

## Science: Challenges of Today— Outlook for the Future

The primary purpose of the Annual Meeting of the American Association for the Advancement of Science is communication. This year's meeting will be the 140th of the Association and the second time San Francisco has served as host city.

Last year's meeting took place in Washington, D.C., and members attending experienced a broad array of subject matter.

The San Francisco meeting promises an equally wide range of subjects, many focusing on areas of critical concern where solutions are presently needed.

San Francisco itself, with its spectacular views of the Bay Area, has much to offer by way of entertainment—superb cuisine, symphony and opera for the music lovers, and, of course, Chinatown and Fisherman's Wharf—which are a "must." Those attending the meeting should note that spring, with its moderate temperatures, will be well under way in San Francisco during the week of 24 February to 1 March.

### Outlook for the Future

The theme "Science: Challenges of Today—Outlook for the Future," has attracted a number of interesting and informative symposia. For decades, research in the sciences—biological, behavioral, environmental, social, physical, agricultural, and mathematical has been widespread throughout the United States.

A brief glimpse of today's science will be presented at this year's meeting together with some projections for the future. As President John F. Kennedy stated in his talk, a decade ago, at the Centennial Celebration of the National Academy of Sciences: "[S]cience is the most powerful means we have for the unification of knowledge, and a main obligation of its future must be to deal with problems which cut across boundaries, whether boundaries between the sciences, boundaries between nations, or boundaries between man's

scientific and his humane concern." The main thrusts of this year's program are presented under the broad themes of "The Utility of Biological Systems," "The Changing Methods of Communication," and "Environment and Science in Transition."

A series of invited lectures will bring together a distinguished group of scientists and administrators to cover topics ranging from early man, attempts at imitating the sun's energy, and science policy at the highest levels. This series will provide members with an interesting diversion, after a day of sessions, into another area of science interpretation, at either the late afternoon or early evening lectures. To accommodate the anticipated large audiences, ballrooms with seating capacities for several thousand persons have been reserved.

There will be a wide spectrum of major program areas on which to focus. Under the orientation of "The Utility of Biological Systems," one becomes concerned with health and behavior and the living world. Each of these sections will include subareas in order to accommodate specific units/symposia, which are the framework of the meeting. Varied topics will cover ethics in health, the psychology of thinking, what consciousness is, how one can control pain, and what will be done to feed the world. To look at today's trends, one need only attend the symposia on where people should live, or look to the 1990's and beyond. Whether we should control the pests with which we have to live is timely and should provide some direction on how to save our ecosystems which are vital to our existence and survival.

"The Changing Methods of Communication" provides the attendee with a stimulating program dealing with technological innovation, education, and science and public policy, coupled with government and the politics of science. Closely related are symposia discussing which species should be saved in our own country; should we as a developed nation be concerned with the scientists

in the underdeveloped nations?; and the role of controversy in science and why there should be relevance. In this age of concern one becomes interested in knowing what impact our professional societies will have, and a number of symposia will deal with this question.

Closely related to the role of education and science, with reference to the environment, one sees transition or change. The question of how our land will be used will be discussed from a variety of viewpoints. A program on the Pacific Basin will cover subjects of special interest to those looking at the Bay Area. Specific topics include why earthquakes are centered in these areas and, possibly, a forecast of when and what is taking place in the coastal zone.

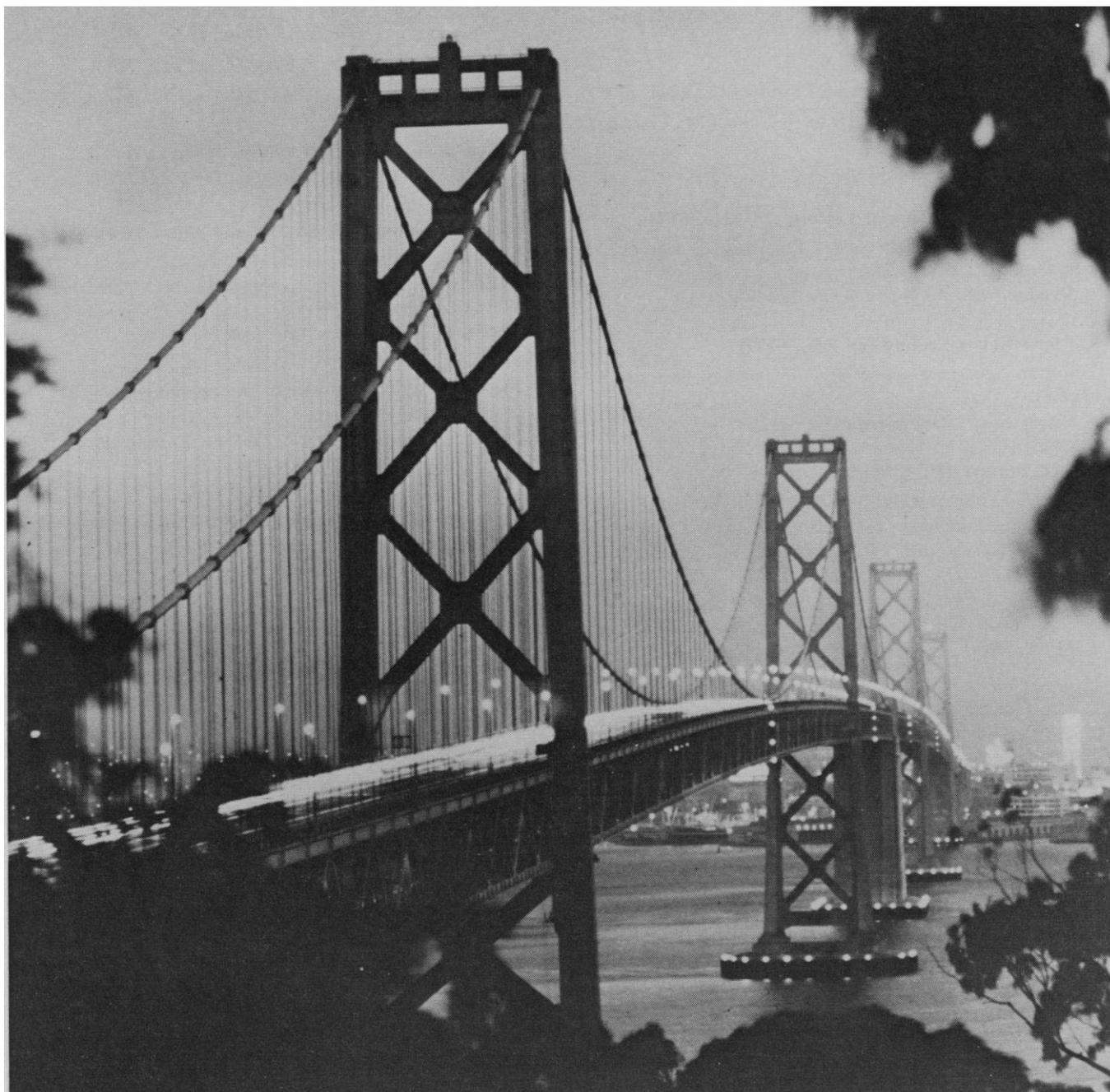
One can also look forward to such topics as science in the Republic of China and energy. A number of symposia will deal with the latter. This all-encompassing program will also consider space and the cosmos by presenting programs on specific accomplishments and theories including one that is in controversy.

This year's program has a week of excellent symposia, lectures, and films that could keep one busy for 10 hours each day. The following pages list the symposia offered at the meeting, arranged by themes. Although not officially listed in the program, the exchange of information with friends and colleagues outside the meeting rooms, in the hallways, and to and from the convention hotels is a most important and pleasant bonus from any meeting.

