



Science and Technology: Resources for Our Future

We are told by archaeoastronomers that many primitive peoples the world over built elaborate stone configurations from which to site various astronomical events, including the winter solstice, presumably so they would know just when to welcome back the ascending sun and the new year. We, with our more mechanical outlook on time, arbitrarily welcome the new year on 1 January, rather than on 22 December as our forebears might have done. Nevertheless, the celebration is welcome, for it permits both reflections on what passed in the year before and resolutions on what we wish to come to pass in the year to come—a pause in the affairs of our lives paralleling the pause in the apparent descent of the sun. May I suggest yet another time shift for our more modern world—a more appropriate time for our winter-solstice celebration, for pausing and reflecting and resolving? I refer, of course, to the period 3–8 January, the new time for our Annual National Meeting. Being held this coming year in the sunny warmth of Houston, it gives all of us ample occasion for informed reflection on many of the most important issues of our day, as well as the means for resolving at least some of them, all in a very pleasant and stimulating ambience.

The Meeting Program, displayed for you over the next several pages, has many important and exciting aspects, beginning with a description of the nine public lectures and the premiere of a light and music show using some of the latest technological procedures. The following pages show the 138 symposia, in 17 categories, which will be given at the Meeting. These include general interest symposia on space, industry,

engineering, the frontiers of science, and possible limits to usable knowledge; symposia on the latest developments in the physical, biological, and medical sciences; symposia on current problems in health care, nutrition, and ecology; symposia on current developments in the social and behavioral sciences, including human development; symposia on issues in history, philosophy, education, and communications; and symposia on problems in energy use, technology, economic development, and science policy. All-in-all, we present many of the major issues of today in a manner whereby the contributions from one discipline in science or technology are made accessible to the practitioners in other disciplines.

Beyond the lectures and the symposia, the Meeting will have poster sessions of contributed papers, an exhibit of the latest offerings in scientific instrumentation and publication, and a festival of some of the excellent science films of the past year. Through the auspices of the Houston Advisory Committee and its able chairmen, Norman Hackerman (President of Rice University) and Randall Meyer (President of Exxon Company, U.S.A.), we have an outstanding array of tours of the scientific and cultural sites in Houston, as well as ample opportunity to enjoy Texas hospitality.

The Meeting promises to be one of genuine excitement and lasting value. You owe it to yourself to attend and experience it and, for those of us in less temperate climates, the springlike weather in Houston in January is not to be ignored. Register now; you will find forms at the end of the Program description.

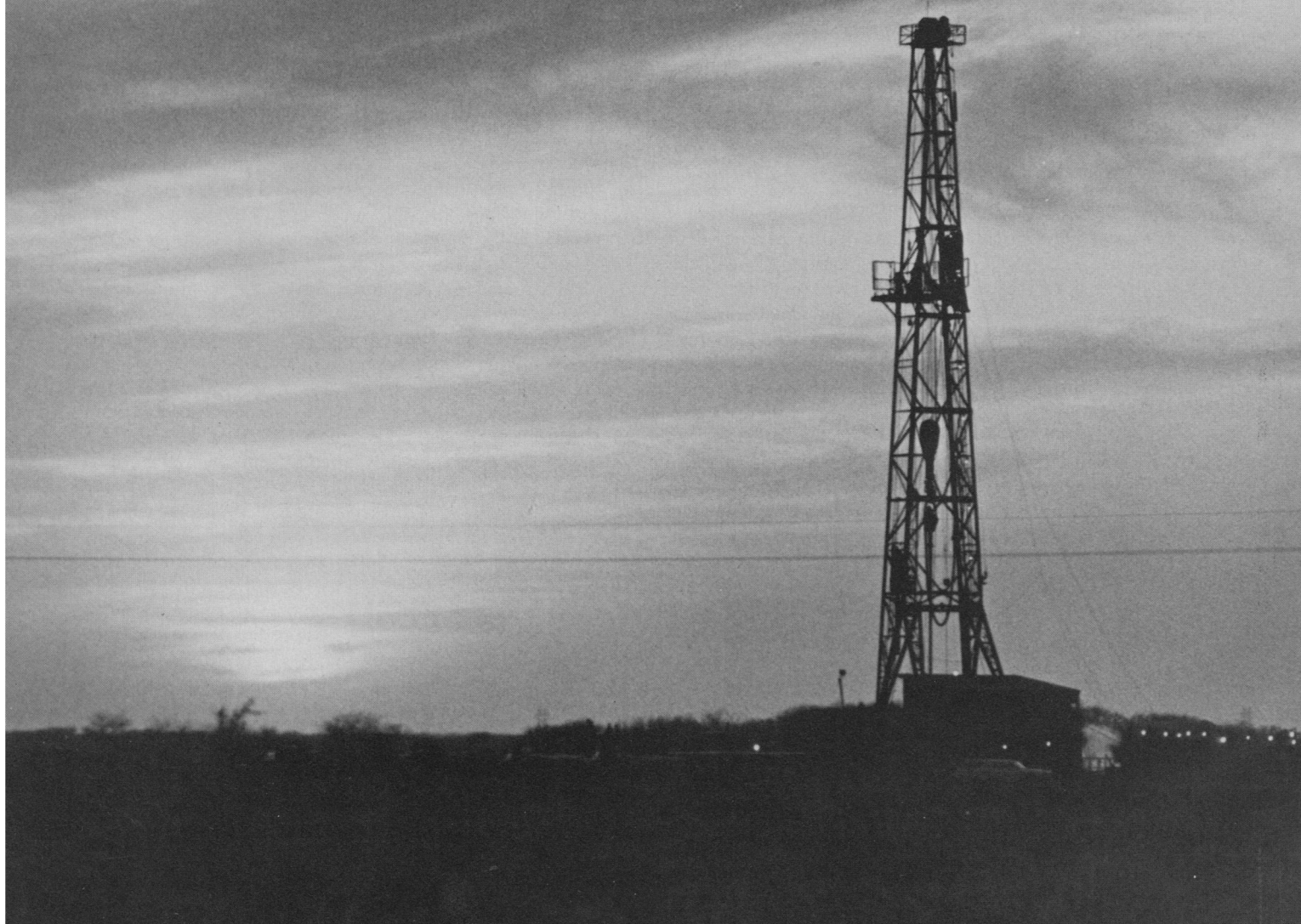
—ARTHUR HERSCHMAN

Photo, facing page, courtesy of Exxon Company, U.S.A.

Advance registrants (see forms on pages 874 and 875) will receive a free 1979 AAAS Calendar with their registration package in Houston. For information on Tours and Cultural Events see *Science*, 13 October 1978.

Annual Meeting
HOUSTON

3-8 January 1979



Meeting Information

Listed below are the Houston hotels used by AAAS for Program activities and housing during the Annual Meeting. The two-letter codes in parentheses identify session locations in the preliminary program. For locations and distances between these hotels, see map at end of program information.

Shamrock Hilton (SH), Main Street and Holcombe Blvd.: Housing (650 rooms blocked); symposia, public lectures; contributed papers (poster sessions only); business meetings; social functions; advance and on-site registration desks; welcome center (hospitality); resource center for disabled attendants; headquarters office; newsroom; employment information center; SCIENCE INTERNATIONAL (exhibits); *Science Film Festival*.

Houston Marriott at the Astrodome (HM), 2100 South Braeswood at Greenbriar: Housing (250 rooms blocked); symposia; business meetings; social functions; advance and on-site registration desks; information desk; AAAS office.

Hotels used for housing only: Astro Village Tower and Lodge (500 rooms) and Holiday Inn-Astro Village (300 rooms), both located at I-610 and Kirby Drive; Tideland Motor Inn (125 rooms), 6500 South Main Street; and Tides II Motor Inn (150 rooms), 6700 South Main Street.

Registration

Meeting registration categories and fees are listed on the advance registration form on page 874 in this issue. The fee includes the full program book and the abstract volume.

Advance registrants, please note: We will *not* mail the full program prior to the Meeting. Instead, we will send you in early December an expanded pre-convention program, your badge, registration receipt, and a voucher redeemable on site for the program book, condensed program (foldout), and abstract volume. Present your voucher at one of the advance registrants' desks in the meeting registration areas.

Advance and on-site registration desks will be located at the Shamrock Hilton (Grand Ballroom Foyer) and at the Marriott (Convention Lobby). Registration hours at both locations are Wednesday, 3 January, through Sunday, 7 January, 8:00 a.m. to 6:00 p.m.

Registration Refunds

The AAAS will refund advance registration fees for all cancellations received in writing or by telegram prior to 27 December 1978. NO REFUNDS WILL BE MADE ON CANCELLATION NOTICES RECEIVED AFTER THIS DATE. Refunds will be mailed from the AAAS Offices in Washington, following the Annual Meeting.

Housing

In cooperation with the AAAS, the six Houston hotels used for housing and meetings have set aside—at guaranteed reduced rates—blocks of guest rooms for the attendants of the Annual Meeting. The official housing request form on page 875 of this issue lists the hotels and their rates. **These rates are guaranteed only when reservations are made through the AAAS Housing Bureau on the official reservation form prior to 13 December 1978.** Please read the important notice at the bottom of the housing form concerning reservation and room assignment procedures.

Do not be a "no-show." If you have made a hotel reservation and find that you cannot attend the meeting, write to the Housing Bureau (or call the hotel) and cancel.

