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AAAS [American Association for the Advancement of Science] Handicapped in Science [1975-1976]

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PROJECT ON THE HANDICAPPED IN SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

There is a new focus at the American Association for the Advancement of Science (AAAS) on the concerns of handicapped scientists. The AAAS, the largest general scientific organization in the United States, recognizes its responsibility as a leader in science to enhance the status of the physically disabled and to accelerate their advancement in all the sciences and engineering. The AAAS obtained funding from the Rehabilitation Services Administration/HEW to launch an ongoing program to explore the barriers obstructing the entry and full participation of physically handicapped persons to employment opportunities in science. In its initial eight month phase, the program examined and evaluated ways in which the scientific professional associations could contribute to equal educational and occupational opportunity. Defining a role which these organizations can play, the Project now seeks to activate and implement such efforts.

OFFICE OF OPPORTUNITIES IN SCIENCE

THE PROBLEM

Many physically disabled individuals with interest and aptitude in science have difficulty obtaining an education, employment and promotion in the area of their interest. Science educators and employers are largely unaware of the needs of the handicapped and of their own responsibilities for overcoming the difficulties faced by disabled veterans, accident victims, persons disabled by severe illnesses and those suffering from birth defects. Physically disabled scientists working with the AAAS since 1973 have identified three aspects of the problem which they think the professional associations should address:

- Professional meeting inaccessibility
- Recognition of the problems faced by the handicapped in their field
- Barriers to the acquisition of training and jobs in science

OBJECTIVES

In order to overcome these three kinds of career-related problems the initial project:

- Developed and tested methods to overcome physical and communication barriers that prevent handicapped scientists from participating fully in professional meetings.
- Developed and tested methods of increasing the awareness of all U.S. scientific professional associations of the education and career-related needs of their handicapped members.
- Developed program ideas through which AAAS and other scientific societies may enhance educational and occupational opportunity and equality for the handicapped.

ACTIVITIES

To achieve the objectives, the staff of the Office of Opportunities in Science in consultation with the project Advisory Group undertook the following activities:

- Made the AAAS Annual Meeting in Boston, February 18-24, 1976, accessible to the physically handicapped and prepared a professional meetings accessibility guide for distribution to the 291 AAAS affiliate professional societies and academies and to hotels in major convention cities. This was made possible in part through contributions from the Exxon Corporation and the Du Pont Company.

- Arranged activities at the AAAS Annual Meeting to focus the attention of the science community on the handicapped: a symposium "Science, Technology and the Handicapped"; an information center and exhibits on the handicapped in science; a luncheon and press conference; and a reception for symposium participants, other scientists, local rehabilitation agency personnel and others.
- Identified 500 handicapped scientists to serve as a resource group to guide further program development, assist in dissemination of information and form a support system for handicapped students and peers.
- Surveyed the various organizations and government agencies of and for the handicapped, and the scientific professional associations for their suggestions as to the educational and occupational barriers.
- Disseminated information to the general public and scientific community on AAAS project activities and other issues of concern to the handicapped.

FUTURE DIRECTIONS

The Project on the Handicapped in Science will direct itself to the following activities:

ADVOCACY: Heightened awareness of and appropriate response to the problems of the handicapped in science on the part of professional societies, their members and organizations of and for the handicapped.

CLEARINGHOUSE: Establishment of a network and information base that will link the science community, organizations and agencies of and for the handicapped and handicapped scientists in united efforts to remove educational and career barriers.

PROGRAMS: Development and/or facilitation of projects to achieve full educational and career opportunities for the handicapped in science.

PUBLICATIONS

BARRIER-FREE MEETING DESIGN: A GUIDE TO ACCESSIBILITY FOR PROFESSIONAL ASSOCIATIONS

PROCEEDINGS: SCIENCE, TECHNOLOGY AND THE HANDICAPPED

FOR INFORMATION OR INPUT, PLEASE CONTACT:

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PROJECT ON THE HANDICAPPED IN SCIENCE
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
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Who Are the Handicapped Scientists?

Who are the handicapped scientists? They include the head of a worldwide allergy research division of a large pharmaceutical company who is deaf, the professor of psychology who is blind, and the manager of a department in a computer firm who is quadriplegic. The AAAS Office of Opportunities in Science will undertake a systematic survey of this group later this year in order to produce a profile of the handicapped scientist. This profile will be instructive in developing programs and resources to help overcome the problems such scientists face.

The Office has already heard from more than a hundred scientists who are deaf, blind, or orthopedically or neurologically handicapped—in most cases as the result of an accident or illness. Some generalizations about these scientists are possible. They are to be found in all fields of science, working in research, teaching, and administration. Most of them were handicapped after their education was begun, assuring the acquisition of basic communication skills and recognition of their intellectual prowess. Most have supportive families, but had to struggle through educational institutions that were anything but supportive.

These successful handicapped scientists have required extraordinary, almost unbelievable, perseverance to acquire an education. The obstacles placed in their way by educational institutions were both physical and attitudinal. In a 1974 survey of ACE-accredited 4-year colleges and universities, 22 percent of the respondents reported that they would reject deaf applicants (1). Although there are now some happy exceptions, such as the University of Texas and the University of Illinois, most campuses are unnegotiable for the severely orthopedically handicapped. Nor do most offer any of the counseling and other services necessary to assure the handicapped an equal chance of success.

The psychological hurdles are also great; these people have had to prove themselves over and over again. All of them can tell stories of the professor who, having no experience with the handicapped, routinely dismissed their abilities on the assumption that these students "would not be able to keep up with the reading" because they were blind, or "would not be safe in the laboratory" because a limb did not function. One deaf woman chemist was required to undergo an additional examination to get her Ph.D. after she had completed with honors all the requirements demanded of her "normal" colleagues.

Landing that first job is another problem mentioned frequently by our respondents (2). One deaf physicist with a Ph.D. from Yale was told teaching was impossible and he should stick to research, while other deaf scientists have been told by employers that they would not be safe in a laboratory, or that they should stick to teaching the deaf "where they could really make a contribution...." Although the myth that handicapped workers present additional safety hazards has been disproven in practice (3), this concern is still widely used by employers to reject handicapped applicants.

Advancement on the job is frequently not open to the handicapped on the basis of merit. They may be deprived of professional give-and-take in the laboratory or full participation in professional associations by colleagues who will not take the time and trouble to include them. Ad-

vancement to supervisory responsibilities is often especially difficult for those whose capacity to communicate is impaired. It is somehow assumed that the handicapped will not be able to administer, travel, and communicate with foreigners, although the AAAS file is full of examples of people who do all of these things.

The appeal that many handicapped scientists make is that the able handicapped persons of our society, who are often considered to be an added cost, should be valued as a human resource to be developed. They seek recognition that the patience, incentive, and self-discipline developed by the handicapped are of positive value to the employers of scientists. They hope that changing attitudes will make it possible for all bright, able, scientifically inclined youngsters to choose science without having to be super-achievers in order to reach their goals. — JANET WELSH BROWN

References

1. Guy H. Mahan, "Special provisions for handicapped students in colleges," *Exceptional Children* 41, 51 (1974).
2. A. B. Crammatte, *Deaf Persons in Professional Employment* (Thomas, Springfield, Ill., 1968).
3. James H. Sears, "The able disabled," *Chemtech*, (December 1974), pp. 713-715. Reports a study of 1452 handicapped workers at DuPont.

AAAS Initiates Barrier-Free Meetings

This year in Boston the AAAS rolled out the welcome carpet for the physically disabled in the scientific community. More than 200 persons walked or wheeled over that carpet to attend the annual meeting with their colleagues. For many of this group, full participation in a professional meeting had previously been impossible. At this year's AAAS meeting the housing and meeting facilities selected were highly accessible to wheelchairs, interpreters were available to the deaf, and volunteers were on hand to help as requested. In addition, a resource center and 24-hour-a-day hot line offered on-the-spot assistance.

The AAAS Office of Opportunities in Science, with the cooperation of the Meetings Office, coordinated the activities. The university student volunteers and members of the Massachusetts Council of Organizations of the Handicapped served as the backbone of the accessibility effort. Also, the Boston Advisory Committee, hotel and convention bureau staff, and tour directors eagerly participated by adjusting their plans to accommodate the special needs of the disabled. The tour director, with the help of the Advisory Committee, even managed to have a ramp built at Symphony Hall and provided a van with hydraulic lift to transport people to the Boston Pop's Concert.

Close association with their disabled peers seemed to have had a profound effect on the able-bodied scientists who attended the Boston meeting. Many expressed regret that their colleagues had been unthinkingly excluded in the past. Plans are currently underway to ensure

that the Denver meeting and others in the future will be made as barrier-free as possible. Also, efforts will be made to provide whatever assistance is necessary to encourage and ensure the full meeting participation of all members of the scientific community.

Surprisingly, the AAAS staff responsible for the accessibility effort found that the tasks involved were much easier than they had expected. And they confirmed that the benefits received from tapping these valuable human resources far outweighed the efforts in their behalf.

In order to assist AAAS affiliates and other professional organizations to provide barrier-free meetings, the Office of Opportunities in Science is preparing a guide to making professional meetings accessible. The guide, based on the experiences in making the Boston meeting accessible and written with the guidance of a large number of the disabled scientists who attended, will be ready for distribution this summer. The Office also has offered its help to several scientific societies in planning for their future meetings. The American Physical Society at its recent meeting in Washington provided special information and assistance to the handicapped. The American Psychological Association is planning to expand its services to the handicapped at its meeting in Washington this fall.

One highlight of the AAAS meeting as it concerned the physically disabled was a symposium, "Science, Technology, and the Handicapped," which focused on technological innovations and research needs, as well as on the removal of physical, educational, and career bar-

riers for the handicapped. Featured were two computers, one that reads to the blind, the other that helps teach the deaf to speak, and communication devices for the nonvocal. Special attention was given to the implications for action by professional societies in the removal of barriers to the physically disabled. Proceedings of the symposium will be available by the end of the summer from AAAS.

Also, as part of the Science International exposition at the AAAS meeting, 14 booths demonstrated the work of rehabilitation research and training centers across the country; instructional methods for teaching science and art to blind students; the work of state agencies and local organizations serving the needs of the deaf, blind, and physically disabled; and some of the technological developments to aid the disabled.

AAAS began to actively consider the needs of its physically disabled members over 2 years ago, at the urging of one of its members, a deaf biologist. During the past year an all-out effort has been launched to facilitate the full participation of handicapped scientists in the activities of the Association. The steps taken thus far are intended to be only the beginning of activities to remove the barriers to the handicapped for education and careers in science. AAAS also is encouraging its affiliates to become involved in programs toward this end.

MARTHA ROSS REDDEN
Opportunities in Science

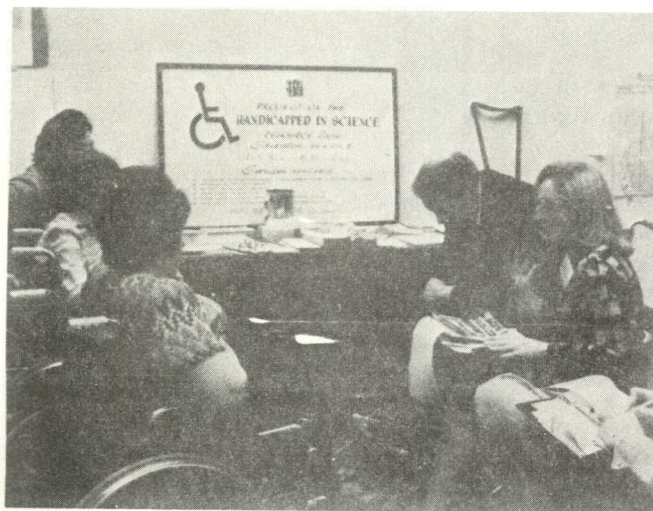
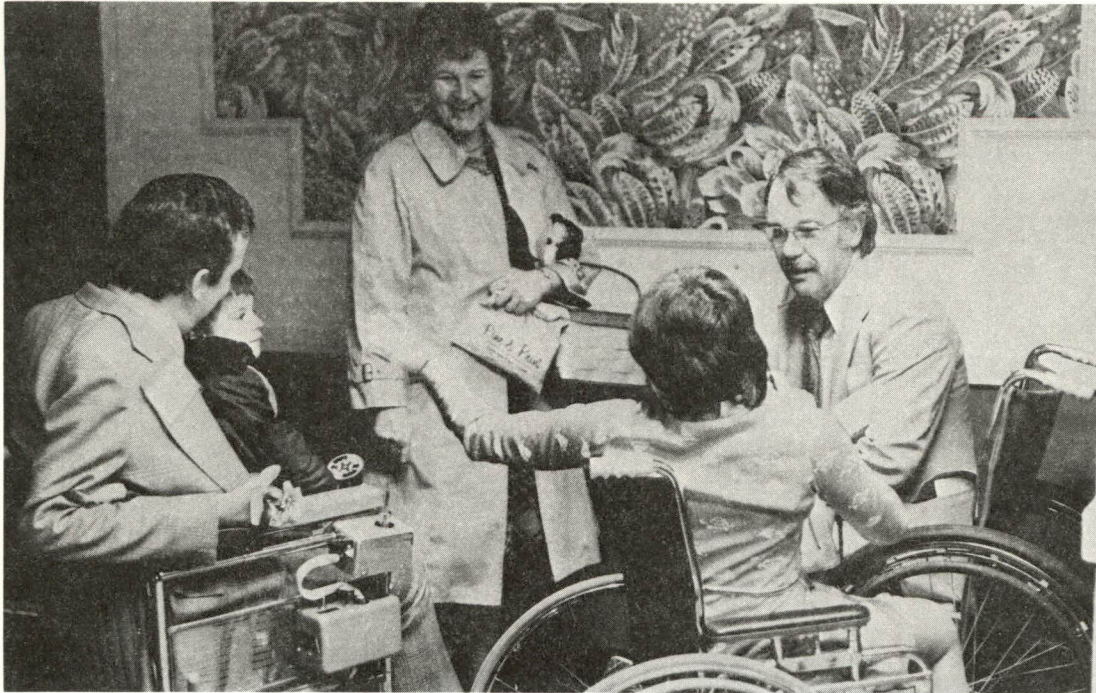


Fig. 1 (left). Martha Ross Redden (far right), director of the AAAS Project on the Handicapped in Science, discusses the program with several disabled scientists at the Boston meeting. Left to right, Frances Lowder, Phyllis Stearner, Cheryl Davis, and Robert Larsen. Fig. 2 (right). Robert Haushalter of American University explains some of the features of Laboratory Science and Art for the Blind to an exhibit visitor at the AAAS meeting. [Photos by Steven Brody]



—United Press International

Finding time to talk shop during a symposium on "Science Technology and the Handicapped" are (from left); Elmer C. Bartels, Honeywell Corp., and president of the New England Spinal Cord Foundation; Jimmy

Bartels; Marty T. Bartels; Doris Sarkisian, Fisher Scientific co. and director, Massachusetts Council of Organization of the Handicapped; Edward Lynch, Office of Civil Rights.