We invite you to study the following pages of program information, fill out your "Hotel Reservations Form," make your flight reservations, and plan to meet your colleagues at a most interesting and worthwhile AAAS Annual Meeting.—HARVE J. CARLSON

Registration and Housing Forms, pages 116 and 117

Science Film Festival and Exhibits, page 115



The San Francisco-Oakland Bay Bridge. [San Francisco Convention and Visitors Bureau]

## AAAS INVITED LECTURES

### National Geographic Society Lecture (24 Feb., SFH)

Richard E. Leakey (Administrative Director, National Museums of Kenya, Nairobi).

*Earliest Man: A New Perspective from Kenya.*

### Co-Chairmen's Lecture (25 Feb., SFH)

Russell Train (Director, Environmental Protection Agency, Washington, D.C.).

*The Environment Today.*

### Illustrated Lecture I (25 Feb., SFH)

Howard D. Greyber (Consultant, Washington, D.C.), Richard F. Post (Group Leader, Magnetic Mirror Program, Lawrence Livermore Laboratory), John P. Holdren (University Assistant Professor, Energy and Resources Program, University of California, Berkeley), and Jerome Weingart

(Senior Research Fellow, Environmental Quality Laboratory, California Institute of Technology).

*Imitating the Sun.*

### Invited Lecture I (26 Feb., SFH)

Ray Bradbury (Author, Los Angeles).

*Ray Bradbury on Science: Or What It's All About.*

### Illustrated Lecture II (26 Feb., SFH)

Roger N. Shepard (Professor of Psychology, Stanford University).

*Adventures in Perceptual Experience.*

### Invited Lecture II (27 Feb., SFH)

H. Guyford Stever (Director, National Science Foundation).

*Is It a Science World Again?*

**Address of the Retiring AAAS President (27 Feb., SFH)**

Leonard M. Rieser (Dean of Faculty, Dartmouth College).

*The Role of Science in the Orwellian Decade.*

**W. O. Atwater Memorial Lecture (28 Feb., SFH).**

J. George Harrar (President Emeritus, The Rockefeller Foundation).

*Nutrition and Numbers in the Third World.*

**Phi Beta Kappa Lecture (28 Feb., SFH)**

Joshua Lederberg (Professor of Genetics, Stanford University).

*Do Scientists Understand Science?*

**Invited Lecture III (1 Mar., SFH)**

Marina Whitman (Distinguished Public Service Professor [Economics], University of Pittsburgh).

*The "Dismal Science" Comes of Age: Economics in America's Third Century.*

**THE UTILITY OF BIOLOGICAL SYSTEMS**

**HEALTH**

**Liquid Crystals in Living Systems (25 Feb., SFH)**

Donald M. Small, Glenn H. Brown, A. J. Mabis, W. Stoeckenius, Harden M. McConnell, Carol Linden, Richard J. Havel, and Sunney I. Chan.

**Ethical and Public Policy Issues in Amniocentesis and Biomedical Innovation (25 Feb., SP)**

Amitai Etzioni, Leon E. Rosenberg, Gilbert Omenn, Lloyd Smith, Philip R. Lee, Albert R. Jonsen, Stephan P. Strickland, and Richardson Preyer.

**Food Additives: Beneficial or Deleterious? (25 Feb., SP)**

W. Ann Reynolds, William J. Darby, James S. Turner, Leon Golberg, Morley R. Kare, and A. M. Schmidt.

**The Control of Pain (25-26 Feb., SFH)**

Matisyohu Weisenberg, Aaron Ganz, Bernard Tursky, Robert King, Kenneth Casey, Donald Kroeger, Ernest Hilgard, Thomas Budzynski, Dewitt C. Baldwin, Jr., Samuel Dworkin, Daniel Laskin, Richard Black, John Ingle, John Loeser, Kay Thompson, and Robert Pearson.

**Hospital and Clinical Pharmacy (26 Feb., SFH)**

George F. Archambault, Harold W. Puffer, Adi S. Virji, Harold M. Silverman, Alex A. Cardoni, Vincent Cardi, Louis P. Jeffrey, John Autian, William M. Heller, Robert M. Elenbaas, Keith E. Jacoby, Gary C. Cupit, Donald E. Francke, Gary M. McCart, Sam K. Shimomura, Steven R. Kayser, Eric T. Herfindal, Jean R. Matoi, Joseph N. Gallina, Donald F. Beste, Jr., and Margaret M. McCarron.

**The Outlook for Psychiatry, Psychoanalysis, and Mental Health (26 Feb., SP)**

Alfred H. Rifkin, Margaret M. Lawrence, Irving Bieber, June J. Christmas, Leon Salzman, Judd Marmor, and Charles Lawrence.

**Possible Cellular Regulatory Roles for Polyamines (26 Feb., SFH)**

Diane H. Russell, Nikolaus Seiler, Edward J. Herbst, George Weber, Werner K. Maas, and P. R. Srinivasan.

**Systems Approach to Strokes and Heart Disease (27 Feb., SP)**

Harry E. Emler, Jr., Gardner C. McMillan, Homer R. Warner, Donald E. Wood, Cesar A. Caceres, Donald C. Harrison, and Charles D. Flagle.

**Recent Scientific Inquiries in Immunobiology (27 Feb., SP)**

R. E. Billingham, Alan E. Beer, Jonathan Lanman, Jan Behrman, Robert A. Good, Donald Morton, W. C. Cooper, and Roy L. Walford.

**Two Aspects of Drug Selection: Medical Efficacy and Pharmaceutical Quality (27 Feb., SFH)**

William M. Heller, Philip G. Walters, Henry W. Elliott, John C. Ballin, Harold Aaron, Donald E. Francke, Robert F. Maronde, Joseph G. Valentino, Daniel Banes, Marvin C. Meyer, and Allan B. Dyer.

**Implications of Some Recent Biological Studies of Depressive Illness (27 Feb., SFH)**

J. Mendels, James Maas, Alan Frazer, Dennis L. Murphy, Frederick K. Goodwin, Ross Baldessarini, David Hamburg, Ming P. Tsuang, Edward J. Sachar, John M. Davis, and Bernard J. Carroll.

**Biochemical Lesions of Periodontal Disease (27 Feb., SFH)**

Howard M. Myers, Philip Person, William A. Payne, Marcel E. Nimni, Roy L. Page, Audre W. Loverde, Thomas R. Tempel, and J. Max Goodson.

**The Pharmaceutical Sciences (28 Feb., SFH)**

John Autian, E. O. Dillingham, W. H. Lawrence, James Lim, Morton L. Mallin, James W. McGinity, John Hill, Martin Apple, Suzanne F. Adair, Dennis W. Adair, Leslie Z. Benet, James R. Talley, Robert A. Magarian, E. Blanche Sommers, Kenneth N. Barker, and C. T. Peng.

**Issues in Extrafamily Child Care (28 Feb., SFH)**

Myra H. Strober, Patricia Greenfield, S. Shirley Feldman, and Pamela Roby.

**Biomedical Aspects of Aging (28 Feb.-1 Mar., SFH)**

Robert R. Kohn, Alex Comfort, George A. Sacher, Calvin Lang, Nathan Shock, Takashi Makinodan, Nathaniel O. Calloway, Edwin L. Bierman, Robert D. Terry, Richard C. Alderman, Caleb E. Finch, Christian R. De Duve, Bernard L. Strehler, Leslie Orgel, Leonard Hayflick, Charles Daniel, Edward J. Masoro, and Jaime Miquel.

**Sex Differences in Health Care (1 Mar., SP)**

Jane E. Prather, Linda S. Fidell, Vernon Bullough, Bonnie Bullough, Mary C. Howell, Michael S. Backenheimer, Pauline Bart, Oliver Cope, Sheryl Ruzek, Lawrence Linn, and Virginia Olesen.

**Who Pays for Medical Education; Who Benefits?  
(1 Mar., SP)**

Richard H. Kessler, Victor R. Fuchs, Eli Ginzberg, Margaret E. Mahoney, David Mechanic, Sherman M. Melnickoff, and John S. Millis.