On request, the hotels will accommodate additional persons in guestrooms (for example, three in a double room) at the following extra cost: Shamrock Hilton, \$12; Marriott, \$4; Astro Village and Holiday Inn, \$5; Tideland and Tides II, \$4. Children are accommodated free of charge in same room with parents; age limits are as follows: Shamrock Hilton, no age limit; Marriott, 18; Astro Village and Holiday Inn, 12; Tideland and Tides II, 13.

Airport and Shuttle Bus Transportation

Bus service from Houston Intercontinental Airport to and from the South Main Terminal (located adjacent to the Shamrock Hilton) departs every 1/2 hour during daytime and peak evening hours; the fare is \$4.50. Taxis charge a flat rate of \$17 plus 55 cents for each passenger

sharing the vehicle. There is no special bus service to and from Hobby Airport.

All meeting hotels operate courtesy limousines to and from the South Main Terminal. If you need information about pick-up on arrival, use appropriate courtesy telephone to check with the hotel.

For the convenience of meeting attendants, AAAS will operate shuttle buses between the six participating hotels. Buses are scheduled to depart from the originating points (see below) approximately every 15 minutes, beginning at 8:00 a.m. and ending at 11:00 p.m., Wednesday (3 Jan.) through Sunday (7 Jan.). On Monday (8 Jan.), bus service will begin at 8:00 a.m. and conclude at 1:00 p.m.

Route A: Buses will originate at the Tides II Motor Inn with stops at the Tideland Motor Inn, Shamrock Hilton, and Houston Marriott, returning to the Tides II via the same hotels. Buses can be met at the front entrance of each hotel.

Route B: Buses will originate at the Astro Village Complex with stops at the front entrances of the Houston Marriott and Shamrock Hilton, returning via these hotels. Pick-up point is the "Meeting Place," a small covered shelter located on Kirby Street midway between the Astro Village Tower/Lodge and the Holiday Inn.

Resources for Disabled Attendants

The AAAS, in cooperation with the Houston Advisory Committee, is again making every effort to make the Annual Meeting fully accessible to disabled individuals. In addition to hotel rooms which can accommodate wheelchairs, and accessible meeting areas, the following resources will be available:

- A Resource Center staffed with volunteers to offer assistance on request.
- Assistance in movement within and between meeting hotels as needed.
- Transportation service to and from airports and train and bus stations, as needed.
- Interpreters for the hearing impaired at all public lectures and for other sessions on request.
- Emergency repair service for wheelchairs.
- Round-the-clock telephone service responding to emergency needs.
- Special tour and sightseeing information for disabled persons.
- Audiotaped highlights of the meeting program for persons with visual impairments.

Persons needing special hotel accommodations, interpreting services, and other assistance are strongly urged to so indicate on the advance registration and housing request forms. Of the six participating hotels, only one is not wheelchair accessible: the Astro Village Tower and Lodge. Your early response will help us to plan and serve you better. For additional information or suggestions, contact *Martha Redden or Cheryl Davis, AAAS Project on the Handicapped in Science, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036 (telephone: 202-467-4496).*

Employment Information Center

Adjacent to the exhibit area there will be bulletin boards for posting "positions wanted" and "positions open" notices. Also available will be small separated tables for conducting interviews. AAAS will not coordinate interactions between prospective employers and employees. **Hours:** 10 a.m.-6:00 p.m., 4-6 January; 10 a.m.-4 p.m., 7 January.

Child Care Services

For meeting attendants who require babysitters for infants and small children, or companion care for children 8 years and up, we have obtained the services of the **Baby Sitters of Houston (Phone: 713/641-4239)**. The agency is open Monday through Friday, 10:00 a.m. to 4:00 p.m.; 24-hour notice is requested for weekday sitting service; for Saturday and Sunday service, arrangements must be made by Thursday, since sitters are in great demand on weekends. The agency also has sitters with special training for attending handicapped children (please specify when calling). All sitters are bonded and over age 21. **Rates:** 1-2 children, \$2.50 per hour; 3-4 children, \$3.00 per hour; plus \$3.00 for sitter's transportation.

Preconvention Program

Science and Technology: Resources for Our Future

Public Lectures

- **Welcome to Houston (3 Jan., 1:30 p.m., SH).**
The Honorable James J. McConn (Mayor of the City of Houston).
- **AAAS Keynote Lecture (3 Jan., 1:45 p.m., SH).**
Hanna Holborn Gray (President, University of Chicago).
The Advancement of Science in the Retreat of the University.
- **AAAS Public Presentation (3 Jan., 8:30 p.m., SH).**
An original light and music show arranged by Gregg Edwards (National Science Foundation) and James L. Gumnick (University of Houston)
Eine Kleine Lichtmusik.
- **George Sarton Memorial Public Lecture (4 Jan., 1:45 p.m., SH).**
George W. White (Professor of Geology, University of Illinois).
Foundations of American Geology.
- **AAAS Public Lecture (4 Jan., 8:30 p.m., SH).**
Owen K. Garriott (NASA Scientist-Astronaut, Lyndon B. Johnson Space Center)
Space Exploration and Research.
- **Phi Beta Kappa Public Lecture (5 Jan., 1:45 p.m., SH).**
Colin S. Pittendrigh (Bing Professor of Human Biology, Stanford University).
The Diversity of Biological Time Scales.
- **AAAS Public Lecture (5 Jan., 8:30 p.m., SH).**
Michael E. DeBakey (President, Baylor College of Medicine).
Advances Toward a Better Understanding of Arteriosclerosis.
- **AAAS Public Lecture (6 Jan., 1:45 p.m., SH).**
Cyril Ponnampertuma (Professor of Chemistry and Director, Laboratory of Chemical Evolution, University of Maryland).
Primordial Cosmochemistry and the Origin of Life.
- **AAAS President's Public Lecture (6 Jan., 8:30 p.m., SH).**
Edward E. David, Jr. (President, American Association for

the Advancement of Science; President, Exxon Research and Engineering Company, Inc.).

Science Futures—The Industrial Connection.

- **AAAS Public Lecture (7 Jan., 1:45 p.m., SH).**
Peter F. Drucker (Marie Rankin Professor of Social Science and Management, Claremont Graduate School, Claremont, Calif.; Professor Emeritus of Management, Graduate School of Business Administration, New York University).
Science and Industry: The Challenges of Antagonistic Interdependence.
- **AAAS Public Lecture (7 Jan., 8:30 p.m., SH).**
Hal Murray (Associate Professor of Biology, University of Southern Colorado).
The Season of Man.

1. General Interest

Getting Into Orbit: Historical Perspectives on the American Space Program (3 Jan., 3:00 p.m., SH): Man on Mars, Skylab, space shuttle.

Roger E. Bilstein, Edward C. Ezell, William David Compton, Charles D. Benson, Richard P. Hallion, John M. Logsdon.

How Big and Still Beautiful? Macroengineering Revisited (4 Jan., 9:00 a.m., 3:00 p.m., SH): Appropriate scale, large-scale technology, costs, human values, evaluation, rural technology, islands, rigid airship, hypersonics.

Frank P. Davidson, John E. Fobes, Cynthia Harris, William J. Jones, Ramon Barquin, George Kozmetsky, Hans Huessy, Robert Salkeld, James McHale, John T. Craven, Francis Morse, J. Peter Vajk, C. Lawrence Meador, John A. Seeger.

Industrial Maturation and the Shifting Spectrum of Scientific Innovation (5 Jan., 9:00 a.m., SH): Views on the future, chemical industry, automotive industry, pharmaceutical research, common carriers.

Thomas Baron, James Gumnick, Norman Hackerman, Paul Howell, J. O. Milligan, Robert A. Charpie, Paul F. Chenea, William N. Hubbard, Jr., John R. Pierce.

The Frontiers of the Social Sciences (5 Jan., 3:00 p.m., SH): Anthropology, biological psychology, network theory and methods.

Meredith P. Crawford, Priscilla Reining, Richard N. Adams, Sandra W. Scarr, Charles Kadushin.

Frontiers of the Natural Sciences (6 Jan., 9:00 a.m., 3:00 p.m.,

HOTEL CODES: Shamrock Hilton . . . SH; Houston Marriott . . . HM

SH): Ant communication, mathematics, physics, chemistry, geology, cosmology.

Rolf M. Sinclair, Norman Hackerman, Bertold Holldobler, Joseph B. Keller, William M. Fairbank, George C. Pimentel, David W. Scholl, James E. Gunn.

Science in Society: Are There Limits to Usable Knowledge? (7 Jan., 9:00 a.m., 3:00 p.m., SH): Scientific productivity, fundamental limits, organic limits to intelligence, artificial intelligence, public education, cultural limits, directed research, our knowledge.

Gregg Edwards, William A. Gale, Norman Hackerman, Karl Pribram, Joseph Weizenbaum, J. E. Pournelle, I. I. Rabi, Raymond Cattell, Richard Cyert.

2. Mathematical and Physical Science

Mathematics Today (3 Jan., 3:00 p.m., SH): Four color, differential geometry, minimum network, computation.

Felix E. Browder, Wolfgang Haken, Roger Penrose, Ronald Graham, Martin Davis.