An All-Out Effort to Make Life Easier

By Cristine Russell
Washington Star Staff Writer

BOSTON — Parking space was limited, but the wheelchairs kept coming. They crowded into the convention room and trailed into the hallway. Inside an interpreter translated in sign language as the speakers made their presentations.

And a volunteer on a wheelchair that must have been the fastest of them all — with its flashy yellow trim and black swivel seat it almost looked like a mini-bike — raced back and forth with messages from the resource center.

The occasion was a symposium on "Science, Technology and the Handicapped." It was the focal point of an effort by the American Association for the Advancement of Science to make this year's annual meeting accessible to physically disabled scientists and public.

THIS IS THE first time that a major professional organization, other than those devoted to the needs of the handicapped, has attempted to cater to this increasingly vocal minority, according to Martha Redden, who directs the AAAS's new Project on the Handicapped in Science.

"It's the first time that any professional organization has even really considered the needs of the handicapped" at its regular

meeting, added the swift wheelchair rider, Vivienne Thomson, president of the Massachusetts Association of Paraplegics.

At the resource center set up here at the Sheraton-Boston, the AAAS is offering transportation for persons in wheelchairs to and from all sessions — some 1,500 speakers are exploring 180 topics — and to and from all public transportation terminals.

There are interpreters for the those whose hearing is impaired, assistants for the visually handicapped, repairs for wheelchairs and crutches, special tours, and even a round-the-clock "hot line" for emergency needs.

ABOUT 150 persons have shown up at the center since the meeting began Wednesday.

"I've never considered my handicap to be my major barrier," said Dr. Hadi Madjid, an economist with Arthur D. Little in Cambridge. But just having a "room to go to" helped him get oriented.

After the sessions here, the AAAS hoped to issue an "accessibility" guide for the handicapped. It would be distributed to the 287 societies affiliated with the AAAS who also hold their own meetings. But the broader goal is to break some barriers the handicapped face in both getting

an education and then pursuing a career.

A first step has been an concerted attempt to identify handicapped scientists "who have already made it" to seek advice in setting up the program, said Redden. The total comes to about 500 so far — researchers, teachers and administrators in all fields of science.

MANY OF THEM have come to Boston, including Dr. John Gavin, a deaf biologist with Miles Laboratories in Elkhart, Ind., who first prodded the AAAS into paying more attention to his and other disabled scientists' needs. And there was Dr. Phyllis Sterner, a biologist with the Argonne National Laboratory who suffers from cerebral palsy. She said she had "come out of her ivory tower" to work for the rights of the handicapped.

"Until now the burden has been on the handicapped scientists," said Dr. Ralph F. Guertin, an assistant professor of physics at Rice University who lost his hearing at the age of seven.

Dr. Nansie Sharpless, a deaf but not mute biochemist at Albert Einstein College of Medicine, was accompanied to scientific sessions in her field by an "oral interpreter," making it possible for her to understand what was going on. Sharpless never learned sign language because she

"didn't know enough deaf people to make it worthwhile," but she does read lips. The "oral interpreter" repeats what the speaker on the far-off platform says for Sharpless to lip read.

"THIS CONFERENCE has gone out of its way to make the meeting available, but the next step is improving educational opportunities for the disabled," said Elmer Bartels, a paraplegic who manages computer software development for Honeywell in Boston. He suffered a spinal cord injury 15 years ago.

The special all-day session Thursday on technology for the handicapped focused on reading machines for the blind, a computer to help teach deaf children to speak, communication devices for the non-vocal, and the general goal of providing "barrier free" environments for those confined to wheelchairs.

This and the multitude of other long scientific sessions, enough to tire even the most attentive, was capped last night by an evening with the Boston Pops Orchestra, with transportation provided in a special bus equipped with a hydraulic lift. And just this week a specially built ramp was installed in Symphony Hall to make wheeling in easier.

Expanding Horizons: Careers in Science

*Martha Ross Redden
Janet Welsh Brown*

This article discusses the American Association for the Advancement of Science Project on the Handicapped in Science. The plan sets forth strategies to ensure the full participation of disabled members in their professional scientific organizations.

The American Association for the Advancement of Science (AAAS) has initiated a program to remove barriers to the handicapped for careers in science. The AAAS, the world's largest scientific professional association, has recognized its responsibility as a leader in science to enhance the status of the physically handicapped and to accelerate their advancement in all the sciences and engineering. In order to launch an ongoing program, the AAAS has sought and received funding from the Rehabilitation Services Administration/HEW for a project to explore the barriers obstructing the entry and full participation of physically handicapped persons to employment opportunities in science. Specifically, the initial eight-month phase of the program, July 1975 to February 1976, has sought to examine and evaluate ways in which the scientific professional associations can contribute to equal educational and occupational opportunity.

Many physically disabled individuals with an interest and aptitude in science have difficulty obtaining an education, employment, and promotion in the areas of their interest. Science educators and employers are largely unaware of the needs of the handicapped and of their own responsibilities for overcoming the difficulties faced by disabled veterans, accident victims, persons disabled by severe illnesses, and those suffering from birth defects. Physically disabled scientists working with the AAAS since early 1974 have identified three aspects of the problem that they think the professional associations should address:

1. Handicapped scientists find the scientific meetings of their professional associations inaccessible, thus preventing them from full participation.

Martha Ross Redden is Director, Project on the Handicapped in Science, American Association for the Advancement of Science, Washington, D.C. Janet Welsh Brown is head of the Office of Opportunities in Science, American Association for the Advancement of Science, Washington, D.C.

2. Handicapped members perceive a general lack of awareness on the part of the professional associations to their problems.

3. There are real barriers to the acquisition of education and jobs.

Since early 1974 when the problems of the handicapped in science were first brought to the attention of the AAAS by a deaf biologist Association member, the AAAS Office of Opportunities in Science has been a national center for the concerns of the handicapped in science and of the need for improved science education for handicapped youth. At the 1975 annual meeting, a symposium focused on the problems of the handicapped vis à vis science. The interest generated by the symposium among scientists and organizations of and for the handicapped led to the establishment in the AAAS of the Project on the Handicapped in Science.

The Project has completed activities in the following areas: (a) the identification of over 400 handicapped scientists and the provision of information to our 120,000 members about the needs of the handicapped, (b) provision of the same to our affiliated societies and state academies (over 300 organizations), (c) arrangements to make the 1976 AAAS meeting completely accessible to handicapped scientists both in terms of physical accessibility and provision of necessary services for the blind and deaf, (d) publication and distribution of a handbook based on the AAAS experience, explaining how other organizations can make their professional meetings accessible and meaningful, (e) arrangements at the 1976 annual meeting for a comprehensive symposium on "Science, Technology, and the Handicapped," including both policy analysis and technical papers by leaders of national stature in these areas, (f) publication and wide dissemination of the symposium proceedings, (g) arrangements for a lunch and reception for handicapped scientists at the annual meeting with news coverage from all major media, and (h) a survey of state education agencies to estimate the level of current science education efforts for the physically disabled.

As a result of these activities the AAAS has committed itself to develop a comprehensive program and a national resource center which will (a) assist physically disabled individuals in overcoming barriers to education and careers in science and technology, (b) develop a resource linkage between the scientific professional associations and the organizations and agencies of and for the handicapped for the benefit of the handicapped scientists, (c) provide a constant flow of information concerning the needs and activities of handicapped scientists to all the publications of the scientific associations, organizations, and agencies of and for the handicapped and the public media, and (d) promote the improvement of science education for handicapped students at all educational levels.

Through this project, the scientific professional associations will

have been made more aware of the problems of handicapped scientists and of their role in overcoming barriers. They will be provided with information enabling them to take the first corrective steps to increase career opportunities in science for the handicapped. The handicapped and their organizations will, at the same time, have been made more aware of how they can use their professional associations for achievement of equal occupational and educational opportunities in the sciences. It is expected that each type of group, as it becomes increasingly more conscious of the potential of the other, will itself become more effective in overcoming occupational barriers to the handicapped.

The most important outcome of the Project will be a heightened sensitivity to the needs of the handicapped scientist by their peers in the science professions. This will lead to the development of convention staffs who can adapt their facilities and programs to meet the needs of the handicapped, a rehabilitation network that is concerned with finding jobs to meet the potential of handicapped scientists, special educators who are knowledgeable about the importance of science education and of science teachers who are able to teach mainstreamed students, and a general public who will grant equal rights to the handicapped.

American Association for the Advancement of Science
Office of Opportunities in Science

A Resource Directory of Handicapped Scientists

The AAAS Project on the Handicapped in Science proposes to create a multiple purpose directory of scientists who have mobility, neurological, aural, and visual handicapping conditions. Such a directory is necessary for effective communications among the handicapped themselves, for research and program planning, and for referral to NSF and other federal agencies and professional societies who may require their advice and other services.

The Purpose of a Directory

A well-conceived and organized roster* may serve these several purposes. One is the need, articulated by the handicapped scientists with whom the AAAS has been working, to identify others like themselves as their first activity. They need to know who the others like themselves are in order to lessen their real feelings of isolation and uniqueness, to share practical experience and information on coping and other strategies, and to organize action when they need to.

Secondly, the compilation of a roster will have an educational function. When AAAS first started stating our concern about handicapped scientists, we met widespread skepticism that there were enough to be concerned about. In October 1975, the AAAS asked handicapped scientists to identify themselves in order to serve as resources to the program. To date, over 500 have responded. There are surely many more. Knowledge of their existence and their problems is a necessary part of the educational job that must be done in the science community. If the experience of other roster-makers is relevant here*, the self-education of the handicapped themselves will be reinforcing when they see how many they actually are.

Thirdly, the roster may serve as the basis for problem analysis and program planning, both for our own Association and for other scientific societies and federal agencies. In the process of collecting data for the roster, we will ask also for information on the problems and barriers faced by the people both in their education and on the job as scientists. Analysis of this information will permit the rational design of programs and policies to overcome those barriers.

Fourth, the roster will enable the AAAS to carry out its clearinghouse functions more efficiently. We will be able to identify scientists by field and professional association should the disciplinary societies need their advice and assistance. We will be able to match needs and resources--i.e., when a deaf high school student needs counsel about the availability of a career in biology, we can put that person in touch with a deaf biologist who can advise. When parent groups and teachers want role models or technical assistance to help them deal with handicapped youngsters, we can match them up with handicapped scientists who have volunteered to undertake those assignments. When a paralyzed engineer meets a particular problem on the job, we can put him or her in touch with a colleague who has already dealt with a similar kind of situation.

Finally, a roster will enable us at the AAAS to identify scientists who may serve federal agencies, such as the NSF, as advisers, peer reviewers, etc., as now required by law.

*See Brown, Coleman, Posner, Rosters of Minority and Women Professionals. The term roster includes directories and registries of varying degree of detail.

The Directory

The proposed directory of handicapped scientists is to include all natural and social scientists, as well as engineers and medical personnel for whom a rigorous scientific education is required. In each category, we will seek to include those with degrees in these areas and/or equivalent training who are working in scientific, medical, or technological fields. The roster will also include individuals trained in science but working in other areas or unemployed because of their handicapping condition.

The roster will compile on each participating scientist basic personal and professional biodata, plus information on the nature and age of onset of handicapping condition, educational and professional problems to overcome, and successful coping strategies. Participants are also to be asked in which of several ways they would be willing to serve: as role models and advisers to the young, as speakers, as advisers to science students and their professors and teachers, as peer reviewers, etc. An open-ended invitation to comment is added to the questionnaire.

The basic biodata--name, address, field and kind of employment, and nature of handicap--is to be published in a directory and distributed to the handicapped scientists to facilitate communication and cooperation among them. The information on barriers, problems, and strategies will be analyzed and reported by AAAS staff to the handicapped participants and to appropriate professional associations and public agencies. The more detailed information on professional qualifications, etc., will be maintained by the AAAS on key sort cards and accompanying files for uses approved by the participating scientists.

Procedure and Schedule

This task can be accomplished within 12 months because much of the preliminary work has already been done. We already have 500 scientists identified with whom we are in communication. We have designed the questionnaire and sent it to all of these persons. Two hundred have already replied, providing considerable information and allowing revisions and improvements on the data collection.

We need now to do several things: (1) The list of 500 must be expanded to the maximum by extensive mailings and announcements through the scientific societies, the organizations of and for the handicapped, schools and programs for the handicapped, and through the 500 scientists already identified. (2) The response rate from the scientists already surveyed and from the new ones identified must be increased by mailings and, if necessary, a phone campaign. (3) Professional resumes must be sought from each scientist who had indicated the willingness to serve as advisers and reviewers to federal agencies and scientific societies. (4) The information necessary for the published directory must be drawn from the forms and edited for printing. (5) Remaining data must be punched on key sort or other similar cross-filing system for easy identification, and forms and resumes filed. (6) Problems on handicap conditions and barriers must be analyzed, summarized, and distributed. (7) The directory must be printed and distributed.

Dr. Martha R. Redden, Director of the AAAS Project on the Handicapped in Science, will have supervisory responsibility, assisted by a third-time assistant. Dr. Janet W. Brown, author of Rosters... and head of the Office of Opportunities in Science, will provide direction on the design of the roster and have overall fiscal and administrative responsibility. The project will cost approximately \$26,000 and take 12 months.