**BEHAVIOR**

**Crime and Social Control in the 1990's (25 Feb., SFH)**

Margaret A. Zahn, Sawyer Sylvester, John C. Ball, Simon Dinitz, Harold Goldman, Lewis Lindner, Thomas Foster, Leonard Savitz, Leslie T. Wilkins, William J. Chambliss, and Gilbert Geis.

**The Application of Science and Technology to the Problem of Drug Abuse in the United States (25 Feb., SFH)**

Calvin Fenton, Thomas Bryant, Lonnie E. Mitchell, David Smith, Donald R. Wesson, Walter Z. Collier, Miryam M. Davis, Avram Goldstein, Elliott Bovelle, Frances C. Welsing, and Luis A. Batista.

**The Psychology of Thinking (25 Feb., SP)**

Carl P. Duncan, Roger L. Dominowski, Bruce R. Ekstrand, and Edward E. Smith.

**Neurobiological Mechanisms of Adaptation and Behavior  
(25-26 Feb., SFH)**

Arnold J. Mandell, Walter Lovenberg, Norman Kirshner, Ronald Kuczynski, Seymour Kaufman, Joseph J. Schildkraut, Suzanne Knapp, E. Leong Way, Dora B. Goldstein, Frederick K. Goodwin, Jon M. Stolk, David S. Segal, Richard H. Rech, Wagner H. Bridger, James W. Maas, and Richard J. Wyatt.

**The Psychology of Consciousness (26 Feb., SP)**

Phillip Lee, Robert Ornstein, David Galin, Arthur Deikman, and Charles Tart.

**Cognitive Views of Human Motivation (27 Feb., SP)**

Bernard Weiner, Robert Bolles, Richard S. Lazarus, Walter Mischel, David Birch, John W. Atkinson, and Robert R. Sears.

**Behavioral Sociobiology (28 Feb., SP)**

Edwin M. Banks, J. P. Scott, B. L. Hart, John Fentress, and Rebecca Field-Lockhart.

**New Developments in Brain Function for Speech Perception and Production (28 Feb., SFH)**

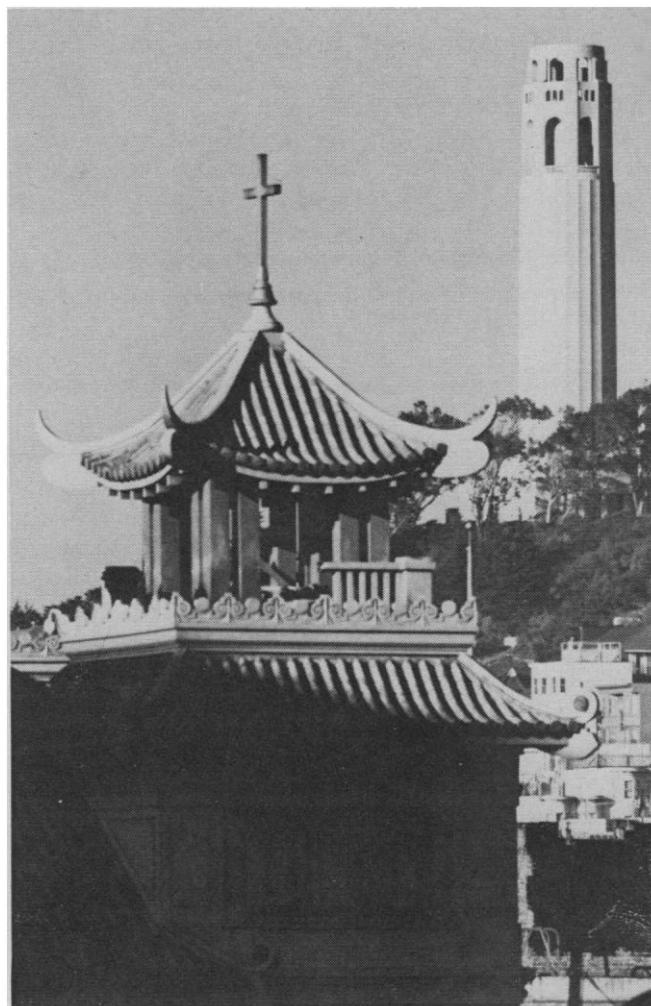
C. I. Berlin, Ruth S. Day, James Abbs, Peter N. Ladefoged, and James H. Dewson, III.

**Developmental Psychobiology: The Significance of Infancy (28 Feb., SP)**

Lewis P. Lipsitt, Sandra Scarr-Salapatek, Philip R. Zelazo, Joseph J. Campos, and Daniel G. Freedman.

**Ethics, Moral Values, and Psychological Interventions  
(1 Mar., SP)**

Robert S. Wallerstein, Rudolph Ekstein, Erik Erikson,



Telegraph Hill, crowned by Coit Tower, looms above typical pagoda-roofed building in San Francisco's Chinatown. [San Francisco Convention and Visitors Bureau]

William H. Grier, Robert Lifton, Robert Michels, and Robert J. Stoller.

**LIVING WORLD**

**Annual Biological Clocks: Circannual Clocks (25 Feb., St.F)**

Jerome B. Senturia, Mary Anne Brock, Sigfried P. Berthold, Eric T. Pengelley, Sally J. Asmundson, Eberhardt Gwinner, Albert R. Dawe, Wilma A. Spurrier, Ivan Assenmacher, James T. Enright, Bengt W. Johansson, James T. Rutledge, Robert Schwab, Helmut Klein, Richard J. Goss, Alain Reinberg, and Michel Menaker.

**On the Nature of Species in Light of Modern Research  
(25 Feb., SFH)**

Theodosius Dobzhansky, H. L. Carson, F. J. Ayala, Harlan Lewis, and J. W. Valentine.

**The Structure and Functioning of Western United States Coniferous Forest Ecosystems (26 Feb., SFH)**

Joan M. Hett, Robert Wissmar, Jeff Richey, Robert Rydell, Robert Gara, Scott Overton, Curtis White, Kenneth Reed, William Emmingham, Ronald Kickert, Charles Grier, Phillip Sollins, Dale Cole, and Gordon Swartzman.

**The Use of Zoos in Animal Behavior Research (26-27 Feb., St.F)**

Gary Greenberg, Suzanne Adams, Georgia Babladelis, Randall Eaton, Phillip W. Ogilvie, Allen W. Stokes, Duane M. Rumbaugh, L. James Shapiro, Benjamin B. Beck, Erich Klinghammer, and Kay Mehren.

**Biological Control of Populations (27 Feb., SFH)**

R. W. Allard, Robert van den Bosch, Timothy Prout, and Kingsley Davis.

**Endangered Species: Causation and Remedies (27-28 Feb., SFH)**

Daniel B. Luten, Ian McT. Cowan, Carl O. Sauer, George M. Woodwell, Roger Tory Peterson, A. Starker Leopold, Richard H. Robinson, Eugene V. Coan, Elizabeth McClintock, Robert W. Risebrough, Judson E. Vandevere, John Lloyd Cahill, David J. Dunaway, Mildred E. Mathias, Howard R. Leach, William Aron, Lee M. Talbot, Richard Gard, Edward D. Mitchell, Joan McIntyre, Victor B. Scheffer, Maxine E. McCloskey, Keith M. Schreiner, James W. Moorman, Raymond F. Dasmann, Richard A. Frank, and Garrett Hardin.

**Pest Management: An Interdisciplinary Approach to Crop Protection (28 Feb., SP)**

J. Lawrence Apple, William R. Furtick, Edward H. Glass, Philip S. Corbet, Stephen Wilhelm, Ray F. Smith, Robert L. Rabb, H. C. Ellis, Furney A. Todd, Dale G. Bottrell, Donald W. DeMichele, William E. Waters, Ellis B. Cowling, Stanley C. Hoyt, and John D. Gilpatrick.