Observing Opportunities for Orbiting Astronomers—Spacelab and Beyond (3 Jan., 3:00 p.m., HM): UV, optical, solar, infrared, and space astronomy.

Karl G. Henize, Adrienne F. Timothy, George H. Rieke, Harlan J. Smith.

Science for the Naked Eye, Or the Physics of Everyday Experience, VI (4 Jan., 9:00 a.m., 3:00 p.m., SH): View from planets, gems or gyps, sports, partly random music, simulation of literature, gothic cathedrals.

Rolf M. Sinclair, Harold Masursky, George R. Rossman, Richard F. Voss, Joseph B. Keller, William R. Bennett, Jr., Robert Mark.

Frontiers of Industrial Physics (5 Jan., 9:00 a.m., SH): Surface electron energies, catalysis, crystal architecture.

D. Allan Bromley, Dean Eastman, John H. Sinfelt, Arthur C. Gossard.

Future Developments in Electrochemistry and Related Fields (5 Jan., 3:00 p.m., SH): Raman spectroscopy, photoelectrochemistry, semiconductor-liquid junctions, electrode kinetics, future developments.

Rudolph A. Marcus, Norman Hackerman, Richard P. Van Duyne, Allen J. Bard, Barry Miller, Fred C. Anson, V. G. Levich.

Chemistry in Space (6 Jan., 9:00 a.m., 3:00 p.m., SH): Interstellar molecules and dust grains, interplanetary grains, meteorites, comets.

Paul W. Hodge, William D. Watson, Patrick Thaddeus, William Klemperer, Edward M. Purcell, Donald E. Brownlee, Lawrence Grossman, Armand H. Delsemme.

Satellite Oceanography: The SEASAT-I Mission (7 Jan., 9:00 a.m., HM): Radar experiment, orbit determination, scatterometer, microwave radiometer, data systems.

George H. Born, Byron D. Tapley, Raynor L. Duncombe, S. Walter McCandless, W. E. Giberson, Paul Teleki, John W. Sherman, W. Linwood Jones, Duncan Ross, James A. Dunne.

Climatic Changes as a Potential Hazard Revealed by Geologic and Contemporary Records (7 Jan., 3:00 p.m., HM): Volcanic activity, oxygen isotope data, deep-sea cores, west Antarctic ice sheet and sea ice, water supply, implications.

Robert F. Black, Reid A. Bryson, Claes G. H. Rooth, Terrence

J. Hughes, George H. Denton, James D. Hays, Charles W. Stockton, Stephen H. Schneider.

Weather, Climate, and Public Policy (8 Jan., 9:00 a.m., SH): Weather resources, atmospheric carbon dioxide, impacts on society, international cooperation.

Roger Revelle, David M. Burns, Harlan Cleveland, Frederick E. Smith, Thomas F. Malone.

3. Biological Science

Ligand Assays: The State of the Art (3 Jan., 3:00 p.m., HM): Radioimmunoassay, prostaglandins and thromboxanes, parathyroid hormone, estrogen receptor.

Barry G. England, Daisy S. McCann, Robert J. Ryan, Frank A. Fitzpatrick, Gino V. Segre, James H. Clark.

Various Approaches to the Study of Biologically Active Compounds (4 Jan., 9:00 a.m., HM): Molybdenum complexes, metalloporphyrins, quantum chemical calculations, nitrosamines.

Toby F. Block, John H. Enemark, Eugene C. Johnson, David H. Dolphin, Joyce J. Kaufman, William Lijinsky.

Nature and Functional Role of Cytochrome P-450 Mediated Systems (4 Jan., 3:00 p.m., HM): Cellular and tissue distribution, biological and ecological significance.

Sami Ahmad, Ronald W. Estabrook, Ernest Hodgson, James R. Gillette, Lena B. Brattsten.

Effects of Prenatal Exposure to Alcohol: Human and Animal Studies (5 Jan., 9:00 a.m., HM): Maternal alcoholism, animal models, effects of CNS depressants, social drinking, fetal alcohol syndrome.

Sharon Landesman-Dwyer, Ann Pytkowicz Streissguth, G. F. Chernoff, Joan C. Martin, Ernest P. Noble.

Animal Models for the Study of Breast Cancer (5 Jan., 3:00 p.m., HM): Radiation-estrogen carcinogenesis, chemical carcinogen, experimental model, mammary neoplasia.

Seymour Holtzman, Albert Segaloff, Dilip K. Sinha, Clifford W. Welsch, Claire J. Shellabarger.

Hemoglobin—A Model Protein (6 Jan., 9:00 a.m., HM): Structure-function relationships, molecular adaptations, evolution in higher organisms, structural variants.

Hiroshi Mizukami, Andreas Rosenberg, Austen F. Riggs, Morris Goodman, Donald L. Rucknagel.

Interactions Between Water and Cytoplasmic Structures

(6 Jan., 3:00 p.m., HM): Living cells and model systems, water-soluble spin labels, extended protein chains, diffusional processes.

Carlton F. Hazlewood, Keith R. Porter, Paula T. Beall, Andrea M. Mastro, Gilbert N. Ling, Alec D. Keith.

Handicapped Scientists: Some of Their Current Contributions to Biological and Medical Research (7 Jan., 9:00 a.m., SH): Blood pressure control, ionizing radiations, carcinogenicity, allergic disease, gonorrhea.

Nansie S. Sharpless, Myron H. Weinberger, C. E. Grim, F. C. Luft, S. Phyllis Stearner, Anne B. Swanson, John J. Gavin, Robert P. Williams, Sheldon M. Steiner, Edward R. Gubish, Jr.

Clinical and Biochemical Aspects of Trace Metal Metabolism in Man (7 Jan., 3:00 p.m., HM): Zinc metabolism, genetic information transfer, copper complexes, chromium.

Roland F. Bonewitz, Jr., R. Rodney Howell, Rubye P. Torrey, Robert J. Cousins, Gunther L. Eichhorn, John R. J. Sorenson, K. Michael Hambidge.

4. Medical Science

Internal Environment and the Immunologic State (3 Jan., 3:00 p.m., HM): Genetic considerations, nutrition, pharmacology, periodontal disease.

Barnet M. Levy, Tommy C. Douglas, Samuel Dreizen, Richard A. Ortey, Bruce F. Mackler.

Genetics in Epidemiology (4 Jan., 9:00 a.m., 3:00 p.m., HM): Disease susceptibility, gene loci, mutations, chromosome disorders, environmental effects, public policy, familial aggregation, smoking-discordant twins, schizophrenia.

Bernice H. Cohen, Gordon Allen, Abraham M. Lilienfeld, Arno G. Motulsky, N. E. Morton, Ernest B. Hook, Gilbert S. Omenn, Edmond A. Murphy, Rune Cederlöf, Barbara S. Dohrenwend, Leon Gordis.

Radiochemistry, Radiopharmaceuticals, Tomography, and New Aspects of Measuring Metabolism in Humans (5 Jan., 3:00 p.m., HM): Positron emission, organic and inorganic compounds labeled, neurological research.

Alfred P. Wolf, Michel M. Ter-Pogossian, Michael J. Welch, Martin Reivich.

Epidemiology Studies of Low-Level Radiation Exposure (6 Jan., 9:00 a.m., HM): Scientific criteria, standards, risk estimates, strategies.

Rosemary A. Chalk, Robert Alvarez, Alice Stewart, Eleanor MacDonald, Jacob I. Fabrikant, Charles Land, James L. Liverman, Clark W. Heath, Jr., William A. Mills, Morris L. Shore.

Biofeedback: Current Perspectives (6 Jan., 3:00 p.m., HM): Information for the therapist and patient, desensitization, relaxation techniques, research.

Theodore Weiss, Thomas G. Pickering, Ian E. Wickramasekera, Richard S. Surwit, Gary E. Schwartz.

The Role of Genetics and Human Semen Cryobanking in Family Planning (6 Jan., 3:00 p.m., SH): Standards, genetic counseling, genetic diseases, the Brave New World.

Mark S. Frankel, Mary S. Harris, Armand M. Karow, Jr., J. K. Sherman, James E. Bowman, James W. Couch, George P. Smith, II.

Neuroscience and Disease: A Role for Serendipity (7 Jan., 9:00 a.m., HM): Brain self-repair, myasthenia gravis, mental retardation, endorphins.

Michael V. L. Bennett, David A. Robinson, Douglas M. Fambrough, Dominick P. Purpura, Floyd E. Bloom.

The Cancer Problem (8 Jan., 9:00 a.m., SH): Hormone receptors, human lymphocytes, radiation and virus, minorities and women.

Louise T. Miller, Yolanda S. George, Judith Rae Lumb, G. Shyamala, Lawrence Alfred, Miriam P. Finkel, Jewel Plummer Cobb, Barbara Bynum.

5. Health Care

Technology and Health Care: Prospects and Pitfalls (3 Jan., 3:00 p.m., HM): Medical technology, prevention of illness, fragmentation of care, effectiveness, medical practice.

Stanley Joel Reiser, David E. Rogers, Lester Breslow, Rosemary A. Stevens, Frederick C. Robbins.

Health Enhancement: Prevention and Promotion (4 Jan., 9:00 a.m., HM): Health and well-being, behavioral medicine, fasting, health maintenance organization, health insurance, prevention.

Ronald W. Mandersheid, Lorenz K. Y. Ng, Richard I. Evans, Joseph B. Tamney, Frank Newman, Mathew Greenwald, John H. Proctor.