*American Association
for the Advancement of Science*

1776 MASSACHUSETTS AVENUE, NW, WASHINGTON, D. C., 20036

Phone: 467-4400 (Area Code 202)

Cable Address: Advancesci, Washington, D. C.

September 27, 1976

Lex Frieden
9667 Meadowvale
Houston, Texas 77042

Dear Lex,

Thanks for giving me and AAAS Resource Group a chance for input to the Congressional Committee of which you are a member. The hearings and interaction there were very exciting. I believe this can be the beginning of research and development in an area long slighted.

I'm enclosing a discussion paper we prepared recently that proposes a project to gather and organize information about disabled scientists. I believe this type of roster can be very helpful to your committee and to the groups that will carry out their mandate. We are seeking funding for the project from several different sources. There has been some interest, but not any commitment to fund. However, we will keep trying. We are ready to start the project as soon as we receive funding, so it is likely that the data will be available within the next few months.

I'm sending you also our latest bunch of information. You probably have copies of it already. If so, give it to someone who would be interested.

Hope to see you soon.

Sincerely,



Martha Ross Redden, Director
Project on the Handicapped in Science
Office of Opportunities in Science

MRR:p

Encl.

*American Association
for the Advancement of Science*

1776 MASSACHUSETTS AVENUE, NW, WASHINGTON, D. C., 20036

Phone: 467-4400 (Area Code 202)

Cable Address: Advancesci, Washington, D. C.

6 July 1976

Dear Resource Group Member:

Based on your response to the questionnaire for the AAAS Project on the Handicapped in Science Resource Group, I recently recommended you to serve, as needed, on the various committees in preparation for the state and national level White House Conferences on Handicapped Individuals. All together about one hundred very capable physically disabled scientist colleagues were recommended. It is my hope that this group of outstanding human resources from across the nation will be used extensively to plan and conduct the state and nationwide conferences.

The barriers to education and careers in science must be broken down for the physically disabled. The attention of the nation will be focused on the needs of the handicapped as a result of the White House Conferences. We must demand that our particular concerns be heard at this forum.

I have enclosed some reprints of articles on the accessibility effort at the AAAS Annual Meeting. Any suggestions or comments you would like to make concerning the Project are always needed and welcome.

Please let me know in what ways you are asked to serve in connection with the White House Conference on Handicapped Individuals.

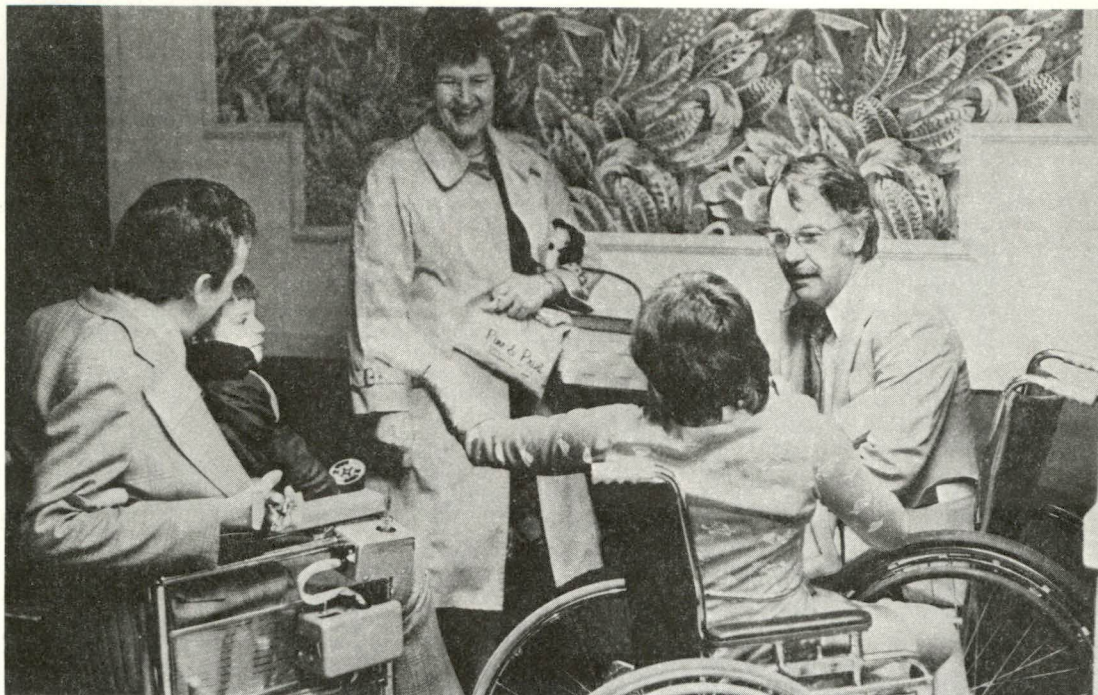
I look forward to hearing from you soon and often.

Sincerely,



Martha Ross Redden, Director
Project on the Handicapped in Science

MRR/dab
Enclosures



—United Press International

Finding time to talk shop during a symposium on "Science Technology and the Handicapped" are (from left); Elmer C. Bartels, Honeywell Corp., and president of the New England Spinal Cord Foundation; Jimmy

Bartels; Marty T. Bartels; Doris Sarkisian, Fisher Scientific co. and director, Massachusetts Council of Organization of the Handicapped; Edward Lynch, Office of Civil Rights.

An All-Out Effort to Make Life Easier

By Cristine Russell
Washington Star Staff Writer

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"It's the first time that any professional organization has even really considered the needs of the handicapped" at its regular

meeting, added the swift wheelchair rider, Vivienne Thomson, president of the Massachusetts Association of Paraplegics.

At the resource center set up here at the Sheraton-Boston, the AAAS is offering transportation for persons in wheelchairs to and from all sessions — some 1,500 speakers are exploring 180 topics — and to and from all public transportation terminals.

There are interpreters for the those whose hearing is impaired, assistants for the visually handicapped, repairs for wheelchairs and crutches, special tours, and even a round-the-clock "hot line" for emergency needs.

ABOUT 150 persons have shown up at the center since the meeting began Wednesday.

"I've never considered my handicap to be my major barrier," said Dr. Hadi Madjid, an economist with Arthur D. Little in Cambridge. But just having a "room to go to" helped him get oriented.

After the sessions here, the AAAS hoped to issue an "accessibility" guide for the handicapped. It would be distributed to the 287 societies affiliated with the AAAS who also hold their own meetings. But the broader goal is to break some barriers the handicapped face in both getting

an education and then pursuing a career.

A first step has been an concerted attempt to identify handicapped scientists "who have already made it" to seek advice in setting up the program, said Redden. The total comes to about 500 so far — researchers, teachers and administrators in all fields of science.

MANY OF THEM have come to Boston, including Dr. John Gavin, a deaf biologist with Miles Laboratories in Elkhart, Ind., who first prodded the AAAS into paying more attention to his and other disabled scientists' needs. And there was Dr. Phyllis Sterner, a biologist with the Argonne National Laboratory who suffers from cerebral palsy. She said she had "come out of her ivory tower" to work for the rights of the handicapped.

"Until now the burden has been on the handicapped scientists," said Dr. Ralph F. Guertin, an assistant professor of physics at Rice University who lost his hearing at the age of seven.

Dr. Nansie Sharpless, a deaf but not mute biochemist at Albert Einstein College of Medicine, was accompanied to scientific sessions in her field by an "oral interpreter," making it possible for her to understand what was going on. Sharpless never learned sign language because she

"didn't know enough deaf people to make it worthwhile," but she does read lips. The "oral interpreter" repeats what the speaker on the far-off platform says for Sharpless to lip read.

"THIS CONFERENCE has gone out of its way to make the meeting available, but the next step is improving educational opportunities for the disabled," said Elmer Bartels, a paraplegic who manages computer software development for Honeywell in Boston. He suffered a spinal cord injury 15 years ago.

The special all-day session Thursday on technology for the handicapped focused on reading machines for the blind, a computer to help teach deaf children to speak, communication devices for the non-vocal, and the general goal of providing "barrier free" environments for those confined to wheelchairs.

This and the multitude of other long scientific sessions, enough to tire even the most attentive, was capped last night by an evening with the Boston Pops Orchestra, with transportation provided in a special bus equipped with a hydraulic lift. And just this week a specially built ramp was installed in Symphony Hall to make wheeling in easier.

AAAS Initiates Barrier-Free Meetings

This year in Boston the AAAS rolled out the welcome carpet for the physically disabled in the scientific community. More than 200 persons walked or wheeled over that carpet to attend the annual meeting with their colleagues. For many of this group, full participation in a professional meeting had previously been impossible. At this year's AAAS meeting the housing and meeting facilities selected were highly accessible to wheelchairs, interpreters were available to the deaf, and volunteers were on hand to help as requested. In addition, a resource center and 24-hour-a-day hot line offered on-the-spot assistance.

The AAAS Office of Opportunities in Science, with the cooperation of the Meetings Office, coordinated the activities. The university student volunteers and members of the Massachusetts Council of Organizations of the Handicapped served as the backbone of the accessibility effort. Also, the Boston Advisory Committee, hotel and convention bureau staff, and tour directors eagerly participated by adjusting their plans to accommodate the special needs of the disabled. The tour director, with the help of the Advisory Committee, even managed to have a ramp built at Symphony Hall and provided a van with hydraulic lift to transport people to the Boston Pop's Concert.

Close association with their disabled peers seemed to have had a profound effect on the able-bodied scientists who attended the Boston meeting. Many expressed regret that their colleagues had been unthinkingly excluded in the past. Plans are currently underway to ensure

that the Denver meeting and others in the future will be made as barrier-free as possible. Also, efforts will be made to provide whatever assistance is necessary to encourage and ensure the full meeting participation of all members of the scientific community.

Surprisingly, the AAAS staff responsible for the accessibility effort found that the tasks involved were much easier than they had expected. And they confirmed that the benefits received from tapping these valuable human resources far outweighed the efforts in their behalf.

In order to assist AAAS affiliates and other professional organizations to provide barrier-free meetings, the Office of Opportunities in Science is preparing a guide to making professional meetings accessible. The guide, based on the experiences in making the Boston meeting accessible and written with the guidance of a large number of the disabled scientists who attended, will be ready for distribution this summer. The Office also has offered its help to several scientific societies in planning for their future meetings. The American Physical Society at its recent meeting in Washington provided special information and assistance to the handicapped. The American Psychological Association is planning to expand its services to the handicapped at its meeting in Washington this fall.

One highlight of the AAAS meeting as it concerned the physically disabled was a symposium, "Science, Technology, and the Handicapped," which focused on technological innovations and research needs, as well as on the removal of physical, educational, and career bar-

riers for the handicapped. Featured were two computers, one that reads to the blind, the other that helps teach the deaf to speak, and communication devices for the nonvocal. Special attention was given to the implications for action by professional societies in the removal of barriers to the physically disabled. Proceedings of the symposium will be available by the end of the summer from AAAS.

Also, as part of the Science International exposition at the AAAS meeting, 14 booths demonstrated the work of rehabilitation research and training centers across the country; instructional methods for teaching science and art to blind students; the work of state agencies and local organizations serving the needs of the deaf, blind, and physically disabled; and some of the technological developments to aid the disabled.

AAAS began to actively consider the needs of its physically disabled members over 2 years ago, at the urging of one of its members, a deaf biologist. During the past year an all-out effort has been launched to facilitate the full participation of handicapped scientists in the activities of the Association. The steps taken thus far are intended to be only the beginning of activities to remove the barriers to the handicapped for education and careers in science. AAAS also is encouraging its affiliates to become involved in programs toward this end.

MARTHA ROSS REDDEN
Opportunities in Science



Fig. 1 (left). Martha Ross Redden (far right), director of the AAAS Project on the Handicapped in Science, discusses the program with several disabled scientists at the Boston meeting. Left to right, Frances Lowder, Phyllis Stearner, Cheryl Davis, and Robert Larsen. Fig. 2 (right). Robert Haushalter of American University explains some of the features of Laboratory Science and Art for the Blind to an exhibit visitor at the AAAS meeting. [Photos by Steven Brody]

American Association for the Advancement of Science

1776 MASSACHUSETTS AVENUE, NW, WASHINGTON, D. C., 20036

Phone: 467-4400 (Area Code 202)

Cable Address: Advancesci, Washington, D. C.

December 12, 1975

Mr. Lex Frieden
9667 Meadowvale
Houston, Texas 77042

Dear Mr. Frieden:

Thank you for identifying yourself to the AAAS Project on the Handicapped in Science. We need help from people like you to give us advice as we plan ways that the scientific community can best help to remove the barriers to the full participation of handicapped individuals in science. The resources you have to offer are needed to improve the status of handicapped scientists, as well as to assist us in urging the necessary changes that will assure a quality science and mathematics education for all handicapped youth.

This project is only the beginning of a program for the handicapped that will be well integrated into the basic structure of AAAS. Depending on your interest and the time you can spare there are several ways you can help the program:

1. Identify other handicapped scientists who may wish to join our Resource Group (we will send them an invitation to participate before including them);
2. Inform handicapped scientists that the AAAS Annual Meeting will be accessible and urge them to attend;
3. Attend the AAAS Annual Meeting yourself and make your voice heard among your colleagues;
4. Send us your ideas for program development;
5. Write to your congressperson and senators informing them of the program and stressing its importance.

We need more information in order to use the talents of the Resource Group most effectively. Please fill out and return the enclosed questionnaire. This information will be used to help develop a strong program; your name will never be used without your permission.

I look forward to hearing from you soon.

Sincerely,



Martha Redden, Director
Project on the Handicapped in Science

MR:ws
Enclosures

Who Are the Handicapped Scientists?

Who are the handicapped scientists? They include the head of a worldwide allergy research division of a large pharmaceutical company who is deaf, the professor of psychology who is blind, and the manager of a department in a computer firm who is quadriplegic. The AAAS Office of Opportunities in Science will undertake a systematic survey of this group later this year in order to produce a profile of the handicapped scientist. This profile will be instructive in developing programs and resources to help overcome the problems such scientists face.