**Invertebrate Transplantation (28 Feb., St.F)**

Richard K. Wright, Gysèle Van De Vyver, Xénia Kolenkine, Stanley Shostak, Christopher Bayne, Edwin L. Cooper, W. H. Hildemann, R. Karp, A. L. Reddy, Howard Bern, Michael P. Kambysellis, and William J. Bell.

**Lifes Input-Output: Are Nonintrusive Multicomponent Low-Cost Time Profiles Needed? (28 Feb., SP)**

N. G. Anderson, P. R. Lee, G. Z. Williams, E. C. Horning, E. L. Scott, M. Anbar, B. W. Brown, Jr., A. L. Burlingame, S. N. Cohen, W. Dreyer, M. Horning, Arthur B. Robinson, and Roy Teranishi.

**CHANGING METHODS OF COMMUNICATION**

**SCIENTIFIC AND TECHNOLOGICAL INNOVATIONS**

**Applications of Artificial Intelligence Research (25 Feb., St.F)**

Jerome A. Feldman, Roger Schank, Raj Reddy, Seymour Papert, Bernard Chern, and Edward Feigenbaum.

**Printing Technology (25 Feb., St.F)**

Gerry B. Andeen, William D. Rinehart, Louis D. Mailoux, Gerald L. Pressman, Richard G. Sweet, J. James Stone, R. Hugh Van Brimer, Robert Meltzer, Donald E. Troxel, and William F. Schreiber.

**Category Theory Applied to Computation and Control (25-26 Feb., St.F)**

Ernest G. Manes, Samuel Eilenberg, Rudolph E. Kalman, Joseph A. Goguen, F. Joanne Helton, E. Stewart Bainbridge, Mitchell Wand, Bostwick Wyman, Lydia Shelliktree, Suad Alagic, B. Griffeth, and Michael A. Arbib.

**Some Mathematical Questions in Biology (25-26 Feb., St.F)**

Hans J. Bremermann, Motoo Kimura, Warren J. Ewens, E. C. Zeeman, John J. Tyson, Simon A. Levin, George Oster, Stephen Blomfield, Alfred Gierer, Hans Meinhardt, and Nancy Kopell.

**Organizing Computer Networks for Science (25-26 Feb., St.F)**

Kenneth L. Bowles, Joe B. Wyatt, Allen B. Veaner, Thomas N. Pyke, Jr., Norman R. Nielsen, William F. Massey, Carlos A. Cuadra, Michael S. Sher, Charles Warden, Ruth M. Davis, Russell Shank, Madeline Henderson, Kenneth J. Stetten, and Jerome I. Elkind.

**New Applications of Mathematics to the Behavioral Sciences (26 Feb., St.F)**

Paul J. Knopp, Patrick Suppes, Robert M. Axelrod, and Michael D. Intriligator.

**High-Voltage Electron Microscopy (27 Feb., SP)**

Robert M. Glaeser, R. E. Fisher, H. G. F. Wilsdorf, Keith R. Porter, J. M. Cowley, and A. V. Crewe.

**The Transition from Scientific Research to Engineering (27 Feb.-1 Mar., St.F)**

Robert J. Raudebaugh, G. A. Busch, William Buehler, S. P. Wolsky, Earl R. Parker, Donald W. Breck, R. T. Dorsey, J. H. Wernick, George Irwin, Raynor Duncombe, Stephen T. Quigley, Morris Cohen, Alan G. Chynoweth, A. L. Conn, Richard Balzhiser, C. Judson King, John A. Sargent, Warren Muir, Donald G. Wilson, F. Karl Willenbrock, Raymond J. Schneider, Robert Duffy, P. K. Seidelmann, Gene R. Marner, R. C. Spear, Duncan Peterson, Uwe Reischl, and Bernard Tebbens.

**Mathematics and the Social Sciences (28 Feb., St.F)**

Daniel Gallin, David Berlinski, Ed Levy, Stephen Smale, Roy Radner, Patrick Suppes, and Tom Bever.

**Recent Progress in Foundations of Mathematics (1 Mar., St.F)**

Lipman Bers, Julia Robinson, Saunders MacLane, Errett Bishop, Ernest Nagel, Wilhemus A. J. Luxemburg, Alonzo Church, and George Kriesel.

**SCIENCE AND PUBLIC POLICY**

**Social Policy Affecting Women's Roles (25 Feb., SP)**

Jean Lipman-Blumen, Madeline Mixer, Barbara Newell, Jessie Bernard, Kirsten Amundsen, Nancy McDermid, and Constantina Safilios-Rothschild.

**The 1990's and Beyond: A Gerontocracy? (25 Feb., SFH)**

Lissy F. Jarvik, David D. McFarland, Gordon Tomkins,

Marjorie Fiske Lowenthal, George Maddox, Alexander Simon, Bernice Neugarten, Carl Eisdorfer, Roslyn Lindheim, and James E. Birren.

**Federal Support of Science and Scientific Institutions (25 Feb., SFH)**

Dael Wolfe, James A. Shannon, Charles Sprague, Robert W. Berliner, George E. Mueller, and William D. McElroy.

**Technological Innovation: What We Know, Don't Know, and Should Know (25 Feb., SFH)**

Melvin Kranzberg, Frederick A. Rossini, Norman R. Baker, Michael Michaelis, Patrick Kelly, Fred A. Tarpley, Morris Mitzner, and Aaron J. Gellman.

**Institutions for the Application of Science to Society's Problems (25 Feb., SP)**

Richard A. Scribner, John C. McKinney, Karl Kreilkamp, Paul F. Lazarsfeld, Henry W. Riecken, Ruth M. Davis, Robert K. Merton, Richard A. Carpenter, David Mechanic, Don E. Kash, Constantine Toregas, and Verne L. Roberts.

**Science Manpower in the Seventies—Will Supply Match Demand? (25 Feb., SP)**

Lincoln E. Moses, Helen S. Astin, Elizabeth Scott, Alfred E. Brown, Betty M. Vetter, Lewis Solmon, and Allan M. Cartter.

**The Ethnography of Power (25–28 Feb., SP)**

Richard N. Adams, Lewis L. Langness, Michael D. Lieber, Margaret Mackenzie, Blodwen Hammond, Mary Shephardson, Edward Norbeck, Richard W. Lieban, Harumi Befu, Bernard Gallin, Shelley Errington, Mary B. Black, Arthur E. Hippler, Stephen Conn, Pamela Amoss, Lowell J. Bean, Raymond D. Fogelson, Raymond J. DeMallie, Triloki N. Pandey, Sam Stanley, Albert Wahrhaftig, Bernard Siegel, Benson Saler, Brian Stross, Fadwa El Guindi, M. W. Helms, Jacob Fried, Ralph Bolton, Benjamin Orlove, Laura Nader, Robert F. Spencer, Robert B. Lane, and Elizabeth Colson.

**Creative Responses to Contemporary Needs by Higher Education (26 Feb., SP)**

David G. Barry, Edward J. Kormondy, Maxwell F. Taylor, Jr., George W. Hazzard, Harold L. Hodgkinson, and Robert L. Stern.

**Scientists, Engineers, and Congress: A View from Inside Out (26 Feb., SFH)**

Richard A. Scribner, George E. Brown, Jr., Jessica Tuchman, Elliot Segal, Michael Telson, Anne Cahn, Benjamin Cooper, Barry Hyman, Ronal Larson, and N. Richard Werthamer.

**National Administration of Science (26 Feb., SFH)**

Minoru Tsutsui, E. R. Piore, Koji Fushimi, Russell Drew, and Masao Yoshiki.

**Science Education and Administrative Problems Facing the Academies of Science (26 Feb., St.F)**

Franz H. Rathmann, Lowell J. Paige, Charles E. DePoe,

Charles M. Vaughn, James R. Batt, Robert T. Orr, Margaret H. Peaslee, Lora M. Shields, and Harold C. Lyon.