Health Care Systems: Insights Through Large-Scale Simulation Modeling (4 Jan., 3:00 p.m., HM): State of art, hypertension screening, national health insurance, medical technology, policy formulation.

Kenan E. Sahin, William B. Stason, William C. Hsiao, Harvey Fineberg, Howard S. Frazier.

Health and the Environment: The Need for Greater Concern (5 Jan., 9:00 a.m., 3:00 p.m., HM): National Institute for Environmental Health Sciences, Environmental Protection Agency, cancer, public's viewpoint, Food and Drug Administration, National Institute for Occupational Safety and Health, Occupational Safety and Health Administration, Consumer Product Safety Commission.

Samuel Elkin, David P. Rall, Stephen J. Gage, Marvin A. Schneiderman, Barry Commoner, Marion J. Finkel, Edward J. Baier, R. Hays Bell, Michael A. Brown.

Politics, Science, and Cancer: The Laetrile Phenomenon

(6 Jan., 9:00 a.m., HM): Sloan-Kettering case study, historical perspective, political implications, legal perspective, social context.

Gerald E. Markle, James C. Petersen, Richard D. Smith, James Harvey Young, Robert F. Rich, Grace Powers Monaco, Peter de la Cruz, Dorothy W. Nelkin, Allan Mazur.

Medical Innovation and Public Policy: The Case of DES (6 Jan., 3:00 p.m., HM): Reproductive tract anomalies, Food and Drug Administration, consumer protection, occupational health, legal responsibility, drug manufacturers.

Diana B. Dutton, John P. Bunker, Halsted Holman, Kenneth L. Noller, Donald Kennedy, Marion J. Finkel, Bob Eckhardt, Anthony Mazocchi, Fay A. Saber, Raymond E. Rauch, Fran Fishbane, Jonathan King, Betsy Carleton.

Hypnosis in the Control of Pain (7 Jan., 9:00 a.m., HM): Surgery, symptom alteration, placebo hypnosis, pain reduction, hypnoanalgesia.

Marion Kenn, Paul Sacerdote, Harold B. Crasilneck, Luis Bravo, Frederick J. Evans, Ernest R. Hilgard, André M. Weitzenhoffer.

Psychosocial Aspects of Drug Treatment for Hyperactivity (7 Jan., 3:00 p.m., HM): Ritalin, 10-year follow-up, predictors of symptoms, drug therapy, illicit drug use.

Kenneth D. Gadow, Robert L. Sprague, Lily Hechtman, Jan Loney, Barbara Henker.

Self-Control Factors in the Use of Addictive Substances (8 Jan., 9:00 a.m., HM): Self-management, sociocultural factors, individual differences, excessive use, habitual behavior.

Peter K. Levison, Thomas C. Schelling, Judith Rodin, Gerald E. McClearn, John L. Falk, Peter Dews.

6. Agriculture and Nutrition

Research to Enhance Agricultural Productivity (3 Jan., 3:00 p.m., HM): Photosynthesis, molecular biology, saline environments, mycorrhizal symbionts, tissue culture.

Peter R. Day, R. Harold Brown, Timothy C. Hall, Frederick A. Bliss, Emanuel Epstein, John L. Ruehle, Donald H. Marx, Philip Gordon.

Animals, Feed, Food, and People (4 Jan., 9:00 a.m., 3:00 p.m., HM): Food animal production, international trade, forage, waste and by-product conversion, resource allocation, developing countries, nutritionist's view.

R. L. Baldwin, A. C. Bywater, Larry J. Martin, Karl D. Meilke, N. E. Smith, Henry S. Bayley, R. F. Brokken, Ludwig M. Eisgruber, J. K. Whittaker, Robert E. McDowell, Vernon R. Young.

Patterns and Effects of Diet and Disease Today (5 Jan., 9:00 a.m., 3:00 p.m., HM): Intake patterns, child development, lactation, bone maturation, dental caries, nutrition in later life, cancer, sugar and carbohydrate, protein-calcium, fiber, fats and lipids, vitamins, minerals, and elements.

John J. Hefferren, Mary L. Moller, Gilbert A. Leveille, Reba M. Hill, Buford Nichols, Dominic P. Depaola, George K. Stookey, Margaret Albrink, Seymour L. Romney, Ira L. Shannon, Helen M. Linkswiler, Jon A. Story, William Insull, Martin E. J. Curzon.

National Food Policy—Progress and Prospects (6 Jan., 9:00 a.m., HM): Nutrition research, dietary goals, the consumer, national food policy.

Alex Hershaft, Mark Hegsted, Nick Mottern, Joan D. Gussow, Rod Leonard, Joseph Crapa.

Agricultural Systems for Space Habitats (6 Jan., 3:00 p.m., HM): Closed food chain, controlled environment, phytotrons, food technology.

Jack M. Spurlock, Michael Modell, John M. Phillips, Carl N. Hodges, Annita Harlan, C. David Raper, Jr., Judith F. Thomas, Marcus Karel.

Environmental, Socioeconomic, and Political Aspects of Pest Management (7 Jan., 9:00 a.m., 3:00 p.m., HM): Public policy, economic milieu, environmental and social costs, benefits versus costs, technological change, legal controls.

David Pimentel, John H. Perkins, Joseph C. Headley, John Krummel, Jerry D. Stockdale, A. Dan Tarlock.

Plant Growth Regulators: Potential for Increasing Agricultural Productivity (8 Jan., 9:00 a.m., HM): Internal control points, synthetic regulators, assimilates in plants, problems in clearance.

Larry D. Noodén, A. Carl Leopold, Lawrence Rappaport, Page W. Morgan, Donald R. Geiger, Douglas Campt.

7. Ecology and Environment

Technical and Environmental Implications in the Development of Marine Transportation Systems in the Arctic (3 Jan., 3:00 p.m., SH): Nuclear icebreaker, Arctic LNG, ice forecasts, innovative systems, offshore drilling.

John E. Sater, Derek E. Evans, William H. German, Russell B. Thornburg, Murray Todd.

Deep-Sea Ecology (4 Jan., 9:00 a.m., 3:00 p.m., SH): Bathyal region, megabenthic fauna, depth zonation patterns, harpacticoid copepods, deep-sea amphipods, Norfolk Canyon, bathypelagic animals, deep benthic fish, deep-sea holothuroids, demersal deep-sea fishes.

Paul A. Haefner, Jr., Edward B. Cutler, Richard L. Haedrich, Joseph F. Siebenaller, David Thistle, A. Aristides Yayanos, Charles A. Wenner, James J. Childress, Kenneth J. Sulak, Robert S. Carney, John A. Musick.

The Amoco Cadiz Oil Spill (5 Jan., 9:00 a.m., SH): U.S. studies, oil sediment interactions, weathering effects, biological effects, cleanup processes.

Wilmot N. Hess, Miles O. Hayes, Erich R. Gundlach, John A. Calder, Ford A. Cross, Roy W. Hann.

Air–Sea Interaction in the Gulf of Mexico (5 Jan., 3:00 p.m.,

SH): Sea, lake, and overland surges, ocean wave climate, hindcasting hurricane waves, sediment dynamics.

Robert O. Reid, Guy A. Franceschini, Chester P. Jelesnianski, Donald T. Resio, George Z. Forristall, David W. McGrail.

Gulf Coast Industry and Wildlife Management (6 Jan., 9:00 a.m., SH): Environmental benefits, fin and shell fisheries, land development, environmental quality, fish and wildlife resources.

Donald J. Zinn, Keith G. Hay, Robert Mauermann, James C. Stribling, Bob Eckhardt, Ted L. Clark, Bob Kemp.

Mitigating Developmental Impacts on Fish and Wildlife (6 Jan., 3:00 p.m., SH): Status, legal problems, preventing losses, evaluation of planning, law and policy.

Gerald C. Horak, Martin H. Lewis, Ann G. Rappoport, Norville S. Prosser, Robert G. Martin, Patrick A. Parenteau.

Effects of Desertification on Soil Chemical, Physical, and Biological Properties (7 Jan., 9:00 a.m., SH): Soils, salts, sedimentation and erosion.

H. E. Dregne, B. L. Allen, Gerald W. Olson, Burns R. Sabey, Lynn D. Whittig, Peter J. Wierenga.

The National Forest Management Act Two Years Later: Scientific Issues Involved in Implementing NFMA (7 Jan., 3:00 p.m., SH): Resource planning, land and resource management, scientific issues.

Arthur W. Cooper, Thomas C. Nelson, Charles R. Hartgraves, Stephen H. Spurr, Thaddeus Box, R. Rodney Foil, Ronald Stark, Earl L. Stone, Dennis E. Teeguarden, William L. Webb.

Public Lands Belong to All the People (8 Jan., 9:00 a.m., SH): Priority needs, food production, multiple use, grazing fees.

Clair E. Terrill, Richard O. Wheeler, Evert K. Byington, H. A. Henderson, Billy F. Headden, Gerald W. Thomas, Darwin B. Nielsen, Robert S. Rummell.

8. Mathematics in Biological and Social Sciences

The Uses and Misuses of Survey Data (3 Jan., 3:00 p.m., HM): Public policy decisions, marketing decisions, public opinion polls, social science research, evaluation of survey data.