The Office has already heard from more than a hundred scientists who are deaf, blind, or orthopedically or neurologically

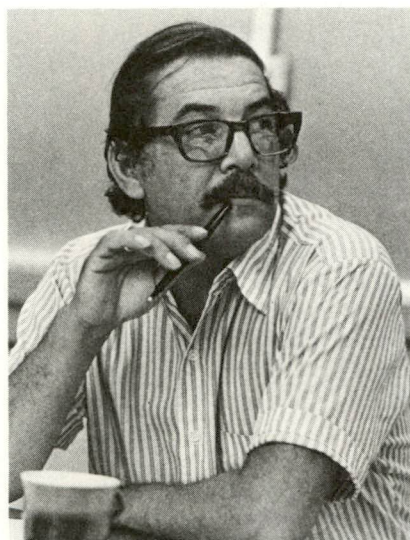
handicapped in most cases as the result of an accident or illness. Some generalizations about these scientists are possible. They are to be found in all fields of science, working in research, teaching, and administration. Most of them were handicapped after their education was begun, assuring the acquisition of basic communication skills and recognition of their intellectual prowess. Most have supportive families, but had to struggle through educational institutions that were anything but supportive.

These successful handicapped scientists have required extraordinary, almost unbelievable, perseverance to acquire an education. The obstacles placed in their way

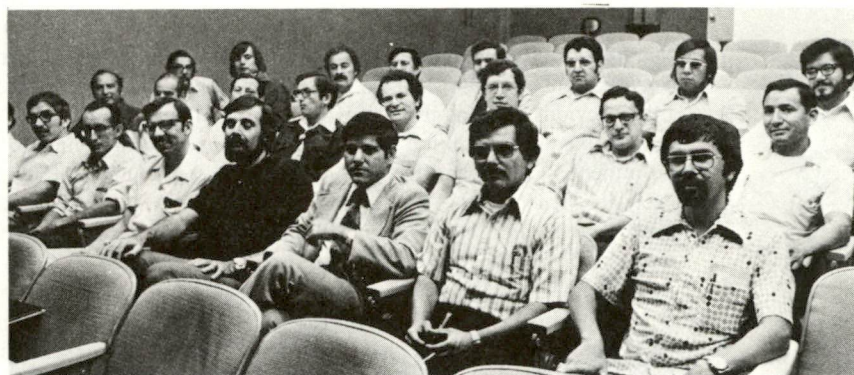
by educational institutions were both physical and attitudinal. In a 1974 survey of ACE-accredited 4-year colleges and universities, 22 percent of the respondents reported that they would reject deaf applicants (1). Although there are now some happy exceptions, such as the University of Texas and the University of Illinois, most campuses are unnegotiable for the severely orthopedically handicapped. Nor do most offer any of the counseling and other services necessary to assure the handicapped an equal chance of success.

The psychological hurdles are also great; these people have had to prove themselves over and over again. All of them can tell stories of the professor who, having no experience with the handicapped, routinely dismissed their abilities on the assumption that these students "would not be able to keep up with the reading" because they

(Continued on page 593)



Chicano and Native American Scientists Meet



The Society for the Advancement of Chicano and Native American Scientists (SACNAS) held its third annual meeting in Albuquerque in August. At the meeting, members elected Alonzo C. Atencio (above left), of the University of New Mexico as president, Richard Tapia, mathematics professor at Rice University as vice-president, and Miguel Rios, physicist from Sandia Laboratories as secretary-treasurer. All of the new 1975 officers are members of the AAAS. Four of the six board members are also AAAS members.

Dr. Atencio has served on the AAAS Committee on Science and the Promotion of Human Welfare and, with three other SACNAS members, is presently on an advisory panel to the Office of Opportunities in Science.

The objective of the SACNAS is to increase the participation of Chicanos and Native Americans in science. The Society works with the National Institutes of Health and the National Science Foundation to that end. Individual members, most of whom are Ph.D.'s in the natural sciences, are all committed, either through personal endeavor or through established programs, to improving the scientific training and counseling that is available to Chicano students. At the meeting which was held in August, members approved the Articles of Incorporation and planned activities for the coming year that will increase the number of Chicanos entering science and the visibility of their accomplishments.

—JANET WELSH BROWN

were blind, or "would not be safe in the laboratory" because a limb did not function. One deaf woman chemist was required to undergo an additional examination to get her Ph.D. *—after* she had completed with honors all the requirements demanded of her "normal" colleagues.

Landing that first job is another problem mentioned frequently by our respondents (2). One deaf physicist with a Ph.D. from Yale was told teaching was impossible and he should stick to research, while other deaf scientists have been told by employers that they would not be safe in a laboratory, or that they should stick to teaching the deaf "where they could really make a contribution. . . ." Although the myth that handicapped workers present additional safety hazards has been disproven in practice (3), this concern is still widely used by employers to reject handicapped applicants.

Advancement on the job is frequently not open to the handicapped on the basis of merit. They may be deprived of professional give-and-take in the laboratory or full participation in professional associations by colleagues who will not take the time and trouble to include them. Ad-

vancement to supervisory responsibilities is often especially difficult for those whose capacity to communicate is impaired. It is somehow assumed that the handicapped will not be able to administer, travel, and communicate with foreigners, although the AAAS file is full of examples of people who do all of these things.

The appeal that many handicapped scientists make is that the able handicapped persons of our society, who are often considered to be an added cost, should be valued as a human resource to be developed. They seek recognition that the patience, incentive, and self-discipline developed by the handicapped are of positive value to the employers of scientists. They hope that changing attitudes will make it possible for all bright, able, scientifically inclined youngsters to choose science without having to be super-achievers in order to reach their goals. —JANET WELSH BROWN

References

1. Guy H. Mahan, "Special provisions for handicapped students in colleges," *Exceptional Children* 41, 51 (1974).
2. A. B. Crammatte, *Deaf Persons in Professional Employment* (Thomas, Springfield, Ill., 1968).
3. James H. Sears, "The able disabled," *Chemtech* (December 1974), pp. 713-715. Reports a study of 1452 handicapped workers at DuPont.

Notes from Other Offices

Science Education: The sixth edition of the annotated bibliography, *Science for Society*, will be published in November. Like previous editions it will cover the interrelations of humankind, society, the environment, science, and technology. However, its structure will be different from previous editions. References will be indexed under 11 "science-society" issues—from aging and death through transportation. For each of these 11 issues, there will be a mini-course outline or framework. There will be some 2000 entries which include recent books and articles from a variety of periodicals during the past year.

* * *

Opportunities in Science: Wanted: Information leading to the identification of science education projects aimed at minorities. Ongoing or now defunct programs undertaken since 1960. All educational levels. Includes projects in engineering, agriculture, biomedical, technical, and related areas directed at minority students or teachers and counselors of minority students. The AAAS has received a grant from the National Science Foundation to prepare and publish a comprehensive an-

notated bibliography of science education projects for minorities. Please send information about projects (including the names and addresses of individuals involved in them) to: Shirley Mahaley Malcom, Office of Opportunities in Science, AAAS, 1776 Massachusetts Avenue NW, Washington, D.C. 20036.

* * *

Communications: Cancer, a four-cassette album of interviews with 19 recognized cancer authorities, is nearing completion and will be advertised soon in *Science*.

A revised edition of the study guide for the "Ascent of Man" series, as well as detailed guides for programs Nos. 4, 9, 10, 11, and 12, are available at 75¢ from the Communications Department, or from Professor Eleanor Webster, Department of Chemistry, Wellesley College, Wellesley, Massachusetts 02181. Films 4 and 10 stress chemistry; 9 and 12 biology; and 11 centers on philosophy. The series was written by Professor Webster, Professor Dorrothea Widmayer, and Professor Maud Chaplin, all of Wellesley. The 75¢ fee purchases one set of six guides, and covers postage and handling. Supply is limited.

LIST OF ENCLOSURES
LETTER TO RESOURCE GROUP

1. Letter
2. Questionnaire for Resource Group
3. "Who Are the Handicapped Scientists"

An article from Science by Dr. Janet Welsh Brown, Program Head,
Office of Opportunities in Science.

4. Science and Our Expectations: Bicentennial and Beyond

A description of the AAAS Annual Meeting to be held in Boston, 18-24
February 1976 and listing of the 180+ Symposia that will be presented
at that meeting.

5. AAAS Annual Meeting Advance Registration Form

This form appeared in the 14 November issue of Science. It allows the
handicapped individuals to identify special needs they have in order to
enjoy full participation in the meeting. This gives us the information
to prepare for those needs to be met.

6. AAAS Annual Meeting Reservations Form

This form is used to reserve hotel rooms for the meeting. If a handicapped
person identifies special housing needs, room assignments will be made to
accommodate that need.

7. Science, Technology and the Handicapped

The program for the Symposium arranged by the Project to be presented on
Thursday, February 19, 1976 at the Annual Meeting. Also at the meeting
there will be breakfast sponsored by the Massachusetts Rehabilitation
Commission, Research Division; a luncheon for all symposium participants,
handicapped individuals attending the meeting and others interested in the
program; and a reception for all people attending the meeting.

8. News Release

This news release will go to the news media in the New England area,
handicapped consumer group publications, other publications of organizations
for the handicapped and publications of the scientific societies.

AAAS NEWS

American Association for the Advancement of Science

1776 Massachusetts Avenue, N.W., Washington, D. C. 20036—202/467/4485

FOR IMMEDIATE RELEASE
(Mailed 12/9/75)

Contact: Carol L. Rogers
202/467-4485

AAAS ANNUAL MEETING IN BOSTON TO BE ACCESSIBLE TO THE HANDICAPPED

Washington, D.C.---Physically disabled scientists and other handicapped persons interested in science will be able to participate fully in the upcoming Annual Meeting in Boston of the American Association for the Advancement of Science (AAAS). The event will mark the first time that any major scientific organization has attempted to provide such a wide array of special services for people who are in wheelchairs, who have visual or auditory disabilities, or who need assistance because of other disabilities.

The meeting, often referred to as the "world series of science," is organized around the theme "Science and Our Expectations: Bicentennial and Beyond." It is scheduled for 18-24 February 1976 in the Sheraton-Boston Hotel and the adjacent John B. Hynes Veterans Auditorium at the Prudential Center.

Professional scientific meetings have long served as a forum for reporting and discussing the latest developments in research and technology and as a means of making and renewing acquaintances with colleagues. In addition, they frequently are the place where policy decisions are made affecting the specific organizations and disciplines involved. Thus, the inaccessibility of such meetings has severely restricted handicapped scientists from fully participating in the life of their profession. Activities to assist the handicapped like those planned by AAAS for its Annual Meeting will help to remedy this situation.

M-O-R-E

Efforts to make the Boston meeting accessible are being coordinated by the AAAS Project on the Handicapped in Science. Assistance is being provided by the AAAS Meetings Office, Boston hotels, the Massachusetts Council of Organizations of the Handicapped, Massachusetts Rehabilitation Commission personnel, and other interested people and groups.

The Project will operate a resource center on the third floor of the Sheraton-Boston Hotel in Room Beacon E from 8:00 a.m. to 6:30 p.m. each day of the meeting. Many special services will be offered there, including the following:

- transportation for persons in wheelchairs to and from all sessions and to and from all public transportation terminals
- interpreters for the hearing impaired
- assistance for the visually handicapped
- repair service for wheelchairs and crutches
- special tour and sightseeing information for handicapped persons
- round-the-clock telephone service responding to emergency needs.

In addition, the Prudential Center and surrounding area is ramped for wheelchairs and the Sheraton-Boston Hotel has several rooms especially designed for persons in wheelchairs. Other Boston hotels are making special arrangements to meet the needs of the physically disabled.

Two symposia will focus the attention of the scientific community on the handicapped. "Sensory Prostheses for the Hearing Impaired: Current Status and Future Directions" will be held Wednesday afternoon, 18 February, beginning at 3:00 p.m. in Room 210 of the Hynes Auditorium. On 19 February an all-day symposium on "Science, Technology, and the Handicapped" will be held in Room Fairfax A of the Sheraton-Boston Hotel. Also, exhibits on the handicapped in science will be on view in the exposition area in the Hynes Auditorium.

This unique endeavor is part of a larger AAAS program begun several months ago by the Office of Opportunities in Science. The program plans to develop and test methods to overcome physical and communication barriers that prevent handicapped scientists from participating fully in professional meetings; develop and test ways to increase the awareness of all U.S. scientific professional associations about the education and career-related needs of their handicapped members; and explore ideas and develop a program through which AAAS and other scientific societies may enhance educational and occupational opportunities for the handicapped. The initial phase of the program is being funded through a subcontract with the George Washington University, with monies from the Rehabilitation Services Administration of the U.S. Department of Health, Education, and Welfare.

Some 180 diverse topics will be explored during the AAAS meeting, including extraterrestrial intelligence, energy resources, crime and violence, food production, health and nutrition, population, and child development. Ten public lectures by noted scientists, a major exhibition of scientific instruments and publications, a Science Film Festival, and several tours and special events will be featured. Specific details can be found in the 14 and 28 November issues of Science magazine, the 12 December issue, and the 9 and 16 January 1976 issues, or can be obtained from the AAAS Meetings Office.

All handicapped persons who plan to attend the meeting are urged to contact Martha Redden, Director of the Project on the Handicapped in Science, as soon as possible to ensure that adequate services will be available. Write her at the American Association for the Advancement of Science, Office of Opportunities in Science, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036, or call her at 202/467-4497.

#

Science, Technology, and the Handicapped

Arranged by

RICHARD H. BOLT

(Chairman of the Board, Bolt Beranek and Newman Inc.,
Cambridge, Massachusetts)

JOHN A. SWETS

(Chief Scientist, Bolt Beranek and Newman Inc.,
Cambridge, Massachusetts)

BARRY UNGER

(Lecturer in Management, Boston University, and
Executive Vice President, Kurzweil Computer Products,
Cambridge, Massachusetts)

MARTHA REDDEN

(Director, Project on the Handicapped in Science,
Office of Opportunities in Science, AAAS,
Washington, D.C.)

