in the general scheme of things science progresses not nearly so much by acrobatic leaps, as on its hands and knees.

The pleasure was mine.

WILLIAM D. CAREY, *Retiring Executive Officer*