Barbara A. Bailar, Samuel W. Greenhouse, Robert F. Boruch, Ingrid C. Kildegaard, Philip E. Meyer, Duane F. Alwin, Daniel Melnick, William H. Williams.

Some Mathematical Questions in Biology (4 Jan., 9:00 a.m., 3:00 p.m., HM): Infectious diseases, malaria, allergic reactions, control mechanisms, optimal harvesting, cell biology.

Simon A. Levin, George Oster, Roy Anderson, Joel E. Cohen, Carla Wofsy, Sol I. Rubinow, F. C. Hoppensteadt, Donald Ludwig, Harvey P. Greenspan.

Artificial Intelligence in Medicine (5 Jan., 9:00 a.m., HM): Clinical expertise, ill-structured problems, medical decision-making, expert knowledge for consultation.

Peter Szolovits, Harry E. Pople, Randall Davis, Casimir A. Kulikowski.

Application of Statistics to Problems of Air Pollution, Including Effects on Health (5 Jan., 9:00 a.m., HM): Ambient air pollutants, local variation, acute health effects.

Paul Switzer, Donald L. Thomsen, Jr., George C. Tiao, Johannes Ledolter, Ray E. Faith, Edward L. Korn, Alice S. Whittemore, Yvonne M. Bishop.

Pattern Recognition: Introduction, Theory, and Application (5 Jan., 3:00 p.m., HM): Human face profiles, radiography, texture analysis, pattern discrimination, polynomial functions.

Robert S. Ledley, Louis S. Rotolo, Leon D. Harmon, Jack Sklansky, Chan M. Park, Robert M. Haralick, William A. Porter.

Autopoiesis, Dissipative Structures, and Spontaneous Social Orders (6 Jan., 9:00 a.m., 3:00 p.m., HM): Order by fluctuation, evolution, socioeconomic inequalities, dissipative structures, hypercycles and ultracycles, disturbed cell renewal systems, automata simulations.

Milan Zeleny, Peter M. Allen, Humberto R. Maturana, Alfred Gierer, Erich Jantsch, Werner Düchting.

Frontiers of Behavioral Mathematics (7 Jan., 9:00 a.m., HM): Differential topology, decision analysis, cognitive psychology, stochastic calculus.

Loren Cobb, David Berlinski, Robert M. Thrall, David E. Kieras.

Hard and Soft Data in Multicriterion Benefit-Cost Modeling (7 Jan., 3:00 p.m., HM): Fuzzy sets, soft data, multi-attribute utility measurement, non-monetary factors.

Robert M. Thrall, Lofti Zadeh, Ward Edwards, C. William Devaney, Gerald D. Rosenthal, Rodney Pelton.

Advances in Distributed Processing: Implications for Neuroscience Paradigms (8 Jan., 9:00 a.m., HM): Cerebellum, distributed problem-solving, information processing and retrieval, message routing, associative memory and integration, neural function and organization.

Kenan E. Sahin, Andras Pellionisz, Rodolfo Llinas, Victor R. Lesser, W. Ross Adey, Parvati Dev.

9. Social and Behavioral Sciences

Glimpses Into Man's Past: The Development of Man (3 Jan., 3:00 p.m., SH): Anthropology and archaeology, ice age symbol, archaeoastronomy.

Rolf M. Sinclair, Fred Wendorf, Alexander Marshack, Ray A. Williamson.

Hemispheric Dichotomy: Fact or Fantasy? (4 Jan., 9:00 a.m., SH): Neurological foundations, the divided brain, internally controlled movements, linguistic and spatial competencies.

Brenda Milner, Norman Geschwind, Roger Sperry, Doreen Kimura, Roger N. Shepard.

Immigrants: New and Old (4 Jan., 3:00 p.m., SH): Opportunities, small business, cheap labor, Blacks, Eastern European groups, earnings, immigration policy.

Charles Hirschman, Eugene P. Erickson, William L. Yancey, Edna Bonacich, Stanley Lieberman, Alejandro Portes, Robert L. Bach, Charles B. Keely, Avery M. Guest.

What Kind of Social Science Is Scientific? (5 Jan., 9:00 a.m., SH): Models of man, models of culture, scientific sociology, holism and hermeneutics, science, art and morality.

Christie W. Kiefer, David Kaplan, Monica B. Morris, Hubert L. Dreyfus.

Biology and Culture and Human Evolution (5 Jan., 3:00 p.m., SH): Equality and evolution, kin to classes, myths of anthropology, human differences.

Irving W. Wainer, Margaret S. Collins, Theodore A. Bremner, Donald C. Johansen, Peggy Dobbins, Rena Gropper, Stevan Chorover, Richard Goldsby, Jonathan King.

Feminism and Philosophy of Science (6 Jan., 9:00 a.m., SH): Patriarchal myth, feminist method, women and nature, planetary consciousness, psychology.

S. Leigh Star, Sandra Harding, Mary Daly, Barbara Dubois, Susan Griffin, Pat Hynes.

Women and Scientific Research (6 Jan., 3:00 p.m., SH): Lesbianism, feminism versus science, fetishism, experimentation on women, sexism.

Sandra Harding, S. Leigh Star, Lynda Birke, Sarah Hoagland, Janice Raymond, Beverly Smith, Julia Penelope Stanley.

Interdisciplinary Perspectives on Demographic Behavior (7 Jan., 9:00 a.m., 3:00 p.m., SH): Microeconomic theory, fertility, interpersonal behavior, Fishbein model, measurement theory, hunter-gatherers, anthropological approach.

Thomas K. Burch, Robert J. Willis, Barbara F. Meeker, N. Krishnan Namboodiri, Richard P. Bagozzi, M. Frances Van Loo, Toni Falbo, Gary H. McClelland, Nancy Howell, Peggy F. Barlett.

Psychological Dimensions in the Acculturation Process: Theory, Models, and Some New Findings (8 Jan., 9:00 a.m., HM): Quantitative models, adaptation, extended family, Mexican Americans, biculturalism, Cuban Americans.

Amado J. Padilla, Esteban L. Olmedo, John W. Berry, Susan E. Keefe, Jose Szapocznik, Christine Torres-Matrrullo.

10. Personal and Family Development

The Making of Child and Family Policy: Does What We Know Affect What Is Done? (4 Jan., 9:00 a.m., 3:00 p.m., HM): National Academy of Sciences, Carnegie Council report, family impact seminar, policymaking, legislative perspectives, nutrition.

Lyn Chambers, Harold C. Wallach, John A. Butler, William Kessen, Ruth Hubbell, Allan J. Lichtman, Marvin Sussman, John Martin, Kristen W. McNutt, Nicholas Hobbs, Michael O'Keefe.

Paradigms and Prejudices in Research on Homosexuality (5 Jan., 9:00 a.m., HM): Sociobiology, gay couples, social sex roles, Bell/Weinberg study.

Noretta Koertge, Michael Ruse, Pepper Schwartz, John P. De Cecco, Frederick Suppe, Alan P. Bell.

Demographic, Biographical, and Structural Perspectives on Human Life Course (5 Jan., 9:00 a.m., 3:00 p.m., HM): Historian's view, Terman's gifted women, college professors, personal myth, the elderly, mental health, mathematics and poetry.

Kurt W. Back, Tamara K. Hareven, Eleanor W. Willemsen, Robert J. Havighurst, Barbara Myerhoff, Matilda White Riley, Halliman H. Winsborough, Bernice L. Neugarten, Toni Antonucci, Steven Dubnoff, Richard Kulka.

Violence in the Family: Psychiatric, Sociologic, and Historical Perspectives (6 Jan., 9:00 a.m., 3:00 p.m., HM): Causes, ethnopsychiatric dimensions, television viewing, police and justice systems.

Maurice R. Green, Murray A. Strauss, John P. Spiegel, Donald A. Bloch, Louis Jolyon West, Jerome L. Singer, Dorothy G. Singer, Morton Bard, Lynette Friedrich-Cofer, Hilde Bruch.

Frontiers in Aging (7 Jan., 9:00 a.m., 3:00 p.m.; 8 Jan., 9:00 a.m., HM): Physiology, biochemical aspects, membrane biology, gerontological pharmacology, geriatric medicine, nutrition, drug use and misuse, health care, research priorities, National Institute on Aging, academic centers.

Leah M. Lowenstein, Jay Roberts, Charles J. Parrish, Edward Masoro, Richard C. Adelman, Bertram Sacktor, Vernon Young, John Rowe, Lester Smith, Robert Benedict, Charles Gaitz.

The Outer Limits of Human Performance and Educability (8 Jan., 9:00 a.m., SH): Performance potential, field theory approach, unconscious and habitual patterns, personal growth, social limits.

Jerry L. Fletcher, Frank Barron, George T. L. Land, Dale G. Lake, John N. Williamson.

11. History and Philosophy of Science

The Usefulness of Marxist Dialectics in Science (3 Jan., 3:00 p.m., SH): Scientific usefulness, individual and society, Marxist materialism, philosophical basis, causality.

Lloyd Motz, Lester Talkington, Frank Cunningham, Eleanor Leacock, Garland E. Allen, Victor Perlo, Jean Pierre Vigier.

China's Science in World Perspective (4 Jan., 9:00 a.m., 3:00 p.m., SH): Politics of Chinese science, chemistry, biomedical sciences, oceanography, astronomy, geography, earth sciences, plant protection, environmental sciences.