Thursday, 19 February 1976

Sheraton-Fairfax A

9:00 a.m. Session 1 - Technological Innovation for the Handicapped--
Research and Policy

Presiding: EDWARD KELLER (Professor of Biology, West
Virginia University, Morgantown, West Virginia)

A Reading Machine for the Blind: Bringing the Client into the Design Process

RAYMOND KURZWEIL (Pres., Kurzweil Computer Products, Cambridge,
Massachusetts) and

BARRY UNGER (Lecturer in Management at Boston University, and
Executive Vice President of Kurzweil Computer Products)

Using a Computer to Help Teach Deaf Children to Speak

RAYMOND S. NICKERSON (Vice President, Bolt Beranek and Newman
Inc., Cambridge, Massachusetts) and

KENNETH N. STEVENS (Prof. Electrical Engineering, MIT, and
Consultant to Bolt Beranek and Newman Inc., Cambridge, Massachusetts)

Electronically Aided Instruction for the Severely Physically Disabled
Non-verbal

RICHARD A. FOULDS (Engineer, Medical Rehabilitation Research and
Training Center #7, Tufts New England Medical Center, Boston,
Massachusetts)

Technology for the Handicapped: Research Needs

MAX MUELLER (Chief, Research Projects Branch, Innovation and
Development, Bureau of Education for the Handicapped, USOE,
Washington, D.C.)

Policy: Where Do We Go From Here?

DONALD SCHON (Ford Professor of Urban Studies and Policy, MIT, Cambridge, Massachusetts)

3:00 p.m. Overcoming Barriers to Handicapped Scientists

Presiding: RICHARD BOLT (Chairman of the Board, Bolt Beranek and Newman Inc., Cambridge, Massachusetts)

Eliminating Architectural and Transportation Barriers

JAMES JEFFERS (Executive Director, Architectural and Transportation Barriers Compliance Board, Washington, D.C.)

Career Barriers: Discrimination Against the Handicapped

JAMES GASHEL (Chief, Washington Office, National Federation of the Blind, Washington, D.C.)

Providing Quality Science Education for the Handicapped Student

MARTHA REDDEN (Director, Project on the Handicapped in Science, Office of Opportunities in Science, AAAS, Washington, D.C.) and
MAYNARD REYNOLDS (Director, Special Education Leadership Training Institute, University of Minnesota, Minneapolis, Minnesota)

Overcoming Barriers: Implications for Action by Professional Societies

ELIZABETH BOGGS (Theoretical Chemist, Pres'. Committee on Mental Retardation, Hampton, New Jersey)

This symposium will relate research and development of innovative technology for the handicapped to policy priorities, legal requirements, and educational needs. Handicapped scientists will participate with design and development engineers, policy and educational specialists. The goal of the arrangers is to outline a comprehensive program to increase opportunities for careers in science for the handicapped.

The symposium is part of a larger AAAS program to make the Boston meeting accessible to handicapped participants, and to develop model programs for the professional associations.

(Sponsored by AAAS Office of Opportunities
in Science and
AAAS Boston Committee)

Reservations

Hotel Rates*

Annual Meeting Boston

18-24 February 1976



The American Association for the Advancement of Science will hold its 1976 Annual Meeting in Boston, 18-24 February. The majority of sessions will be held in the Sheraton-Boston and in the John B. Hynes Veterans Auditorium. The exhibits (*Science International*) as well as AAAS registration and information desks will be located in the Hynes Auditorium. The following hotels will be used for housing:

Hotel	Single	Double	Twin	Suites**	Parking
SHERATON-BOSTON	\$25	\$36	\$36	\$65	Free 24-hour parking
Prudential Center	29	38	38	and up	for registered guests;
(No. of rooms held: 1200)	31	40	40		\$1 valet charge.
COPLEY PLAZA	\$24	\$32	\$32	\$60	Free 24-hour parking
Copley Square	28	36	36	and up	for registered guests;
(No. of rooms held: 250)	30	38	38		\$1.75 valet charge.
THE LENOX	\$24	\$31	\$31	\$75	Free overnight parking
710 Boylston Street	28	35	35		(6 pm-10 am); day-time
(No. of rooms held: 125)					parking \$3 maximum.
MIDTOWN MOTOR INN	\$24	\$32	\$32	—	Free parking for registered
220 Huntington Avenue					guests.
(No. of rooms held: 100)					
COPLEY SQUARE	\$20	\$23	\$26	\$40	Free overnight parking
47 Huntington Avenue	22	25	28	and up	(5 pm-9 am); for day-time
(No. of rooms held: 75)	24	30	30		parking, inquire at hotel.
THE COLONNADE	\$30	\$38	\$38	\$130	Free parking for registered
120 Huntington Avenue	34	42	42	and up	guests.
(No. of rooms held: 150)					

*Per day; add 5.7% for Massachusetts State Room Tax. Charges for rollaway beds and cots vary between \$5 and \$7, depending on hotel. Children under age 12 accommodated free in same room with parents at Midtown Motor Inn and Colonnade; under age 14 at Copley Square; age limit higher at Sheraton, Copley Plaza and Lenox.

**One-bedroom parlor suites; rates for larger suites available upon request. Deluxe accommodations available at Sheraton-Boston in all categories at higher rates.

NOTE: If room rate specified is not available, the next available higher rate will be assigned. Confirmation will come to you directly from the hotel. You should notify the hotel of any change in your reservation. Assignment is delayed if any information is omitted.

HOTEL RESERVATIONS FORM

(Reservations received after 4 February cannot be assured)

CHOICE OF HOTEL: First _____ Second _____

ROOM: ☐ Single ☐ Double ☐ Twin ☐ Suite Preferred Rate \$ _____

Please indicate any special accommodation needs due to a handicap _____

ARRIVAL: Date _____; _____ a.m. _____ p.m. Be sure to list definite arrival and

DEPARTURE: Date _____; _____ a.m. _____ p.m. Hotel reservations will be held only until 6 p.m. unless otherwise specified.

NAMES AND ADDRESSES OF ALL OCCUPANTS OF ROOM

Name _____ Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

Name _____ Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

Individual Requesting Reservations _____

Mail to: AAAS Housing Bureau,
900 Boylston Street, Boston, Mass. 02115



**Annual Meeting
Boston
18-24 February 1976**

**Advance
Registration Form
(H)**

Enclosed is:

- ☐ \$20 Single Registration Fee ☐ \$30 Double Registration Fee (attendee and spouse)
☐ \$10 Single Student Registration Fee ☐ \$15 Double Student Registration Fee (student and spouse)
☐ \$10 One-Day Registration Fee _____
(Specify Day)

**Program and badge will be mailed to each registrant in late January.
Registrations received after 30 January will be held at the AAAS Information Booth.**

NAME OF REGISTRANT: _____
(Last Name) (First and Initial)

NAME OF SPOUSE: _____
(Last Name) (First and Initial)

REGISTRANT'S
MAILING ADDRESS: _____
[For receipt of program(s) and badge(s)] (Street) (City/State) (Zip Code)

ADDITIONAL REGISTRANTS: _____
(List full name and mailing address)

REGISTRANT'S
INSTITUTION OR COMPANY: _____

(City) (State) (Zip Code)

CONVENTION ADDRESS: _____
(Where you can be reached) (Hotel or Street Address)

Check days attending: Wed Thu Fri Sat Sun Mon Tue
☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ Please check here if you need special services due to handicap. We will contact you prior to the meeting.

**Mail to: American Association for the Advancement of Science, Dept. R,
1515 Massachusetts Ave., NW, Washington, D.C. 20005**

**SURVEY OF ATTENDEES
Annual Meeting, Boston, 18-24 February 1976**

Your answers to the following questions will help us in planning future AAAS Annual Meetings. Please complete the following form and either return it with your registration form or send in separately (to the same address) if you wish to respond anonymously (in any case, the two forms will be processed separately).

Principal Professional Interest

- 11 ☐ Physical, mathematical
12 ☐ Biological, medical
13 ☐ Engineering
14 ☐ Social, behavioral
15 ☐ Science policy
16 ☐
(other)

Principal Professional Activity

- 21 ☐ Teaching, education
22 ☐ Health practice
23 ☐ Other practice, consulting
24 ☐ Research, development
25 ☐ Administration
26 ☐
(other)

Institutional Affiliation Type

- 31 ☐ University, 4-year college
32 ☐ Other educational
33 ☐ Industrial, commercial
34 ☐ Other private
35 ☐ Government
36 ☐
(other)

Highest Educational Level

- 41 ☐ Doctoral Degree
42 ☐ Master's Degree
43 ☐ Other professional
44 ☐ Bachelor's Degree
45 ☐
(other)

Age

- 51 ☐ Under 26 years
52 ☐ 26 to 35 years
53 ☐ 36 to 45 years
54 ☐ 46 to 55 years
55 ☐ 56 to 65 years
56 ☐ Over 65 years

Distance Traveled to Meeting

- 61 ☐ Under 51 miles
62 ☐ 51 to 100 miles
63 ☐ 101 to 200 miles
64 ☐ 201 to 500 miles
65 ☐ 501 to 1000 miles
66 ☐ Over 1000 miles

Membership: in AAAS ☐ 71, in Affiliate ☐ 72, (specify) _____, Neither ☐ 73

Science and Our Expectations:

Bicentennial and Beyond

What have been our expectations for science—from science—and what have they become? To unlock the secrets of nature and of ourselves, to plumb the limits of the universe and unravel the mysteries of the origin of life; perhaps to feed the hungry and heal the sick, or to better understand our way in the world we have made; all of these and many others.

Come join with us in Boston in next our bicentennial year and let us explore science and our expectations. We have a large and richly varied program of some 180 symposia running for a full week (18–24 February) in excellent facilities at the Sheraton-Boston Hotel and the adjoining John B. Hynes Veterans Auditorium in Boston's Prudential Center.

The program considers the past experience, the present realities, and the future possibilities in the *Perspectives on Science*, the *Uses of Science*, and the *Frontiers of Science*. Historical perspectives on the

growth of science from the scientific milieu of the 18th century; cultural perspectives from Latin America, Afro-Americans, England, Japan, and Native Americans; ethical perspectives on scientific freedom and responsibility and values in science and engineering; as well as the perspectives from pedagogy and from the aspirations of those who seek opportunities in science.

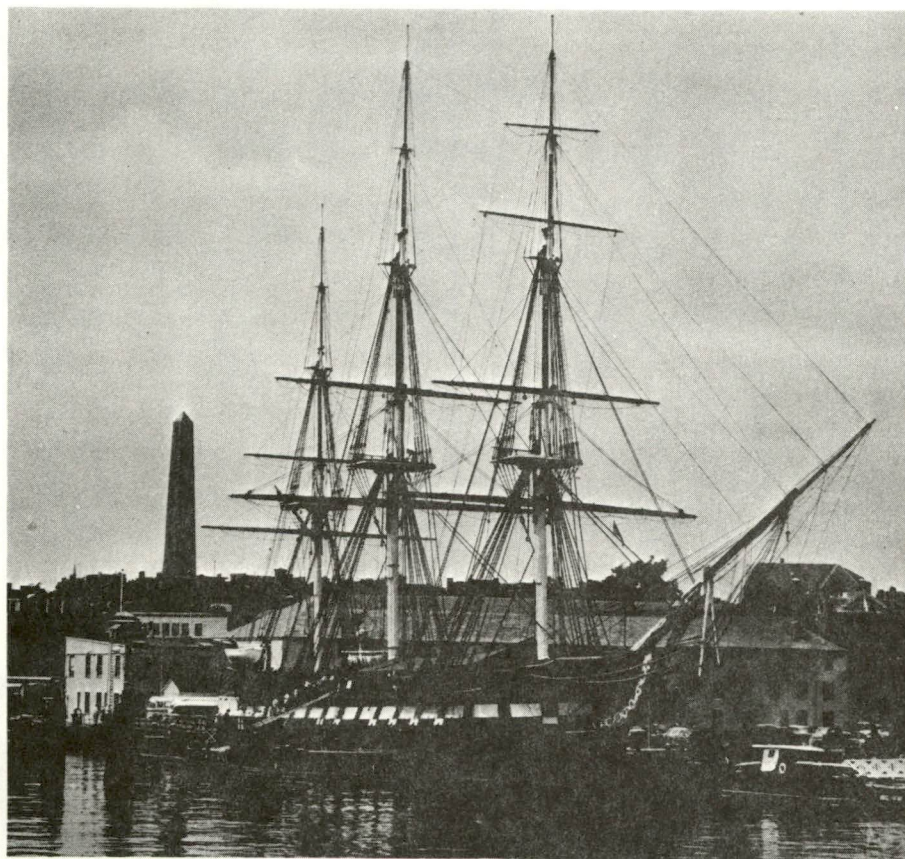
The uses of science for health care, including the problems of the handicapped, occupational health problems, and malnutrition and famine; for food production and use; for improving habitation and our environments for living; for developing resources for energy; as well as the implications of the uses of science and the policy problems which are entailed, will be discussed.

The frontiers of the physical sciences, physics, chemistry, astronomy, and the terrestrial sciences; of the biological sciences; of the medical sciences, infections, neural

functions, cancer, genetics, uses of computers; of anthropology and the social and political sciences, and of the behavioral sciences, including cultural studies, population problems, religion, class equality, crime, child development, intelligence, learning, and much more will be presented.

There will be ten public lectures on a host of interesting topics, including talks by: Derek Bok, J. R. Heirtzler, Gyorgy Kepes, Gerald Holton, Margaret Mead, Joseph Fruton, Andrew Brimmer, and Bradford Washburn, some in the mid-afternoon and others in the evening. We will again have the *Science Film Festival*, augmented this year with a Saturday afternoon of feature films; as well as *Science International*, a greatly enlarged exposition of scientific books and instruments for your perusal.