**Interactions of Government Policies with Technological Development (26 Feb., SFH)**

Joel D. Goldhar, Aaron Gellman, Michael Baram, Robert L. Stern, Joseph Kasputys, J. Timbers, Donald Dunn, Chauncey Starr, Richard Nelson, Daniel De Simone, Jordan Lewis, and C. Branson Smith.

**Research on Decision-Making—Potential for Education (26 Feb., SP)**

Wayne W. Welch, James G. March, Jack C. Merwin, Amnon Rapoport, Russell L. Ackoff, and Michael Scriven.

**Population Change with Issues for Local Policy (26 Feb., SFH)**

George S. Masnick, Judith Blake Davis, Peter A. Morrison, Jose Hernandez, James Sweet, Larry Bumpass, June Sklar, Beth Berkov, and David Alvarez.

**Affirmative Action: Practical Approaches to Achieve Equal Employment Opportunity (26 Feb., SP)**

Janet W. Brown, Jean E. Simmonds, Jennifer A. Renzel, James C. Goodwin, Anne Miner, Brenda Freeman, Arthur Bienenstock, Henry Kowal, and Waite H. Madison.

**Public Understanding of Science (26 Feb., The Exploratorium)**

Gerard Piel, Glenn T. Seaborg, Frank Oppenheimer, David Perlman, Michael Ambrosino, Amitai Etzioni, and James C. Butler.

**Science Advisors in State Government (26 Feb., SFH)**

William A. Thomas, M. Frank Hersman, John E. Mock, and James W. Curlin.



The fleet at Fisherman's Wharf nestled in an early morning cocoon of fog. [San Francisco Convention and Visitors Bureau]



Palace of Fine Arts, home of the Exploratorium, which was built for the 1915 Panama-Pacific Exposition. [NASA-Ames Research Center, Moffett Field, California]

**Systems Theory and Its Application (27 Feb., St.F)**

Perri Stinson, Joseph Piehuta, Eugene P. Wenninger, John R. Biddle, Len R. Troncale, Miroslav Valach, Harold Linstone, James B. Andrews, Bela H. Banathy, Richard F. Ericson, and James G. Miller.

**Scientists and Congress: The Emerging New Relationships (27 Feb., SFH)**

George Kistiakowsky, Sanford A. Lakoff, Frank Von Hippel, Jessica Tuchman, Anne H. Cahn, Roland Herbst, William Miller, Richard Perle, and Herbert York.

**Motivating and Training Minorities and Women in Science (27 Feb., SP)**

Ciriaco Q. Gonzales, Vijaya Melnick, Don C. Ahshapanek, Benjamin Alexander, Arthur F. Diaz, Laurel Glass, Richard Tapia, and Luther Williams.

**Where Should the World's People Live? International Migration and U.S. Immigration Policy (27 Feb., SFH)**

John Tanton, Garrett Hardin, James F. Greene, James J. Orlow, and William M. Buchanan.

**Problems of Society—New Roles and Changing Parameters for Scientists (27 Feb., SFH)**

Milton Harris, Philip H. Abelson, Michael J. Deutch, and Irving H. Siegel.

**Graduate Programs and Policies for Minority Students (28 Feb., SP)**

Leonard H. O. Spearman, O'Neil R. Collins, Alvin H. Jones, Jr., John R. Rinaldi, and Ralph W. Keller.

**Science and International Politics (28 Feb., SFH)**

Harold Brown, Oscar Bakke, Joseph V. Charyk, Nicholas deB. Katzenbach, and Wolfgang H. K. Panofsky.

**Technology Assessment: A Report and Comparison of Several Recently Completed Studies (28 Feb., SFH)**

Irvin L. (Jack) White, Martin V. Jones, John Baden, William R. Menchen, Leo W. Weisbecker, and Vary Coates.

**Implied New Directions for Science and Technology (28 Feb., SFH)**

Howard J. Lewis, Hugh Loweth, John D. Holmfeld, David Z. Beckler, Eugene B. Skolnikoff, Harvey Brooks, and John Logsdon.

**Policies and Procedures in the Use of Grants and Contracts by the NIH in the Support and Conduct of Biomedical Research (1 Mar., SP)**

John F. Sherman, Robert S. Stone, Thomas E. Malone, Leon Jacobs, Richard Stephenson, and Storm Whaley.

**Equality of Educational Opportunity (1 Mar., SP)**

Marshall S. Smith, Stephan Michelson, Andrew C. Porter, and David K. Cohen.

**The Social Science of Science: A Strategy for Science Education in the 1970's (1 Mar., SP)**

Dorothy S. Zinberg, Sidney D. Drell, David A. Hamburg, Dorothy Nelkin, and Malcolm Parlett.

**The Longitudinal Study of Educational Effects (1 Mar., SP)**

Ezra Glaser, Dorothy M. Gilford, Harold Nisselson, Marjorie Chandler, Thomas L. Hilton, and Junius A. Davis.

**THE SOCIAL CONTEXT OF SCIENCE—  
PROCESSES AND NEEDS**

**The Marconi Centenary (25 Feb., SP)**

Egidio Ortona, Gioia Marconi Braga, Charles Susskind, Douglas Cater, Henry Booker, and George H. Brown.

**The Relationship of the Natural Sciences, Social Sciences, and the Humanities to Environmental Education (25 Feb., St.F)**

Peter H. Cohan, J. Arthur Campbell, Irving Morrisett, Carl P. Swanson, Edward J. Ambry, Dean B. Bennett, Barbara B. Clark, Eleanor K. Davis, George E. Grube, and Harold D. Mahan.

**The Food Supply and the Organic Food Myth (25 Feb., SP)**

James B. Kendrick, Jr., A. M. Schmidt, D. Paarlberg, E. M. Mrak, H. B. Jones, S. J. Barrett, and D. I. Arnon.

**The Nation's Heritage: What Should Be Saved? (25 Feb., SP)**

Hester A. Davis, Anthony Andreas, Thomas F. King, Robert Utley, Raymond H. Thompson, Jack Stoddard, Michael J. Moratto, André Emmerich, Charles R. McGimsey III, and Robert Garvey.

**Research Papers (American Junior Academy of Science) (25 Feb., St.F)**

Sr. Mary Alvernia, Philip Carlberg, Michael Moskowitz, Anne Herman, David D. Welter, Gary Owens, Phillip Doerner, Gordon Waite, Deborah Polak, Ofrie Romero, Margaret Gail Smiley, Edgar L. Steele, David Pittenger, Constance W. Butler, Timothy J. Pollard, Stephen B. Heppe, Patrick Jobe, Glenn Jones, John Davis, Randy Havener, Richard S. Bakalar, and Marilyn A. Smith.

**Mechanisms and Consequences of Transition to Limited Growth (25 Feb., St.F)**

Edward L. Bennett, Ronald Doctor, Rodney J. Arkley, David Seckler, Paul W. Barkley, Louis B. Lundborg, William E. Siri, Judith Blake, Peter Passell, C. West Churchman, and Roderick Nash.

**Systems Thinking and Science Policy: A Critique of Contemporary Science and Science Studies (26 Feb., SP)**

Ian I. Mitroff, C. West Churchman, Thomas A. Cowan, Frederick Betz, Charles Hanson, and Richard O. Mason.

**Involvement: The Key to Effective Environmental Education (26 Feb., St.F)**

Ruth W. Melvin, Robert E. Roth, Joseph H. Chadbourne, Rudolph J. H. Schafer, and Esther P. Railton.

**Environmental Assessments: Science or Chicanery? (26 Feb., St.F)**

James H. Stone, William D. Schulze, James C. Hite, Suzanne Bayley, and Michael S. Baram.

**The Role of Controversy in Science (27 Feb., SP)**

William V. Mayer, Dale Schwindaman, Richard Carpenter, John A. Moore, and Garrett Hardin.