Leo A. Orleans, Patricia Jones Tsuchitani, Walter R. Rosenblith, Richard P. Suttmeier, John Baldeschwieler, Howard Temin, John H. Ryther, Leo Goldberg, Clifton Pannell, Edward C. T. Chao, Robert Metcalf, Baruch Boxer.

Science and Society—A Comparative History of Eugenics in Four Countries: U.S.S.R., Weimar Germany, United States, and England (5 Jan., 9:00 a.m., SH): American and English comparison, Soviet movement, Weimar politics.

Garland E. Allen, Daniel J. Kevles, Mark B. Adams, Bonnie Bluestein, Val W. Woodward, Loren R. Graham.

Thomas A. Edison: A Critical Examination on the Occasion of the Centennial of Electric Lighting (5 Jan., 3:00 p.m., SH): Incandescent lamp, the scientists, style of invention, history of technology and science.

David A. Hounshell, Robert E. Conot, W. Bernard Carlson, Christopher S. Derganc, Reese V. Jenkins, James E. Brittain.

One Hundred Years Scientific Psychology: 1879–1979 (6 Jan., 9:00 a.m., 3:00 p.m., SH): Wilhelm Wundt; new dualism; psychology's shifting relations; mind, body, and spirit; concept of motivation; learning; diagnostic fashions.

Gregory A. Kimble, Barbara C. Ross, Arthur L. Blumenthal, Eugene A. Galanter, David Leary, Daniel N. Robinson, Charles N. Cofer, Ernest R. Hilgard, William A. Hunt.

The Einstein Centenary (7 Jan., 9:00 a.m., 3:00 p.m., SH): The red shift, problem of motion, philosophers, unstudied topics, general theory of relativity, experimental challenges, black holes, observational cosmology.

John J. Stachel, Peter G. Bergmann, John Earman, Peter Havas, Robert S. Cohen, Irwin Shapiro, Robert Geroch, Beatrice Tinsley.

The Role of Consciousness in the Physical World (8 Jan., 9:00 a.m., SH): Extension of science, psychophysical interaction, psi research, the probe and the probed, psychological and psychic research.

Robert G. Jahn, Eugene P. Wigner, Charles Honorton, Harold E. Puthoff, R. Targ, E. C. May, John Archibald Wheeler, Willis W. Harman.

12. Education

Issues in Science Education (3 Jan., 3:00 p.m., SH): Philosophies of education, politics and professionalism, vested interests.

Marjorie H. Gardner, Richard L. Hopkins, Herbert A. Smith, Jay Barton.

Minority Access and Representation in Higher Education: An Empirical Assessment (4 Jan., 9:00 a.m., SH): Selection policies, Black students, standardized testing, career outcomes, access to professional schools, legislative remedies.

Gail E. Thomas, Edgar Epps, Charles Willie, Doris Y. Wilkinson, James E. Blackwell, Frank Brown, Helen Astin.

How Academies of Science Can Communicate Science to the General Public (4 Jan., 9:00 a.m., SH): Public values and understanding, museums, answers and questions.

Richard J. Raridon, William A. Blanpied, William C. Schmitt, Howard J. Lewis.

Prototypes of New Science Education (4 Jan., 3:00 p.m., SH): Scientifically disadvantaged, science instruction, college-level mathematics, project PROCEED, information systems, technology transfer.

Peter S. Signell, F. James Rutherford, Rustum Roy, Ross L. Finney, Karen C. Cohen, Ernest J. Henley, Robert L. Everett, Gregg Edwards.

Programming Junior Academy of Science Activities (5 Jan., 3:00 p.m., SH): People resources, student research organization, funding, environmental activities.

Frank W. Starr, Elemer Bernath, Sister M. Gabrielle Maze, LeRoy Lee, Lynn Edward Elfner, James D. Welker.

The Public Understanding of Organized Science (6 Jan., 9:00 a.m., SH): Attentive public, young adults, mobilized public.

Jon D. Miller, Keith M. Wulff, Gabriel Almond, Robert Suchner, Alan Voelker, Kenneth Prewitt, Robert Pearson, Todd LaPorte, George Tressel.

The Anatomy of Controversy: Scientific Freedom and Responsibility for Teaching (6 Jan., 3:00 p.m., HM): Anticipating conflict, genetics, evolution, textbook writers.

H. Bentley Glass, Arthur H. Livermore, Fletcher Watson, Paul Wehr, Susan Carpenter, Jack Carter, John Moore.

The Role of the Professions in Undergraduate General Education (7 Jan., 9:00 a.m., SH): Panel discussion.

William J. Winslade, Bernard Towers, Anna Harrison, Harold L. Hodgkinson, Robert Baum, Norman Cousins.

Programs in Science for Precollege Handicapped Students

(7 Jan., 3:00 p.m., SH): Archeological experience, environmental science, the deaf, the physically handicapped, marine science.

E. C. Keller, Jr., Martha Ross Redden, Noel G. Thornburg, Robert Rehwoldt, Manjula B. Waldron, Edward L. Pizzini.

Model Programs: The Research Base and Implications for Performance-Based Teacher Education Program Development and Evaluation (7 Jan., 3:00 p.m., SH): Characteristics of exemplary projects; advantages, limitations, and criticisms; implications.

Donald W. McCurdy, Robert K. James, Howard L. Jones, Gene E. Hall.

13. Information and Communication

Technology and Art: Present and Future (3 Jan., 3:00 p.m., HM): Active interaction, computer animation system, science and art.

Hugh H. Miller, Reginald Pollack, Rustum Roy, Charles A. Csuri, Gregg Edwards, E. P. Miles, Jr.

Recent Technological Advances in the Speech Sciences (4 Jan.,

9:00 a.m., HM): Analysis, synthesis, and perception; machine models; physiology research; aids for the deaf.

June E. Shoup, Dennis H. Klatt, D. Raj Reddy, Osamu Fujimura, Moise H. Goldstein, Jr.

General Systems Research: Science? Methodology? Technology? (4 Jan., 3:00 p.m., HM): Foundations, biology, social systems, management, industry.

B. R. Gaines, M. Bunge, R. Rosen, S. Braten, R. Ackoff, P. Checkland.

Individual and Social Electronics: Coping, Communicating, Understanding (5 Jan., 3:00 p.m., HM): Personal computer, a learning society, philosophy and society.

Joseph M. Dasbach, Joseph I. Lipson, Gregg Edwards, Alan C. Kay, John Seely Brown, Michael Novak, Joseph Weizenbaum.

The Future of Electronic Communications (6 Jan., 9:00 a.m., 3:00 p.m., HM): Perspective on trends, quadrillion geophysical data bits, computerized conferencing network, science news on television, Congress, social impacts, criminal justice systems, social change, policy options.

Madeline M. Henderson, Starr Roxanne Hiltz, Marcia J. MacNaughton, Ira Cotton, Carl H. Savit, John Bregenzer, Joseph Martino, Stuart Umpleby, Murray Turoff, A. E. Cawkell, Kenneth Laudon, Alan F. Westin, Walter Hinchman.

Information Transfer and Effective Utilization of Science and Technology (7 Jan., 9:00 a.m., HM): Transfer of technological information, applied research, communication networks, interactive information systems, interdisciplinary information transfer.

Carole Ganz Brown, Arthur Gerstenfeld, Edwin E. Olson, Michael L. Tushman, Martin C. J. Elton, Ronald G. Havelock.

Evolving Economics and Technology of Science Publishing (7 Jan., 3:00 p.m., HM): Advances, economics, copyright, library and information centers.

James Barsky, D. H. Michael Bowen, Seldon W. Terrant, Wallace Stettinius, Elwood K. Gannett, Marjorie Laffin, Gerald Sophar.

14. Energy

Underground Coal Gasification (3 Jan., 3:00 p.m., SH): Program of Department of Energy, current technologies, environmental effects, aquatic ecosystems, power production.

Esther M. Smith, Edward L. Burwell, Charles F. Brandenburg, Harold L. Bergman, Linda F. Atherton.

Long-Term Energy Transitions: Implications for Alternative Energy Strategies (4 Jan., 9:00 a.m., 3:00 p.m., SH): Oil transition, gasahol, solar energy, human behavior, California research and development policy, federal incentives policy.

August W. Giebelhaus, Lewis J. Perelman, Michael D. Yokell, Joseph Pratt, Ethan B. Kapstein, Mark Christensen, Ronald Larson.

The Nuclear Waste Management Controversy: Can Conflicting Values Be Reconciled? (5 Jan., 9:00 a.m., SH): Panel discussion.

Dorothy S. Zinberg, Roger W. A. LeGassie, Gus Spaeth, Dorothy W. Nelkin, Peter G. Montague, Harvey Brooks, Alexander B. Trowbridge, Sanford A. Lakoff.

Challenges in Assessing Oil and Gas Resources, and the Impact on National Planning (5 Jan., 3:00 p.m., SH): Importance of assessments, geologic uncertainties, economic uncertainties, methods of estimating, recent estimates.

John D. Haun, David A. White, Lincoln E. Moses, John M. Parker, Earl F. Cook, Harry M. Gehman, Charles D. Masters.

Commercializing Alternatives: Public-Private Sector Relationships in Energy R&D (6 Jan., 9:00 a.m., SH): Energy policy, commercializing federally funded technologies, commercializing new technologies.