It is singularly appropriate for our bicentennial-year meeting to be held in Boston, the cradle of the American Revolution and, in a very real sense, the cradle of American science. We have been most fortunate in having an extremely active Boston Advisory Committee under the joint chairmanship of Gerhard Bleicken and Howard Johnson, which has arranged a number of excellent technical programs, tours, and special events, including a special concert by the Boston "Pops" (under the direction of the renowned Arthur Fiedler) for Friday night, and a concert by the New England Conservatory Ragtime Ensemble (playing Scott Joplin under the direction of Gunther Schuller) for Sunday afternoon. In addition, we will have a series of stimulating educational exhibits at the Boston Museum of Science, as well as tours of the very many cultural and scientific facilities in the greater Boston area. More information about these tours and events, and forms for ordering tickets will appear in future issues of *Science*. Meanwhile we urge you to fill out the housing and registration forms and ensure your place at a major scientific and cultural event.—ARTHUR HERSCHMAN



U.S. Frigate *Constitution* (Old Ironsides). [Massachusetts Department of Commerce and Development]



Annual Meeting
Boston
18-24 February 1976



Annual Meeting Boston

18-24 February 1976

PRELIMINARY PROGRAM

Headquarters Hotel is the **Sheraton-Boston**, located in Boston's Prudential Center; it accommodates the public lectures, most sessions, the AAAS Office, an Information and Message Center, the Newsroom, the Handicapped in Science Office, and a Meeting Hospitality Room. The second floor of the adjacent **John B. Hynes Veterans Auditorium** contains AAAS Registration and Information, some sessions, *Science International* (exhibits), and the AAAS *Science Film Festival*. See Boston map page 659.

Science and Our Expectations: Bicentennial and Beyond

Co-Chairmen

Gerhard D. Bleicken
(Chairman of the Board,
John Hancock Mutual Life Insurance Company)

Howard W. Johnson
(Chairman of the Corporation,
Massachusetts Institute of Technology)

Vice Chairmen

Derek C. Bok
(President,
Harvard University)
Mrs. Norman L. Cahners
(Trustee)

Richard H. Bolt
(Chairman of the Board,
Bolt Beranek & Newman, Inc.)
Bradford Washburn
(Director, Museum of Science)

AAAS PUBLIC LECTURES

- AAAS Public Lecture (18 Feb., 1:45 p.m.).
Derek C. Bok (President, Harvard University).
Topic to be announced.
- AAAS Public Lecture (18 Feb., 8:30 p.m.).
J. R. Heirtzler (Chairman, Department of Geology and
Geophysics, Woods Hole Oceanographic Institution).
Exploration of the Mid-Atlantic Rift.
- AAAS Public Lecture (19 Feb., 1:45 p.m.).
Speaker and topic to be announced.
- National Geographic Society Public Lecture (19 Feb.,
8:30 p.m.).
Bradford Washburn (Director, The Museum of Science,
Boston).
Mapping the Grand Canyon.
- Phi Beta Kappa Public Lecture (20 Feb., 1:45 p.m.).
Gerald Holton (Professor of Physics, Jefferson Physical
Laboratory, Harvard University).
The Scientific Imagination.

- AAAS Retiring President's Public Lecture (21 Feb., 8:30
p.m.).
Margaret Mead (Curator Emeritus, American Museum of
Natural History).
Towards a Human Scientist.
- George Sarton Memorial Public Lecture (22 Feb., 1:45
p.m.).
Joseph S. Fruton (Eugene Higgins Professor of Biochemistry,
Yale University).
The Emergence of Biochemistry.
- AAAS Public Lecture (22 Feb., 8:30 p.m.).
Speaker and topic to be announced.
- AAAS Public Lecture (23 Feb., 1:45 p.m.).
Andrew F. Brimmer (Thomas Henry Carroll Ford Founda-
tion Visiting Professor, Graduate School of Business Ad-
ministration, Harvard University).
*Income Distribution and Economic Equity in the United
States.*
- AAAS Public Lecture (23 Feb., 8:30 p.m.).
Gyorgy Kepes (Director Emeritus, Center for Advanced Vis-
ual Studies, Massachusetts Institute of Technology).
Art of a New Scale.

I. FRONTIERS OF SCIENCE

A. General Interest

- **The Limits of the Universe: Is It Open or Closed? (18 Feb.).**
Arranged by Frank Drake (Cornell University).
- **The Viking Mars Science Experiments: Expectations (19 Feb.).**
Arranged by George W. Morgenthauer (Martin Marietta Corporation, Denver).
- **Extraterrestrial Intelligence (ETI) (20 Feb.).**
Arranged by Carl Sagan (Cornell University).
- **The Frontiers of the Natural Sciences (22 Feb.).**
Arranged by Rolf M. Sinclair (National Science Foundation).
- **The Early History of the Earth and of Life (23 Feb.).**
Arranged by Preston Cloud (University of California, Santa Barbara) and Roger Revelle (Harvard University).
- **Science for the Naked Eye: Or the Physics of Everyday Experience, III (24 Feb.).**
Arranged by Rolf M. Sinclair.

B. Physical Science

- **Progress in the Hydrospheric Sciences in America: A Bicentennial Review (18 Feb.).**
Arranged by William C. Ackermann (Illinois State Water Survey, Urbana).
- **Progress of the Atmospheric Sciences in America: A Bicentennial Review (19 Feb.).**
Arranged by William W. Kellogg (National Center for Atmospheric Research).
- **The Meteorology and Chemistry of the Stratosphere (19 Feb.).**
Arranged by James P. Friend (Drexel University).
- **Coal Science and Our National Expectations (20 Feb.).**
Arranged by Henry A. McGee, Jr. (Virginia Polytechnic Institute and State University).
- **Estuaries, Geophysics, and the Environment (21 Feb.).**
Arranged by Pembroke J. Hart (National Academy of Sciences).
- **The Magnetically Varying Sun and Its Effects on Terrestrial Climate (22 Feb.).**
Arranged by Robert W. Noyes (Center for Astrophysics, Cambridge, Mass.).
- **High Energy Radiation in the Universe, X- and Gamma-rays (23 Feb.).**
Arranged by Paul Gorenstein (Center for Astrophysics, Cambridge, Mass.).

- **Fifty Years of Quantum Mechanics (23 Feb.).**
Arranged by Rolf M. Sinclair (National Science Foundation).
- **Severe Storms and Society (24 Feb.).**
Arranged by Louis J. Battan (University of Arizona, Tucson).
- **Geology of Terrestrial Planets: An Overview (24 Feb.).**
Arranged by Baerbel K. Lucchitta (U.S. Geological Survey, Flagstaff, Ariz.).

C. Biological Science

- **Deterministic Versus Stochastic Models in Biology (19 Feb.).**
Arranged by Daniel L. Solomon (Cornell University) and Charles F. Walter (University of Houston).
- **Communication in Biological Systems (20 Feb.).**
Arranged by Hans Laufer (University of Connecticut) and K. Maramorosch (Rutgers University).
- **Biological Rhythms in Activity and Interaction (21 Feb.).**
Arranged by Eliot D. Chapple (Goldwater Memorial Hospital, New York, N.Y.).
- **Guaranteeing Our Wildlife Heritage in 2076 (22 Feb.).**
Arranged by Donald J. Zinn (University of Rhode Island).
- **Zoos and Wildlife Conservation (23 Feb.).**
Arranged by William G. Conway (New York Zoological Society).
- **Some Mathematical Questions in Biology (24 Feb.).**
Arranged by Simon A. Levin (Cornell University).

D. Medical Science

- **Bacterial Infections: Vaccines Versus Antibiotics (18 Feb.).**
Arranged by Robert Austrian (University of Pennsylvania School of Medicine).
- **Medications and the Patient (19 Feb.).**
Arranged by Raymond Jang (University of British Columbia).
- **The Role of Controlled Therapeutic Investigations in the Nation's Health Program (19 Feb.).**
Arranged by Marvin Zelen (State University of New York at Buffalo).
- **Neural Metabolism, Drugs, and Aging (20 Feb.).**
Arranged by Caleb E. Finch (University of Southern California).
- **Priorities in Cancer Research: Occupational and Environmental Carcinogenesis (20 Feb.).**
Arranged by Allen E. Silverstone (Massachusetts Institute of Technology Center for Cancer Research).
- **Medical, Ethical, and Social Consequences of Wide-**

spread Use of Intensive Care and Resuscitation Procedures (21 Feb.).

Arranged by Harold H. Hillman (University of Surrey, England).

- **Genetics and Social Policy (22 Feb.).**
Arranged by Jon Beckwith (Harvard Medical School).
- **Biomedical Research: A View from the Outside (23 Feb.).**
Arranged by Barbara J. Culliton and William A. Blanpied (American Association for the Advancement of Science).
- **Computers and Medical Knowledge: Extending the Availability and Use of Knowledge in Medicine (23 Feb.).**
Arranged by Vladimir Slamecka (Georgia Institute of Technology)
- **Randomization and Therapeutic Investigations in Cancer (24 Feb.).**
Arranged by Marvin Zelen.

E. Anthropology

- **Blood Types and the Mystery of the Origins of Amerindians (18 Feb.).**
Arranged by Marcel Roche (Instituto Venezolano de Investigaciones Científicas, Caracas, Venezuela).
- **Population Studies: The Techniques and Prospects for the Future (19 Feb.).**
Arranged by David Mandelbaum (University of California, Berkeley) and Priscilla Reining (American Association for the Advancement of Science).
- **Fifty Years of Anthropology (20 Feb.).**
Arranged by Ruth L. Bunzel (Columbia University).
- **Nonverbal Behavior in American Society (21 Feb.).**
Arranged by Nelson A. Ossorio (Ramapo College of New Jersey) and John R. Aiello (Rutgers University).
- **The Coevolution of Expressive, Productive, and Cultural Systems (22 Feb.).**
Arranged by Alan Lomax (Columbia University).
- **A Small Child's Alchemy: Air, Water, Mud, and Fire (22 Feb.).**
Arranged by Robert W. Kates (Clark University).
- **On the Problem of Reconstructing a Culture: Of What Is "A Culture" a Model? (23 Feb.).**
Arranged by James Silverberg (University of Wisconsin, Milwaukee) and Marvin D. Loflin (University of Nevada, Las Vegas).
- **The Wider Applicability of Anthropological Methodology (24 Feb.).**
Arranged by Jean K. Boek (National Graduate University, Washington, D.C.).

F. Social and Political Science

- **The Integration of the Natural and Social Sciences (18 Feb.).**
Arranged by Edgar Taschdjian (Society for General Systems Research).

- **Social Scientific Methods in the Study of Religion: Milestones of the Past or Signposts for the Future? (19 Feb.).**
Arranged by Gillian Lindt (Columbia University).

- **Geographic Contributions to Knowledge of Innovation Diffusion Processes (20 Feb.).**
Arranged by Lawrence A. Brown (Ohio State University).
- **Trends in Social and Economic Stratification in the United States (20 Feb.).**
Arranged by Seymour Martin Lipset (Stanford University).
- **Federalism Reconsidered in America's Third Century (21 Feb.).**
Arranged by Werner Z. Hirsch (University of California, Los Angeles).
- **Work in America: Changing Roles (22 Feb.).**
Arranged by Janet Welsh Brown (American Association for the Advancement of Science).

- **Client-Focused Feedback Modeling of Social Systems (23 Feb.).**
Arranged by Kenan E. Sahin (University of Massachusetts) and Richard Wright (Georgia Institute of Technology).
- **Crime: What We Know and What We Need to Know (23 Feb.).**
Arranged by Margaret A. Zahn (Temple University).
- **The Anatomy of Violence in Today's Society (24 Feb.).**
Arranged by Robert W. Wesner (Psychological Dimensions, Inc., New York, N.Y.).

G. Behavioral Science

- **Attitudes Toward Children and Child-Rearing in the United States: An Historical Commentary (18 Feb.).**
Arranged by Lewis P. Lipsitt (Brown University).
- **The Effect of Early Rearing Conditions on the Child's Development (19 Feb.).**
Arranged by Jerome Kagan (Harvard University).
- **Psychoanalytic Contributions to the Parenting Function (19 Feb.).**
Arranged by Martin A. Berezin (Harvard Medical School).
- **Adolescent-Adult Role Socialization, Family Planning, and Health Professional Advocates (20 Feb.).**
Arranged by Harriet H. Werley (College of Nursing, University of Illinois).
- **The Future of Neurology and Pharmacology of Learning and Behavior: Social Issues in the Application of New Techniques (20 Feb.).**
Arranged by Stanley S. Robin and James J. Bosco (Western Michigan University).
- **Intelligence and Performance: Newer Conceptualizations and Relevance for Behavioral Measures of Success (21 Feb.).**
Arranged by Robert Perloff (University of Pittsburgh).

- **Race, Genetics, and Intelligence (21 Feb.).**
Arranged by Ned J. Block (Massachusetts Institute of Technology).
- **Species-Specific Learning (22 Feb.).**
Arranged by Alma S. Wittlin (Biopsychological Institute for Education, Palo Alto, Calif.).
- **The Role of Anticipation in Human Affairs (23 Feb.).**
Arranged by Maurice R. Green (Lincoln Hospital, Bronx, N.Y.).
- **Biofeedback and Self-Control: An Enlightened Era? (23 Feb.).**
Arranged by Robert S. Goyer (Ohio University).
- **How Times Have Changed: What Hypnosis of Today Can Lead To, Tomorrow (24 Feb.).**
Arranged by Kay F. Thompson (Pittsburgh School of Dental Medicine).

II. USES OF SCIENCE

A. General Interest

- **The Future of Health Care (18 Feb.).**
Arranged by Irving M. London (Massachusetts Institute of Technology).
- **Science, Technology, and the Handicapped (19 Feb.).**
Arranged by Richard H. Bolt and John A. Swets (Bolt Beranek & Newman, Inc., Boston, Mass.), Barry Unger (Boston University), and Martha Redden (American Association for the Advancement of Science).
- **Science Policy and Social Development (20 Feb.).**
Arranged by Jerome B. Wiesner (Massachusetts Institute of Technology).
- **Catastrophies: Analyses and Solutions (21 Feb.).**
Arranged by Stephen H. Schneider (National Center for Atmospheric Research) and Walter Orr Roberts (Aspen Institute for Humanistic Studies).
- **The Mouth: Where It All Begins (22 Feb.).**
Arranged by Paul E. Boyle (Harvard School of Dental Medicine).
- **Social, Cultural, and Technological Connections of Acoustics (23 Feb.).**
Arranged by Arthur H. Benade (Case Western Reserve University).
- **Food, Nutrition, and Population Policy (24 Feb.).**
Arranged by Roger Revelle (Harvard University).