**Paradigmatology (27 Feb., SP)**

Magoroh Maruyama, Harold Linstone, Albert Wilson, Donna Wilson, William Filstead, Walter Buckley, Margaret Mead, Irving S. Friedman, Rosalie Cohen, Oliver W. Markley, Theodore Balgooyen, and Heinz von Foerster.

**Science and Technology in Environmental Impact Assessment (27 Feb., St.F)**

Charles F. Cooper, David D. Smith, Leonard Ortolano, John M. Neuhold, Alfred Heller, Malcolm F. Baldwin, L. Edwin Coate, and Charles R. Goldman.

**Reorganizing Information Resources to Improve Decision-Making (27 Feb., SP)**

Manfred Kochen, Andrew A. Aines, John R. Platt, Gerald Feinberg, Eugene Garfield, C. West Churchman, Harold Lasswell, Ronald G. Havelock, Karl W. Deutsch, Ales Inkeles, and Derek de Solla Price.

**Major Features of the World of 1994 (27 Feb., SP)**

Roy C. Amara, Charles W. Williams, Jr., Daniel Bell, Theodore J. Gordon, Willis W. Harman, Margaret Mead, John Platt, and Glenn T. Seaborg.

**Multidisciplinary Research on Problems of Intercultural Communication (28 Feb., SP)**

Robert S. Goyer, Edward C. Stewart, Edmund S. Glenn, Harry Bornstein, Alfred G. Smith, Robert Perloff, and Maung Gyi.

**Science and The People's Republic of China (28 Feb., SP)**

Anne Keatley, John W. Lewis, Leo Orleans, Edward Chao, John J. Bonica, Carl Djerassi, and William Kessen.

**The Social Context of Inquiry: Problems of Forbidden and Discouraged Knowledge (28 Feb.-1 Mar., SP)**

John H. Bunzel, Edward Shils, Max Black, Reinhard Bendix, Bernard Stein, A. James Gregor, John Hospers, Richard Rudner, Michael Scriven, C. West Churchman, Stephen Toulmin, Philip Siegelman, David Fellman, Charles Frankel, Ralph G. Ross, John Silber, Allan Sindler, Miro Todorovich, Robert Boritch, Richard Herrnstein, William Kruskal, Ellis Page, Kathleen Archibald, Bernard Diamond, and Sidney Hook.

**Anthropology in the 1990's: Conditions, Needs, and Prospects (28 Feb.-1 Mar., SP)**

Thomas Weaver, Walter Goldschmidt, Richard N. Adams, Eugene Hammel, Edward H. Spicer, Gerald Berreman, Francis L. K. Hsu, Keith H. Basso, Marshall Durbin, A. Richard Diebold, Brent Berlin, John Gumperz, David Olmsted, Keith Kernan, Ezra B. W. Zubrow, William Longacre, William Lipe, Brian Fagan, Rex L. Wilson, Donald Miller, R. Gwinn Vivian, Steve Zegura, S. L. Washburn, Kenneth Weiss, Bernard Campbell, Richard Osborne, Bruce Wallace, and Solomon H. Katz.

**The Role of Professional Societies in Meeting Environmental Problems (1 Mar., St.F)**

Nels H. Granholm, Winifred W. Doane, Robert W. Krauss, Robert L. Burgess, Joel Primack, Peter H. von Hippel, and Albert W. Johnson.

**Some Needs of Science in Less-Developed Countries (1 Mar., SP)**

Michael J. Moravcsik, Francis Dart, William V. Mayer, Gordon Hiebert, Jorge Sabato, Derek de Solla Price, Carroll Bowen, Antoine Zahlan, and Victor Rabinowitch.

**How Can Technology in the U.S. Be Directed toward Helping Developing Technologies in the Less-Developed Countries? (1 Mar., SFH)**

George Bugliarello, Simón Teitel, Amir U. Khan, José Giral, Albert Rubenstein, Theodore W. Schlie, Allen D. Jedlicka, Bruce S. Old, Charles Bliss, John Reedy, Irma M. Adelman, Uma J. Lele, Jon Sigurdson, Mitsuru Kataoka, Clare Nader, Brewster Denny, Charles S. Dennison, and Harry A. Arnold.

**The Development of American Science in the 19th and 20th Centuries (1 Mar., SP)**

Harry Woolf, Sally Kohlstedt, Nathan Reingold, William Coleman, Arthur Norberg, Robert H. Kargon, Michael Sokal, Garland Allen, and Charles Weiner.

**A New Approach to Technology for Developing Countries in Asia: The "Barefoot" or "People's" Technologist (1 Mar., SP)**

Louis Lazaroff, Victor H. Li, H. E. Hoelscher, Muhammed Naseem, and Harry T. Oshima.

## **ENVIRONMENT AND SCIENCE IN TRANSITION**

### **ENVIRONMENTAL EVOLUTION**

**Lake Powell and Lake Tahoe in Environmental Transition (25 Feb., SFH)**

Philip L. Johnson, Robert H. Twiss, Orson L. Anderson, Jerrold E. Levy, Dean E. Mann, Gary D. Weatherford, F. Lee Brown, Priscilla C. Perkins, Gordon C. Jacoby, David E. Kidd, Robert C. Reynolds, Charles R. Goldman, Robert N. Coats, Robert L. Leonard, Hans W. Paerl, Paul Meyer, Edmond Costantini, and Geoffrey Wandesforde-Smith.

**Experiments in Regional Environmental Management (25 Feb., St.F)**

William E. Felling, Kenneth Brown, Mary Bitterman, Richard Page, and Paul DiFalco.

**Co-Chairmen's Symposium: The San Francisco Bay Area—Looking toward the 1990's (26–27 Feb., SFH)**

Glenn T. Seaborg, G. J. Bongard, Carl A. Trexel, James E. Vann, Allan B. Jacobs, John Bunzel, David A. Wallace, Joseph Bort, John A. Maga, William D. Evers, Philip R. Lee, Howard Cogswell, Edgar Wayburn, Charles J. Hitch, Edgar Kaiser, Sr., William R. Hewlett, Robert D. Brown, Jr., John Knox, Ed Reinecke, John J. Balles, and Walter Hoadley.

**Architecture and the American Future: The Coming Show-down (26–27 Feb., SFH)**

Nathaniel Alexander Owings, Edmund Bacon, Archibald Rogers, William Reilly, Glenn T. Seaborg, Alfred Heller, John W. Abbott, Jerry D. Goldberg, Gordon Hall, J. Russell Levikow, Marc E. Goldstein, Paolo Soleri, Sim Van

Der Ryn, Robert Cahn, Wolf Von Eckhardt, and Irving Bengelsdorf.

**To Feed the World: What to Do with Changing Climate (27 Feb., SP)**

Louis M. Thompson, Wayne L. Decker, James D. McQuigg, Donald L. Gilman, Reid A. Bryson, Thomas F. Malone, William E. Benson, John Imbrie, William W. Kellogg, Stephen H. Schneider, Joseph O. Fletcher, Eugene W. Bierly, J. Murray Mitchell, Jr., James D. Hays, and George J. Kukla.

**Earthquakes, Earthquake Prediction, and Earthquake Control (27–28 Feb., SFH)**

L. C. Pakiser, Julian Wolpert, Vincent E. McKelvey, Robert A. Page, William B. Joyner, John A. Blume, S. T. Algermissen, Karl V. Steinbrugge, Martyn J. Bowden, Robert W. Kates, Dorothy Radbruch-Hall, Tanya Atwater, Clarence R. Allen, Jerry P. Eaton, Robert L. Wesson, James C. Savage, Robert D. Nason, Jack F. Evernden, Harold C. Cochrane, J. Eugene Haas, Waverly J. Person, Frank Press, Robert M. Hamilton, Don L. Anderson, Amos Nur, Lynn R. Sykes, William F. Brace, C. B. Raleigh, Omar Davis, T. Rikitake, Hiroo Kanamori, M. A. Sadovsky, I. L. Nersesov, V. I. Myachkin, V. I. Keilis-Borok, and J. H. Healy.