Irvin L. White, Mary R. Hamilton, Allan R. Hoffman, H. Richard Blieden, David W. Jones, Jr., Jon Veigel, Walter S. Baer, Anthony W. Adler.

The Role of the Social Sciences in Energy Policy and Programs (6 Jan., 3:00 p.m., SH): Social science research, Department of Energy, OSTP/DOE working group.

Kenneth M. Friedman, Thomas J. Wilbanks, Joel Snow, Victoria J. Tschinkel, Cecil D. Barker, Paul P. Craig.

Adapting Social Structures to an Energy-Short World (7 Jan., 9:00 a.m., SH): Public forum, electric power supply, community planning, governmental regulation and free market.

Philip C. White, A. Berry Crawford, Edward H. Allen, W. Donham Crawford, Robert L. Morris, Michael O'Hare, Gregory A. Daneke.

Energy and Society (7 Jan., 3:00 p.m., SH): Energy and man, freedom and values, social issues.

Charles J. Ryan, Richard N. Adams, Earl Cook, Fred Cottrell.

15. Technology and Engineering

The Metric System: Costs versus Benefits (3 Jan., 3:00 p.m., SH): Case for metrication, optimized metric fastener, measurement on a human scale.

David F. Bartlett, Kenneth E. Boulding, Louis F. Sokol, Stanley E. Mallen, Richard Carrigan, David T. Goldman.

The Measurement of Industrial Innovativeness (3 Jan., 3:00 p.m., SH): Problems of measuring, potential indicators, downstream outputs, innovative activity.

Lawrence M. Kushner, Joseph P. Martino, Albert H. Rubenstein, Bela Gold, Eliezer Geisler, Aaron J. Gellman, Stephen Feinman, Robert R. Wright, George Heilmeier, Julius D. Heldman.

Manufacturing Technology: A Factor in the Productivity and the World Competitiveness of U.S. Industry (4 Jan., 9:00 a.m., 3:00 p.m., SH): Current status, problems and issues.

Joel D. Goldhar, Jack Baranson, John W. Bernard, Harvey E. Buffum, George E. Dieter, Wilbur S. Mann, Gustav Olling, Carl-an W. Silha, Jordan Baruch, Pierce T. Angell, Frederick L. Haynes, Robert J. Mayer, Rolf Piekarz, Robert H. Pry.

Technological and Legal Aspects of Noise Control (5 Jan., 9:00 a.m., SH): Some technological solutions, traditional legal attempts, federal laws.

William A. Thomas, Richard A. Scribner, Emilio Q. Daddario, William W. Lang, Henry Thomas, Milton Katz.

The Practice of Engineering versus the Pursuit of Science (5 Jan., 3:00 p.m., SH): Public policymaking, R&D funding, a national foundation for the professions, education, industry view.

Thelma Estrin, Myron Tribus, Bruno O. Weinschel, Allen B. Rosenstein, Robert F. Cotellessa, Arthur P. Stern.

Large-Scale Transportation of Coal and Coal-Derived Energy: Alternatives and Impacts (5 Jan., 3:00 p.m., SH): National dimensions, slurry pipelines, rail and highway, electrical transmission, policy aspects.

Schedule of Contributed Papers

At the Houston Meeting, contributed papers will be presented in **poster session format only**; there will be no slide sessions. Abstracts of individual papers can be found in the *Abstracts of Papers* volume, which is available on site to all registrants. The poster sessions will be held in the Hall of Exhibits at the Shamrock Hilton Hotel, and are scheduled as follows:

- **Poster Session I (4 Jan., 11:30 a.m.–1:00 p.m.).**
Physical Sciences, Mathematics, and Mathematical Biology.
- **Poster Session II (4 Jan., 1:30 p.m.–3:00 p.m.).**
Botany, Zoology, and Ecology.
- **Poster Session III (5 Jan., 11:30 a.m.–1:00 p.m.).**
Physiology and Endocrinology.
- **Poster Session IV (5 Jan., 1:30 p.m.–3:00 p.m.).**
Toxicology, Oncology, and Genetics.
- **Poster Session V (6 Jan., 11:30 a.m.–1:00 p.m.).**
Medical Sciences, Health, and Psychiatry.
- **Poster Session VI (6 Jan., 1:30 p.m.–3:00 p.m.).**
Experimental Psychology.
- **Poster Session VII (7 Jan., 11:30 a.m.–1:00 p.m.).**
Education, Economic and Social Sciences, and Science Policy.

Martin D. Robbins, Aaron Gellman, Robert R. Faddick, Jack Kintslinger, Abraham Gerber, John S. Gilmore.

The Impact of Regulatory Environment on Innovative Decisions (6 Jan., 9:00 a.m., HM): Natural resource development, insurance reimbursement, hazardous materials regulation, impact on technology.

Manoucher Parvin, Ralph C. D'Arge, David Brookshire, Richard Dusansky, Allen V. Kneese, Stephen Finch, Melvin Kranzberg, Gary Sellers, William S. Vickrey.

Human Factors of Outer Space Production (6 Jan., 3:00 p.m., SH): Man and machine design, physiological criteria, habitat requirements, adaptive behavior and competence, economic factors.

T. Stephen Cheston, David L. Winter, Allen J. Louviere, Paul C. Rambaut, Frank H. Samonski, Jr., Richard L. Kline, Kirmach Natani, Klaus P. Heiss.

Community Science and Technology: Experience from the Communities (8 Jan., 9:00 a.m., SH): New York's Lower Eastside, South Bronx, Chicago, rural areas in Texas, San Bernardino.

Craig Decker, Mary Ann MacKenzie, Michael Freedberg, Roman Rueda, Scott Bernstein, Pliny Fisk, Daria Fisk, Valerie Pope, Robert Ying.

16. Technology and Development

Management of Energy-Related Growth in Rural Areas (3 Jan., 3:00 p.m., SH): Social impact assessment, community planning, preliminary results in the south and west, mitigation strategies.

Don L. Boyer, Gary L. Watts, James G. Thompson, Robert L. Valeu, Elizabeth Lake, Elizabeth Peelle, Joel Darmstadter, Ed Smith, Mike Enzi.

The Impact of the Claims Settlement and Pipeline Construction on Alaska's Native People (4 Jan., 9:00 a.m., 3:00 p.m., SH): Alaska native regional corporations, Alaska native economy, environment, land use planning, education and government, response to new Institutions.

Sam Stanley, June Helm, Oran R. Young, B. Stephen Strong, David M. Hickok, Walter B. Parker, John W. Schaefer, Emil Notti, William Timme, Dennis Demmert, Jane P. Demmert, Rosita Worl, Thomas R. Berger.

The Impact of Technological Change on Women in Development (5 Jan., 9:00 a.m., SH): Policy analysis, rural development, food production, processing, and preservation, Agency for International Development.

Melinda Cain, Roslyn Dauber, Elise Boulding, Irene Tinker, Arvonne Fraser, Ruth Addams, Norman Brown, Elizabeth Colson, Daniel Lerner.

The Role of Elites in International Development (5 Jan., 3:00 p.m., SH): Decentralization in Tanzania, Mexican transnational executives, National University, development in Africa.

James H. Stirling, George E. Marcus, James W. Adams, Ignacio Millan, Larissa Lomnitz, Ali A. Mazrui.

Opportunities for U.S.-Mexican Scientific and Technological Cooperation (6 Jan., 9:00 a.m., 3:00 p.m., SH): Marine resources, biosaline research, energy, geological and geophysical research, universities, technological research institutes, U.S.-Mexican bilateral agreement.

Alejandro Orfila, Marcelo Alonso, Eduardo Feller, James W. Rowe, Agustin Ayala-Castañares, Harris B. Stewart, Jr., Fermin Reygadas Macedo, Emanuel Epstein, Gustavo Best Brown, James N. Brune, Cinna Lomnitz, Victor L. Urquidi, Edmundo de Alba, William D. McElroy, A. Richard Kassander, Jr. Guillermo Soberon, Guillermo Fernández de la Garza, James P. Blackledge, Edmundo Flores, Rogert Revelle.

Economic Aspects of Science and Technology Policy in Latin America (7 Jan., 9:00 a.m., SH): Institutional linkages, economic and institutional climate, light capital technologies, political intervention.

Dilms D. James, Allen D. Jedlicka, James H. Street, Fernando Chaparro, Gustav Ranis, Carlos Davila, William Glade, Gordon Smith, Thomas DeGregory.

Development of Infrastructures for Science and Technology in Developing Countries: Indigenous and U.S. Goals and Responsibilities (7 Jan., 3:00 p.m., SH): Latin America, East Africa, the subcontinent, scientific cooperation.

Charles V. Kidd, Mary Pat Williams, Victor L. Urquidi, Aklilu Lemma, M. Anandakrishnan, Peter F. Cowhey.

Strategies in Graduate Education in Science and Technology (8 Jan., 9:00 a.m., SH): Needs of LDC students, role of U.S.

universities, bilateral links, case study, indigenous research capacities, foreign graduate student.

Michael J. Moravcsik, R. S. Ganapathy, William L. Wight, Robert P. Morgan, Henry R. Glyde, Theodore W. Schlie, D. Woods Thomas.