B. Health

- **Sensory Prostheses for the Hearing Impaired: Current Status and Future Directions (18 Feb.).**
Arranged by James H. Abbs (University of Washington).
- **Malnutrition, Behavior, and Social Organization (19 Feb.).**
Arranged by Lawrence S. Greene (Children's Hospital of Philadelphia).

- **Ecology of Famine (20 Feb.).**
Arranged by Frederick B. Bang and Dwain W. Parrack (Johns Hopkins University).
- **Elemental Pathways from Rocks to Man (21 Feb.).**
Arranged by Helen L. Cannon (U.S. Geological Survey, Denver, Colo.).
- **The Biosocial Aspects of Breast-Feeding (21 Feb.).**
Arranged by Dana Raphael (The Human Lactation Center, Ltd., Westport, Conn.) and Solomon H. Katz (University of Pennsylvania).
- **Mortality, Population, and the National Economy (21 Feb.).**
Arranged by M. Harvey Brenner (Johns Hopkins University).
- **An Introduction to Occupational Health and Safety (22 Feb.).**
Arranged by Kostia Bergman (Northeastern University).
- **Statistics and Environmental Factors in Health (22 Feb.).**
Arranged by Donald L. Thomsen, Jr. (SIAM Institute for Mathematics and Society, New Canaan, Conn.).
- **Health Status Indexes—Their Role in Tomorrow (23 Feb.).**
Arranged by Pennifer Erickson (National Center for Health Statistics, Rockville, Md.).
- **Some Recent Advances in Statistical Science (23 Feb.).**
Arranged by Emanuel Parzen (State University of New York at Buffalo).
- **Diet and Cancer (24 Feb.).**
Arranged by Ruth W. Shearer (Fred Hutchinson Cancer Research Center, Seattle, Wash.).
- **The Role of Fiber in Human Nutrition (24 Feb.).**
Arranged by Ruth Schwartz (Cornell University).

C. Food

- **Feasibility and Impact of Urban Food Production (18 Feb.).**
Arranged by Stuart M. Leiderman (Washington University).
- **Human Life in Arid Lands: Food and Agriculture (19 Feb.).**
Arranged by Walter Orr Roberts (Aspen Institute for Humanistic Studies).
- **Climate and Plant Productivity (20 Feb.).**
Arranged by E. R. Lemon (Cornell University).
- **Crop Productivity—Research and Imperatives (20 Feb.).**
Arranged by Marvin Lamborg (Charles F. Kettering Research Laboratory, Yellow Springs, Ohio).
- **Nitrogen and Phosphorus: Food Production and the Environment (21 Feb.).**
Arranged by Raymond C. Loehr (Cornell University).

- **Malthus Thwarted—So Far (22 Feb.).**
Arranged by James G. Horsfall (The Connecticut Agricultural Experiment Station, New Haven).
- **Energy and Food Production: Contemporary Technology and Alternatives (23 Feb.).**
Arranged by George Salzman (University of Massachusetts).
- **Food Resources: Indigenous, Nutritious, Unappreciated, and Unexploited (24 Feb.).**
Arranged by Marjorie Grant Whiting (U.S. Public Health Service [Ret.]).
- **Plant Germplasm Resources—American Independence, Past and Future (24 Feb.).**
Arranged by Garrison Wilkes (University of Massachusetts).

D. Habitation and Development

- **Early Promises: Geographical Views of American Development (18 Feb.).**
Arranged by Michael P. Conzen (Boston University).
- **Technology, Public Policy, and Rural America (20 Feb.).**
Arranged by Vary T. Coates (George Washington University).
- **The Role of Rural Technology in Improving the Economic Development of Less-Developed Countries (21 Feb.).**
Arranged by Allen D. Jedlicka (University of Northern Iowa) and Dilmus D. James (University of Texas, El Paso).
- **Indoor Air Quality (21 Feb.).**
Arranged by Karl H. Raab (S.T.O.P. [Society to Overcome Pollution], Montreal, Que.).
- **Art, Science, and Technology in Shaping the Environment of the Future (22 Feb.).**
Arranged by Arnold Berleant (Long Island University).
- **Where to Live? Policy Implications of Research on Habitat (23 Feb.).**
Arranged by Irene Tinker and Priscilla Reining (American Association for the Advancement of Science).
- **Geography of Economic Development (23 Feb.).**
Arranged by Geoffrey Bannister and Lakshman S. Yapa (Boston University).
- **Telecommunications, Transportation, and Urban Development (24 Feb.).**
Arranged by Jack M. Nilles (University of Southern California).

E. Energy

- **The Optimal Use of Nonrenewable Energy Resources (18 Feb.).**
Arranged by Michael D. Yokell (Washington State University).
- **Energy Policy and the Future of Nuclear Power: Demand, Resources, Alternatives, and Evaluating the Debate (19–20 Feb.).**
Arranged by Richard A. Scribner (American Association

for the Advancement of Science) and Benjamin Cooper (Committee on Interior and Insular Affairs, U.S. Senate).

- **Solar Energy: An Interdisciplinary Societal Opportunity (21 Feb.).**
Arranged by Ronal W. Larson (Georgia Institute of Technology).
- **The Alaska Pipeline (22 Feb.).**
Arranged by Robert W. Hiatt and Keith B. Mather (University of Alaska).
- **Exploration for Hydrocarbons (23 Feb.).**
Arranged by Franklyn K. Levin (Exxon Production Research Company, Houston, Tex.).
- **Oil from the Oceans: Premises and Prospects (23 Feb.).**
Arranged by Susan B. Peterson (Woods Hole Oceanographic Institution).
- **Environmental Impact of Coal Mining and Conversion, Northern Great Plains (24 Feb.).**
Arranged by Arnold J. Silverman (University of Montana).
- **Case Studies in Regional Energy Planning (24 Feb.).**
Arranged by William A. Blanpied (American Association for the Advancement of Science).

F. Science and Technology Implications

- **Putting Science to Work Through University/Industry Interaction (18 Feb.).**
Arranged by John C. Johnson (Pennsylvania State University).
- **Vernaculars of Peace: Exploring Levels of Communication on Foreign Policy (19 Feb.).**
Arranged by Grant G. Hilliker (Consortium on Peace Research, Education and Development).
- **Paths into the Future: The United States as a Force for War and Peace After Vietnam (19 Feb.).**
Arranged by Davis B. Bobrow (University of Maryland).
- **Science and Social Risk (20 Feb.).**
Arranged by Bruce A. Bolt (University of California, Berkeley).
- **Impact of Operations Research on Industrial Management (20 Feb.).**
Arranged by Burton V. Dean (Case Western Reserve University) and George K. Chacko (University of Southern California).
- **Research for the People (21 Feb.).**
Arranged by Jonathan King (Massachusetts Institute of Technology).
- **Man-Computer Relations: What Will They Be? (22 Feb.).**
Arranged by John D. Gould (IBM Thomas J. Watson Research Center).
- **The Perishing Publishing Prospect for Scientific Authors (22 Feb.).**
Arranged by Harold F. Osborne (Veterans Administration, Washington, D.C.).

- **America: The First Information Society (23 Feb.).**
Arranged by Paul Polishuk (U.S. Department of Commerce).
- **The Engineering of Public Safety: Protect or Perish (24 Feb.).**
Arranged by F. Karl Willenbrock (National Bureau of Standards).

G. Science and Technology Policy

- **Science and the Limitations of Decision Technology (18 Feb.).**
Arranged by Ernst R. Habicht, Jr. (Environmental Defense Fund, Setauket, N.Y.) and Helen Hill Updike (University of Massachusetts).
- **The Uses of Social Science for Social Policy (19 Feb.).**
Arranged by Joseph H. Helfgot (Boston University).
- **Can Science Be Measured? Problems in the Use of Science Indicators (19 Feb.).**
Arranged by Arnold Thackray (University of Pennsylvania).
- **The Effect of Government Antitrust Action and Regulation on Technological Innovation: The Issues (20 Feb.).**
Arranged by Richard N. Foster (McKinsey & Co., New York, N.Y.).
- **Science, Technology, and Society: A Field of Study (20 Feb.).**
Arranged by Ezra D. Heitowit (Cornell University).
- **Policy Implementation (21 Feb.).**
Arranged by William Gorham (The Urban Institute, Washington, D.C.) and Erwin C. Hargrove (Brown University).
- **Philosophy of Technology: Methodological Guidelines (21 Feb.).**
Arranged by Paul T. Durbin (University of Delaware).
- **Research-Based Science Policy (22 Feb.).**
Arranged by William H. Gruber (Massachusetts Institute of Technology).
- **Roles for Scientists and Engineers in Congressional Energy Policy-Making (22 Feb.).**
Arranged by Richard A. Scribner (American Association for the Advancement of Science).
- **Evaluating Federal R&D Policy (23 Feb.).**
Arranged by John M. Logsdon (George Washington University).
- **Social Utility Measurements for Technological Endeavors (23 Feb.).**
Arranged by Joseph G. Wohl (The MITRE Corporation).
- **Science and the State Legislative Process (24 Feb.).**
Arranged by Frederick C. Nelson (Tufts University).

III. PERSPECTIVES ON SCIENCE

A. General Interest

- **Planning for the Future: Limits and Prospects (18 Feb.).**
Arranged by Edwin P. Hollander (State University of New York at Buffalo) and Daniel Rich (University of Delaware).
- **Science and Art (19 Feb.).**
Arranged by Rolf M. Sinclair (National Science Foundation).
- **Scientific Communications and the Advancement of Science (19 Feb.).**
Arranged by Ruth M. Davis (National Bureau of Standards) and Joel D. Goldhar (National Science Foundation).
- **Great Women in Science (20 Feb.).**
Arranged by Ruth M. Davis.
- **Science as Drama (21 Feb.).**
Arranged by Judith Wechsler (Massachusetts Institute of Technology), Howard J. Lewis and Norman Metzger (National Academy of Sciences).
- **Science and Values (21 Feb.).**
Arranged by Harvey Brooks (Harvard University).
- **Science and Anti-Science (22 Feb.).**
Arranged by L. Vaughn Blankenship (National Science Foundation).
- **The Scientists' Interface with the Press: Who Carries the Burdens? (23 Feb.).**
Arranged by Homer J. Hall (American Institute of Chemists).
- **Science and Society in the 18th Century and in the Future (24 Feb.).**
Arranged by Magnus Pyke (British Association for the Advancement of Science, London).

B. Ethical Perspectives

- **Human Values in Engineering (18 Feb.).**
Arranged by T. Paul Torda (Illinois Institute of Technology).
- **Ethics and the Corporate Scientist (19 Feb.).**
Arranged by Robert J. Baum (National Science Foundation).
- **Roles for Scientific Societies with Regard to Issues of Scientific Freedom and Responsibility (20 Feb.).**
Arranged by William A. Blanpied (American Association for the Advancement of Science).
- **Literary Modes in the Practice of Science (20 Feb.).**
Arranged by Joseph W. Meeker (Athabasca University, Edmonton, Canada).
- **Transdisciplinary Studies in Science and Values (21 Feb.).**
Arranged by William A. Blanpied.

*For information about tours and special events
see Science, 28 November 1975*

C. Cultural Perspectives

- **Science and Technology—Our Afro-American Prospective (18 Feb.).**
Arranged by Kathleen J. Prestwidge (Bronx Community College).
- **Science and Technology in Brazil: Past, Present, and Future (19 Feb.).**
Arranged by Oscar Sala (Brazilian Society for the Progress of Science, São Paulo).
- **Intercultural Relations Between Mexico and the United States (20 Feb.).**
Arranged by Fernando Cámara (National Institute of Anthropology and History, Mexico).
- **Public Conception of Science and Perspectives on Current Crucial Problems in Japan (22 Feb.).**
Arranged by Keiko Nakamura (Mitsubishi-Kasei Institute of Life Sciences, Tokyo).
- **Unfinished Business: 200 Years of American Indian Development (22 Feb.).**
Arranged by Philleo Nash (American University).
- **Health Science Education as Applied to National Needs (23 Feb.).**
Arranged by Mehdi Tavassoli (Scripps Clinic and Research Foundation).