**Environment: A New Focus for Land-Use Planning (28 Feb., St.F)**

Larry W. Tombaugh, Donald M. McAllister, Kenneth E. F. Watt, George S. Tolley, Earl O. Heady, and B. Bruce Bare.

**Water Policies on U.S. Irrigated Agriculture: Are Increased Acreages Needed to Meet Domestic or World Needs? (28 Feb., St.F)**

Victor A. Koelzer, Russell G. Thompson, Earl O. Heady, Kenneth R. Farrel, Martin E. Abel, Ray K. Linsley, Wade Andrews, John R. Teerink, and Carl C. Bronn.

**Values and Choices in the Development of an Arid Land River Basin (Colorado River Basin) (28 Feb.–1 Mar., SFH)**

Harold Dregne, W. Don Maughan, Ival Goslin, Helen Ingram, Bernard Udis, Henry P. Caulfield, Terah L. Smiley, B. Delworth Gardner, Clyde E. Stewart, Jared Carter, Russell Gum, Gerald W. Thomas, T. G. Roefs, Carl Hodges, Wynne Thorne, Thadis Box, Dean Mann, John D. Hunt, Bahe Billy, Myron Holburt, Thayer Scudder, David Goodall, Troy L. Péwé, Joseph F. Friedkin, Stewart Udall, A. Berry Crawford, A. Bruce Bishop, Jack Campbell, and D. F. Peterson.

**Elements of Land-Use Planning (28 Feb.–1 Mar., St.F)**

Walter E. Jeske, Charles Conklin, Frederic O. Sargent, Kessler Cannon, Earl M. Starnes, Joseph E. Bodovitz, H. Wayne Pritchard, Pete Wilson, Bruce McDowell, C. Lowell Harriss, Ralph R. Widner, William M. Johnson, John F. Timmons, Ira Michael Heyman, and Robert. T. Jorvig.

**The Galápagos Archipelago (1 Mar., St.F)**

Robert T. Orr, Tom E. Simkin, Richard M. Eakin, Allan V. Cox, Alexander R. McBirney, G. Leonard Johnson, Paul A. Colinvaux, George A. Bartholomew, Duncan M. Porter, Michael P. Johnson, William G. Reeder, Craig MacFarland,

Dagmar Werner, Robert I. Bowman, Dee Boersma, Ian Abbott, William A. Dunson, and Margaret Owings.

**The Pacific Coastal Environment (1 Mar., St.F)**

Kenneth S. Norris, Eli A. Silver, Tim P. Barnett, J. D. Isaacs, Kenneth W. Bruland, Alfred W. Ebeling, John S. Pearse, Valrie A. Gerard, John Martin, Peter McRoy, Charles B. Miller, and William T. Peterson.

**ENERGY AND SOCIETY**

**Controlling the Energy "Delta"-[Demand-Supply] (25-27 Feb., SFH)**

George W. Morgenthauer, S. William Gouse, M. Ray Thomasson, Chauncey Starr, Lester Lees, Roger W. Sampson, Robert B. Rosenberg, Richard L. Strombotne, Gerald S. Leighton, Alan R. Siegel, Martin Meyerson, Alan J. Russell, Charles A. Berg, Hoke Garrett, Richard N. Adams, Roy A. Rapaport, William B. Kemp, Robert Engler, W. Fred Cottrell, Glen Werth, Leonard W. Fish, Arthur Lewis, Arnold H. Packer, Neil Cochran, Jack G. Conner, Joseph Brennan, Rolf M. Sinclair, Philip N. Ross, Bertram Wolfe, Richard F. Post, Ray Hallet, Roger D. Bourke, Dwain F. Spencer, Arthur B. Greenberg, W. H. McCulloch, D. O. Lee, W. P. Schimmel, Jr., Floyd Blake, Bill Ogle, P. Muffler, G. V. Keller, Jack Green, Robert L. Gervais, W. E. Heronemus, Jon G. McGowan, D. P. Gregory, Bessel Kon, Frank Schiff, Hendrick S. Houthakker, Sam Schurr, Milton Searl, Edward Teller, Walter Sullivan, Henry Jackson, Arthur Bueche, Mick McCormack, and Samuel Z. Klausner.

**Energy and Society (26 Feb., SFH)**

Samuel Z. Klausner, Joachim F. Wohlwill, Allan Mazur.

Eugene Rosa, Richard B. Lee, William T. Saunders, Brian E. Weiss, Roland Bergman, Richard N. Adams, Robert Engler, Lynton K. Caldwell, Arnold H. Packer, Manfred Stanley, W. Fred Cottrell, David L. Sills, and Dorothy Nelkin.

**Fusion Power (27 Feb., SFH)**

Rolf M. Sinclair, Robert L. Hirsch, Robert F. Bussard, and Arthur Fraas.

**Independent Scientists and the Energy Crisis (27 Feb., SFH)**

Joel Primack, Henry Kendall, Thomas B. Cochran, Ronald Doctor, Bernard Manheimer, and David Brower.

**Materials Achievements in the Enhancement of Our Health, Safety, and Environment: Looking Ahead (28 Feb., St.F)**

Arthur H. Purcell, James C. Phillips, Seymour L. Blum, John R. Barton, Stephen H. Carr, Bernd Matthias, Hans H. Landsberg, and Franklin P. Huddle.

**Energy and Agriculture (28 Feb., SFH)**

Kenneth K. Barnes, Clarence F. Kelly, Robert S. Loomis, Gary H. Heichel, Bartley P. Cardon, Louis M. Thompson, Vashek Cervinka, Jean Hassell, and Perry R. Stout.

**PHYSICAL UNIVERSE**

**Velikovsky's Challenge to Science (25 Feb., St.F)**

Ivan King, Peter Huber, Immanuel Velikovsky, J. Derral Mulholland, Carl Sagan, Irving Michelson, Donald Goldsmith, and Norman Storer.



Two of San Francisco's most popular attractions are to be found at the California Academy of Sciences in Golden Gate Park: Morrison Planetarium and the Steinhart Aquarium, showing unrehearsed performances by reptiles, man-eating piranha, playful porpoises, and many others. [San Francisco Convention and Visitors Bureau]

**Elementary-Particle Physics (25 Feb., St.F)**

Edward J. Lofgren, Murray Gell-Mann, Phillip J. E. Peebles, Denis Keefe, and Valentine L. Telegdi.

**Cosmic Evolution (26 Feb., St.F)**

Frank Drake, George Field, A. G. W. Cameron, and Cyril Ponnampetuma.

**Science for the Naked Eye: Or the Physics of Everyday Experience (26 Feb., St.F)**

Rolf M. Sinclair, James E. Gunn, Jearl D. Walker, Robert G. Greenler, Eugene Shoemaker, Elizabeth A. Wood, and John G. Backus.

**Search for Extraterrestrial Life (26 Feb., St.F)**

Keith A. Kvenvolden, Carl Sagan, Klaus Biemann, Harold P. Klein, and Bernard M. Oliver.

**Recent Developments in Atomic Physics (26 Feb., St.F)**

Hans Mark, Bernd Crasemann, Kenneth Watson, Felix Smith, and Ronald Geballe.

**Remote Sensing Applications for Water Resources Monitoring (27 Feb., SFH)**

Morris Tepper, V. V. Salomonson, D. H. Staelin, E. Kessler, K. E. Wilk, R. H. Burgy, R. R. Anderson, V. Carter, J. C. Barnes, T. J. Schmutge, and M. Deutsch.

**The Emerging Portrait of the Planets (27 Feb., St.F)**

Carl Sagan, Harold Masursky, Conway Leovy, Bruce Murray, S. I. Rasool, and James van Allen.