17. Science and Technology Policy

Scientific, Technological, and Institutional Aspects of Water Resource Policy (4 Jan., 9:00 a.m., HM): Research, improving federal policy, urban aspects, institutional issues.

Yacov Y. Haimes, William C. Ackermann, Leo M. Eisel, Raymond Kudukis, Warren Viessman, Jr.

Science as Evidence in Judicial and Administrative Proceedings (4 Jan., 3:00 p.m., HM): Scientific and technical material, scientist as judge, complex scientific issues, judicial perspective.

Arthur F. Konopka, J. V. Martinez, J. Dan Nyhart, Oscar H. Paris, Paul G. Dembling, Patrick E. Higgenbotham.

Scientific Freedom and Responsibility in the International Arena (5 Jan., 9:00 a.m., SH): Status and prospects, U.S.S.R. and the West, human rights, responsibilities of the scientist.

Jessica Tuchman Mathews, Joel Primack, Jeremy J. Stone, Valentin Turchin, Patricia M. Derian, Bernard Feld.

Zero-Base Planning of Federal R & D: Thought Experiments (5 Jan., 9:00 a.m., HM): The public good, science for the people, federal research support, justification for the national R & D budget.

Rustum Roy, J. Derek deSolla Price, Adlai E. Stevenson, Alvin M. Weinberg, George E. Brown, Jr., J. E. Goldman.

Building Toward a Hurricane Disaster (6 Jan., 9:00 a.m., SH): Hurricane Camille 1969, response to hurricane warnings, protecting ourselves, controlling hurricanes, creating a hurricane disaster.

Neil L. Frank, Wade Guice, Donald G. Friedman, T. Michael Carter, John P. Clark, Robert K. Leic, Sally Davenport, Stanley L. Rosenthal.

Fencing In—and Fencing With—the Oceans (7 Jan., 9:00 a.m., HM): Law of the Sea Conference, science and other freedoms, marine science, fisheries management, 200-mile zone, mining, deep-sea development.

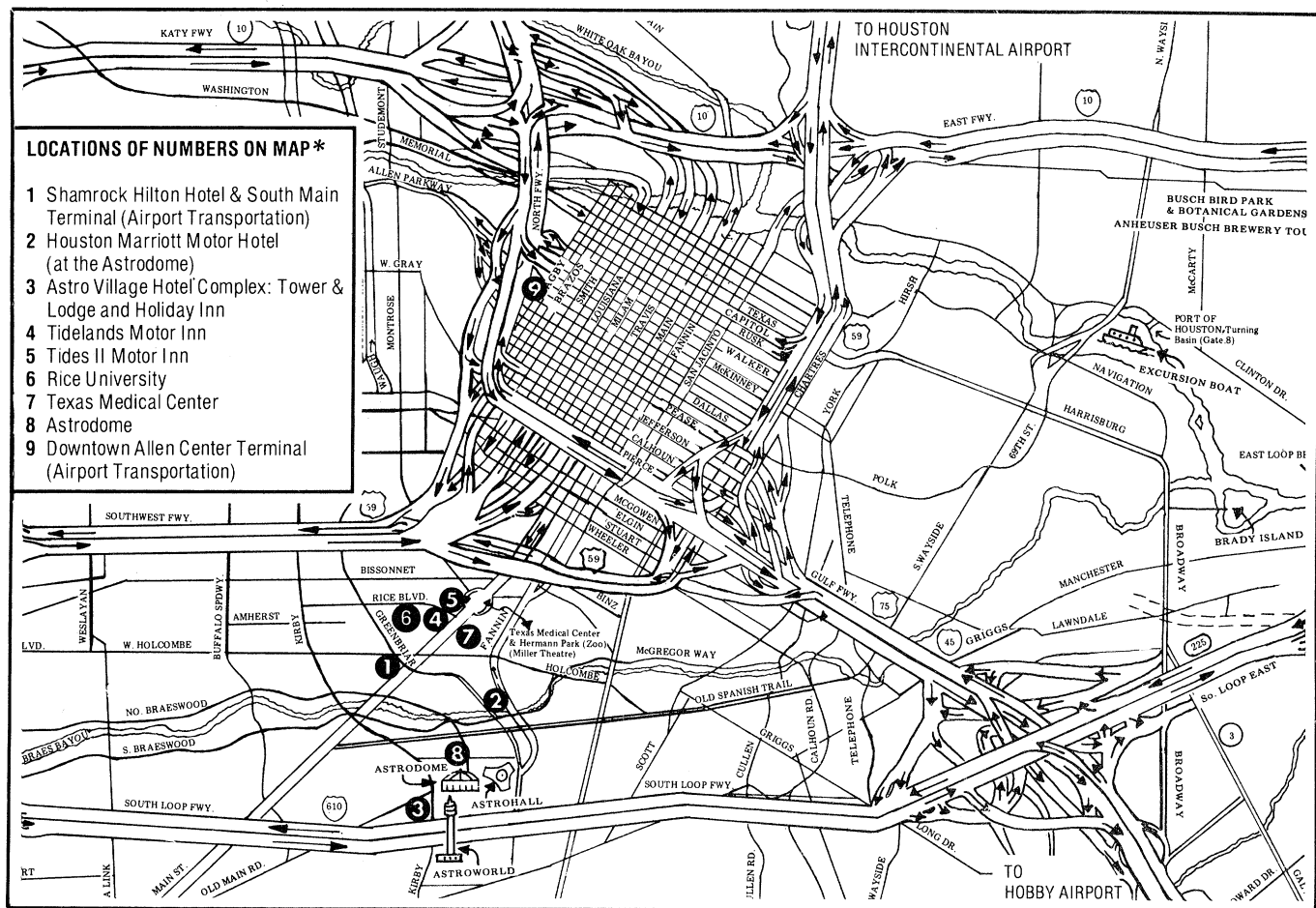
David A. Katcher, William A. Nierenberg, Richard G. Darman, Warren S. Wooster, Donald L. McKernan, Marne Dubs.

Nuclear Nonproliferation Policy: Technology and Institutions (7 Jan., 3:00 p.m., HM): Nuclear fuel cycle, nuclear power, nuclear weapons proliferation, evaluation.

David W. Hafemeister, Joseph S. Nye, John E. Gray, Albert Carnesale.

State and Local Science Policy Mechanisms: Are There Markets for Science in State and Local Government? (8 Jan., 9:00 a.m., HM): President's advisory panel, academic resources, helping state legislatures.

Phyllis Kahn, Richard A. Scribner, John Reuss, Francis Francois, Gordon Voss, Bruce Conlin, James Kellett, Robert Crawford, Diane Chapman-Willis.



*Map is not to scale. Approximate distance from Shamrock Hilton (1) to Houston Marriott (2) is 1/2 mi.; to Astro Village (3), 2 mi.; to Tideland (4) and Tides II (5), 1/4 mi.; to downtown Houston (9), 4 mi.

Annual Meeting
Houston
3-8 January 1979

MAIL TO:
AAAS—DEPT. R
1515 Massachusetts Ave., NW
Washington, D.C. 20005

ADVANCE REGISTRATION FORM

(E)

• PLEASE READ CAREFULLY •

- Preconvention Program, badge, and voucher for full Program and Abstracts will be mailed to registrants in early December.
- Full Program and Abstract Volume will be held at *Advance Registrants' Desks* (Shamrock Hilton and Marriott hotels).
- **Registrations received after 15 December will be held at the AAAS Information Booth.**

PART I: Registrant's name and mailing address for receipt of badge(s), pre-convention program(s), and *Science* (for new applicants)

PART II: Check ☒ categories of registration and enclose amount(s) indicated

[illegible]

PART III: Additional registrant(s) with same mailing address (use separate form if address differs)

(FIRST NAME)	(LAST)

(FIRST NAME)	(LAST)

Meeting Registration Categories	Single	Double (incl. Spouse)
AAAS Member	<input type="checkbox"/> \$25	<input type="checkbox"/> \$38
<input type="checkbox"/> Student or <input type="checkbox"/> Retired Member <i>(Check one)</i>	<input type="checkbox"/> \$13	<input type="checkbox"/> \$20
Non-Member	<input type="checkbox"/> \$31	<input type="checkbox"/> \$44

Non-Members applying for membership with registration (check below): Dues of \$31 (single) and \$43 (double) includes one subscription to *Science* (52 issues per year). Rates are domestic-regular membership. Inquire for Canadian, other foreign, student, and retired persons.

- ☐ \$56 Meeting registr. and single membership
- ☐ \$69 Double registr. and single membership
- Name of Member: _____
- _____
- ☐ \$81 Double registr. and double membership

NOTE: Special one-day attendance registration will be available at Registration Desks.

CONVENTION ADDRESS: _____
(Where you can be reached) (Hotel, Street Address, and/or Phone No.)

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

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

SURVEY OF ATTENDANTS

Annual Meeting, Houston, 3-8 January 1979

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

Number of Past AAAS Meetings Attended

- 61 ☐ None
62 ☐ One
63 ☐ Two
64 ☐ Three
65 ☐ Four
66 ☐ Five or more

Distance Traveled to Meeting

- 71 ☐ Under 51 miles
72 ☐ 52 to 150 miles
73 ☐ 151 to 400 miles
74 ☐ 401 to 1000 miles
75 ☐ 1001 to 3000 miles
76 ☐ Over 3000 miles