D. Historical Perspectives

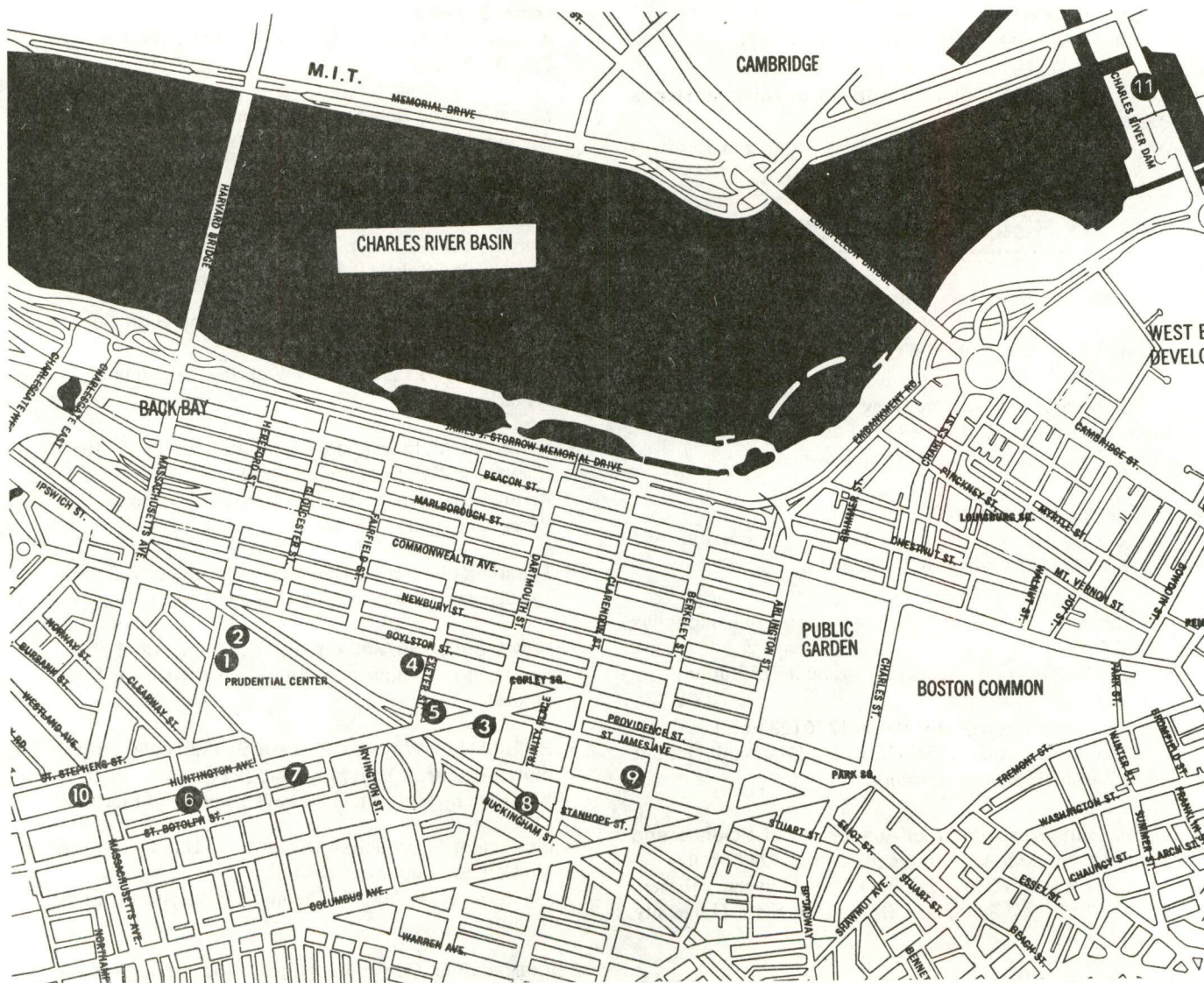
- **American Mathematics: Retrospect and Prospect (18 Feb.).**
Arranged by Arnold Wendt (Western Illinois University).
- **Social History and Archaeology of the 17th and 18th Centuries in the United States (19 Feb.).**
Arranged by James F. Deetz (Brown University).
- **Science and Revolution (20 Feb.).**
Arranged by Thomas F. Glick (Boston University) and Everett Mendelsohn (Harvard University).
- **The Sciences in America: A Bicentennial Retrospective (21–23 Feb.).**
Arranged by Nathan Reingold (Smithsonian Institution).
- **Climate in the United States Since 1776 (23 Feb.).**
Arranged by J. Murray Mitchell, Jr. (National Oceanic and Atmospheric Administration).
- **History of the Association of Academies of Science and of Some Individual Academies of Science (24 Feb.).**
Arranged by John H. Melvin (Ohio State University [Emeritus]) and Franz H. Rathmann (Moorhead State University, Minn.).
- **Biology and the American Public—Then and Now (24 Feb.).**
Arranged by Charlotte M. Porter (American Museum of Natural History).

E. Education

- **Women and Mathematics (18 Feb.).**
Arranged by Lynn H. Fox (Johns Hopkins University).
- **Environmental Education's New Audience and New Communication (18 Feb.).**
Arranged by Richard L. James (Schuylkill Valley Nature Center, Philadelphia, Pa.).
- **Energy and Environmental Education (19 Feb.).**
Arranged by John M. Fowler (National Science Teachers Association).
- **Current Practices in Environmental Education (19 Feb.).**
Arranged by Ronald J. Raven (State University of New York at Buffalo).
- **Science Education Amidst Educational Policies (20 Feb.).**
Arranged by Arthur H. Livermore, Joseph M. Dasbach, and Don I. Phillips (American Association for the Advancement of Science).
- **Can We Develop a Reliable Applied Science of Education? (21 Feb.).**
Arranged by Joseph I. Lipson (University of Mid-America, Lincoln, Nebr.).
- **Museums and Science Education (22 Feb.).**
Arranged by William A. Blanpied (American Association for the Advancement of Science).
- **College Anyone, College Everyone, or College at All in Century III? (22 Feb.).**
Arranged by Robert B. Collagan (Morgan State University).
- **Research Techniques and Reports by High School Science Students (22 Feb.).**
Arranged by Frank Starr (Waterloo Community Schools, Waterloo, Iowa).
- **Symbolic Mathematical Computation: Its Potential for Science and Education (22 Feb.).**
Arranged by James H. Griesmer (IBM Thomas J. Watson Research Center).
- **Teaching of Science-Related Social Issues (23 Feb.).**
Arranged by Laura C. Trout (Indiana University).
- **New Frontiers in Mathematics Education (23 Feb.).**
Arranged by William M. Fitzgerald (Michigan State University).
- **Birth of New Ways to Raise a Scientifically Literate Society: Research That May Help (24 Feb.).**
Arranged by Mary Budd Rowe (University of Florida).
- **Innovative Approaches Currently in Use in Undergraduate Science Education (24 Feb.).**
Arranged by Robert A. Bernoff (Pennsylvania State University).
- **International Communications: The Foreign Language Requirements for the Ph.D. Degree in the Sciences (24 Feb.).**
Arranged by Franz H. Rathmann (Moorhead State University, Minn.).

F. Opportunities

- **Minorities in Science (19 Feb.).**
Arranged by Percy Russell (University of California at San Diego).
- **Problems of Minorities at Majority Institutions (19 Feb.).**
Arranged by Francine B. Essien (Rutgers University).
- **Public Policy and Biomedical and Behavioral Training: Effective Development of Existing Potential (19 Feb.).**
Arranged by Vijaya L. Melnick (Federal City College) and Cora B. Marrett (University of Wisconsin).
- **Financial Support for Minority Scientific Activity in Education and Research (20 Feb.).**
Arranged by Charles M. Goolsby (Organization of Black Scientists, Washington, D.C.).
- **Affirmative Action: Myth or Reality? (20 Feb.).**
Arranged by Francine Essien, Franklin D. Hamilton (University of Tennessee), and Vijaya L. Melnick.
- **Special Training Programs for Minority Students in Science (21 Feb.).**
Arranged by Franklin D. Hamilton.
- **Special Training Programs for Minority Students in Science—Precollege Level (21 Feb.).**
Arranged by Cyrus J. Lawyer (Institute for Services to Education, Washington, D.C.) and Shirley M. Malcolm (American Association for the Advancement of Science).
- **Are Scientists Different? The Job Crisis in Perspective (21 Feb.).**
Arranged by Joseph Schwartz (City University of New York).
- **Bicentennial Retrospectives and Prospectives: Science Education for Women (23 Feb.).**
Arranged by Miriam Schweber (Simmons College).
- **Bicentennial Retrospectives and Prospectives: Opportunities for Women in Science and Engineering (23 Feb.).**
Arranged by Miriam Schweber.



LOCATIONS OF NUMBERS ON MAP

- | | | | |
|----------------------------|-----------------------|-----------------------------|----------------------|
| 1 Sheraton-Boston Hotel | 4 The Lenox Hotel | 7 The Colonnade Hotel | 10 Symphony Hall |
| 2 John B. Hynes Auditorium | 5 Copley Square Hotel | 8 Back Bay Railroad Station | 11 Museum of Science |
| 3 Copley Plaza Hotel | 6 Midtown Motor Inn | 9 John Hancock Hall | |

AMERICAN
ASSOCIATION
FOR THE
ADVANCEMENT
OF SCIENCE

OFFICE OF
OPPORTUNITIES
IN SCIENCE

PROJECT ON THE HANDICAPPED IN SCIENCE

There is a new focus at the American Association for the Advancement of Science (AAAS) on the concerns of handicapped scientists. The AAAS, the world's largest scientific professional association, recognizes its responsibility as a leader in science to enhance the status of the physically handicapped and to accelerate their advancement in all the sciences and engineering. In order to launch an ongoing program the AAAS sought and received funding from the Rehabilitation Services Administration/HEW for a project to explore the barriers obstructing the entry and full participation of physically handicapped persons to employment opportunities in science. Specifically, the initial eight month phase of the program will seek to examine and evaluate ways in which the scientific professional associations can contribute to equal educational and occupational opportunity.

THE
PROBLEM

Many physically disabled individuals with interest and aptitude in science have difficulty obtaining an education, employment and promotion in the area of their interest. Science educators and employers are largely unaware of the needs of the handicapped and of their own responsibilities for overcoming the difficulties faced by disabled veterans, accident victims, people disabled by severe illnesses and those suffering from birth defects. Physically disabled scientists working with the AAAS since early 1974 have identified three aspects of the problem which they think the professional associations should address:

- *Handicapped scientists find the scientific meetings of their professional associations inaccessible, thus preventing them from full participation.
- *Handicapped members perceive a general lack of awareness on the part of the professional associations to their problems, of which the societies are usually not even aware.
- *There are real barriers to the acquisition of education and jobs.

OBJECTIVES

In order to overcome these three kinds of career-related problems the initial project will seek to:

- *Develop, test and disseminate methods to overcome physical and communication barriers that prevent handicapped scientists from participating fully in professional meetings.
- *Develop and test methods of increasing the awareness of all U.S. scientific professional associations of the education and career-related needs of their handicapped members.
- *Explore a wide variety of ideas and develop a program through which AAAS and other scientific societies may enhance educational and occupational opportunity and equality for the handicapped.

ACTIVITIES

To achieve the objectives, the staff of the Office of Opportunities in Science in consultation with the project Advisory Group will undertake the following activities:

- *Make the AAAS Annual Meeting in Boston, February 18-24, 1976, accessible to the physically handicapped, and publish a professional meetings accessibility guide for distribution to the 287 AAAS affiliate professional societies and academies, and to hotels in major convention cities.
- *Arrange activities at the AAAS Annual Meeting to focus the attention of the science community on the handicapped. These activities will include: a symposium "Science, Technology and the Handicapped"; an information center and exhibits on the handicapped in science; a luncheon and press conference; and a reception for symposium participants, other scientists, local rehabilitation agency personnel and others.
- *Ask handicapped scientists to identify themselves in order to guide further program development, assist in dissemination of information and form a support system for handicapped students and peers.
- *Survey the various organizations and government agencies of and for the handicapped, and scientific professional associations for their suggestions as to the educational and occupational barriers, in order to link them in a sharing of resources to facilitate a breakdown of these barriers.
- *Disseminate information through the general media as well as through publications of the professional associations in order to inform readers of new legislation for the handicapped and AAAS project activities.

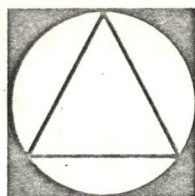
OUTCOMES

The Project on the Handicapped in Science hopes to produce the following outcomes in the initial phase of the program:

- *Heightened awareness on the part of professional societies, their members and organizations of and for the handicapped of the problems of the handicapped in science.
- *Wider participation in the activities of the professional associations by their handicapped members.
- *Establishment of a network that joins the science community--educators and employers-- to the organizations and agencies of and for the handicapped in order to remove career barriers.
- *Changes in educational and employer policy as it relates to education and hiring of the handicapped.
- *Development of a national resource center for information on educational opportunities, employment trends, legislation, etc.

*For information or input, please contact: MARTHA REDDEN, DIRECTOR, PROJECT ON THE HANDICAPPED IN SCIENCE, AAAS, 1776 MASSACHUSETTS AVE, NW, WASHINGTON, DC 20036
(202) 467-4497*

Room 308, 1346 Connecticut Avenue, N.W. • (202) 785-4265
Washington, D.C. 20036



American Coalition of Citizens with Disabilities Inc.

,October 14, 1975

Dear ACCD Member,

I recently received the enclosed information which I am sharing with you as I believe you would find it interesting. Kindly share it with the members of your organization. Those interested can write for additional information.

Very truly yours,

Eunice Fiorito

Eunice Fiorito
President

AMERICAN COALITION OF CITIZENS WITH DISABILITIES

EF/dm
Enc.

*wrote
11/26/75*

RELEASE: September 1, 1975

1776
Massachusetts
Avenue NW
Washington DC
20036

TELEPHONE
202/467/4400

BARRIERS TO THE DISABLED FALL AT AAAS MEETING

Physically disabled scientists are encouraged to attend the Annual Meeting of the American Association for the Advancement of Science in Boston, February 18-24, 1976. The AAAS Office of Opportunities in Science is working with the AAAS Meetings Office, Boston hotels, Rehabilitation Agency personnel and other interested people and groups in the Boston area to make the meeting fully accessible to people who are in wheelchairs, who have visual or auditory disabilities and those who need assistance because of other disabilities. For information and/or suggestions, please contact:

Martha Redden, Director
Project on the Handicapped in Science
Office of Opportunities in Science
AAAS, 1776 Massachusetts Avenue, N. W.
Washington, D. C. 20036
(202) 467-4497

RELEASE: September 1, 1975

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Avenue NW
Washington DC
20036

TELEPHONE
202/467/4400

AAAS LAUNCHES PROGRAM FOR THE HANDICAPPED IN SCIENCE

The American Association for the Advancement of Science has officially launched its Project for the Handicapped in Science. The purpose of this initial project, which is funded by the Rehabilitation Services Administration of the Department of Health, Education, and Welfare through the George Washington University Rehabilitation Research and Training Center is to identify and explore barriers obstructing the entry and full participation of physically disabled persons to education and employment opportunities in science. Specifically, the project will seek to examine and evaluate ways in which the scientific professional associations and organizations of and for the handicapped can contribute to equal opportunities in science careers.

In order to build an ongoing and realistic program, the AAAS needs the expert consultation of handicapped individuals who have experienced difficulties in receiving an education to be a scientist or in professional placement because of their handicap. If you are a disabled scientist, please identify yourself to Martha Redden, Director, Project on the Handicapped in Science, Office of Opportunities in Science, AAAS, 1776 Massachusetts Avenue, N. W., Washington, D. C. 20036. The project will not use, without permission, the names of individual scientists who respond.

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