**The Superheavy Elements (28 Feb., St.F)**

Glenn T. Seaborg, G. Herrmann, Ray Nix, O. Lewin Keller, and Albert Ghiorso.

**Neutron Stars and Black Holes in the Universe (28 Feb., St.F)**

Fritz Zwicky, Stirling Colgate, R. B. Partridge, Ian Strong, Remo Ruffini, Luis Alvarez, Frank D. Drake, Richard G. Huguenin, Herbert Gursky, Paul Boynton, and Robert P. Kraft.

**Skylab Science Experiments: A First Report (28 Feb., SFH)**

William C. Schneider, Gordon A. Newkirk, Jr., Robert A. Parker, Russell L. Schweikart, Owen K. Garriott, Elio Passaglia, Harry C. Gatos, A. F. Witt, M. Lichtensteiger, M. C. Lavine, C. J. Herman, William R. Wilcox, Herbert Wiedemeier, Thomas F. Hanes, Dale D. Myers, Charles A. Berry, Phillip O'B. Montgomery, Ashton Graybiel, Eugene A. Thorley, David S. Simonett, Fabian C. Polcyn, Robert N. Colwell, George W. Morgenthaler, Jules Bergman, Jack M. Campbell, Marvin L. Esch, Stanley Ross, and Stanley I. Weiss.

**FAMILY ACTIVITY INFORMATION COMMITTEE'S "BEST-OF-SAN-FRANCISCO" TOURS**

25 February **GET-ACQUAINTED CITY MINI-TOUR** 12:30-4:30  
**M** Through Financial District and Chinatown (Cha Siew Bow—Chinese hot steamed bun—  
**O** served on board) to Fisherman's Wharf, Ghirardelli Square, The Cannery, Union Street's  
**N** antique shops and bistros; Victorian residential areas of Pacific Heights; through Sea  
Cliff manors, the Consulates, the Presidio and stop at Palace of the Legion of Honor,  
by new St. Mary's Cathedral, Civic Center and other historic landmarks . . . . . **\$6.50**

27 February **MARIN COUNTY ALL-DAY ADVENTURE** 9:30-4:00  
**W** Across the Golden Gate Bridge to Muir Woods (redwood grove), Frank Lloyd Wright's  
**E** Main Civic Center; no-host lunch, browse and shop in Sausalito; afternoon: choice of  
**D** guided tour and movie of U.S. Army Engineers' Bay Model or tour thru Tiburon and  
Belvedere home & shopping areas; home by bay ferry (dutch treat) if you wish. . . . **\$9.50**

28 February **BAY AREA MUSEUM MAXI-TOUR** 9:30-4:30  
**T** Docent-guided tours of De Young Museum in Golden Gate Park (stop at Japanese  
**H** Tea Garden), the Eero Saarinen-designed New California Regional Museum in Oak-  
**U** land—no host lunch—and the Lawrence Hall of Science above the U.C. Campus. . . . **\$10.50**  
**R**

Charges include bus fare, guide and any entrance fees. All tours leave O'Farrell Street entrance of the Hilton Hotel. Each tour is contingent upon 40 paid reservations in hand by 15 February.

Make checks payable to **FAMILY ACTIVITY INFORMATION COMMITTEE** and mail to **MRS. EDWARD J. (SARA) LOFGREN**, Chairwoman, 1937 Yosemite Road, Berkeley 94707, by 15 February.

I enclose check for \$\_\_\_\_\_ for the following tours: CITY ; MARIN  with (choose one) Bay Model   
OR Tiburon Tour ; MUSEUM .

Name \_\_\_\_\_ Home address \_\_\_\_\_ Convention address and phone \_\_\_\_\_

# THE AAAS SCIENCE FILM FESTIVAL

A total of 50 films will be shown in the 1974 AAAS Science Film Festival. A special highlight will be the showing of the 13-part series, *THE ASCENT OF MAN*. This will be the West Coast debut for the series.

Each day, a variety of science films will be shown in the Imperial Ballroom of the San Francisco Hilton, 25-28 February, beginning at 9 a.m. and continuing through 3 p.m. Admission to the film festival is free. Young people under the age of 14 must be accompanied by an adult. Due to time limitations, each film will be shown only once. Please consult listings in the General Program for date and time of showing.

## The Ascent of Man

Written and narrated by Dr. Jacob Bronowski, *THE ASCENT OF MAN* treats the history of man as a phenomenon in which science emerges as a natural activity in each age, at a level appropriate to that age. It is a program concerned with the discovery itself rather than that which is discovered; in other words, the way man works. It deals with the actual places where great evolutionary, cultural, and intellectual steps took place, and with the men who motivated and sometimes created those steps.

Visually it is always very interesting, sometimes startling. It has many visual

firsts: the first time anyone has been allowed to film in the secret archives of the Vatican, where we see the first complete reconstruction of Galileo's trial, exact in every detail; the first time anyone has seen 350 direct descendants of Genghis Khan's horde riding in battle array in Afghanistan; the first time also that anyone has seen the Bakhtiari tribes migrating through the Zagros Mountains where there are no roads, no laws, and where few Westerners have ever been before.

*THE ASCENT OF MAN* is a series of 13 films, in color, coproduced by the British Broadcasting Corporation and Time-Life Films, Inc. It is a series of immense breadth; yet with all its scope has an entity both overall and within each program. It will stimulate and entertain, but it will also intellectually excite anyone who cares to sit down and watch it.

The AAAS wishes to thank Time-Life Films, Inc. for providing *THE ASCENT OF MAN* films for showing during this year's Annual Meeting.

## General Film Program

In addition, the following films will be shown in the festival:

**Moon Flights and Medicine**  
**Salmon Story**  
**The City and the Self**  
**The Flightless Cormorant**  
**Planetary Biology at Ames**

**Problems in Spatial Orientation**  
**Ice in the Atmosphere**  
**Nematode**  
**The Aquatic Ecologist**  
**The Second Pollution**  
**Survival of the Senses**  
**Wondering about Things**  
**Shark! Danger in the Sea**  
**Icarus Montgolfier Wright**  
**Well of Life**  
**The Marine Iguana: Variations on a Theme**  
**Miscommunications**  
**The Cactus**  
**Symmetries of the Cube**  
**The Turtle People**  
**The Hobcaw Story**  
**Stars, Galaxies, and Southern Skies**  
**Ceramics and Metals in Medical Prosthetics**  
**Mars Minus Myth**  
**This Land**  
**The Motions of Stars**  
**Glacier on the Move**  
**States of Matter**  
**Bolero**  
**An Introduction to Feedback**  
**Photography and the City**  
**Perpetuum and Mobile**  
**Eye to Eye with Wild Animals**  
**The Information Machine**  
**Mutations**  
**Who Owns the Sea?**  
**Alpha**

(The views and opinions stated and implied in these films do not necessarily reflect those of AAAS.)

## Special Tours

**The Geysers Power Plant** (Tuesday, 26 February—all day)

In Sonoma County the Pacific Gas and Electric Company has harnessed the only power plant in North America from natural steam wells. The tour includes traversing the Golden Gate Bridge and the Sonoma Valley wine country.

**The Stanford University Medical Center** (Wednesday, 27 February—afternoon)

The Medical Center includes the School of Medicine, University Clinics, and the 618-bed Stanford University

Hospital. The two areas to be shown are the Department of Radiology and the Cardiology Division.

**San Francisco Bay-Delta Hydraulic Model** (Thursday, 28 February—afternoon)

The Bay-Delta Hydraulic Model was the first Army Corps of Engineers model to be built and operated within the prototype region. Since 1957, the model has been used to simulate natural and man-made phenomena in the Bay-Delta Estuary. The current testing program is investigating patterns of saltwater intrusion, effects of the proposed Peripheral Canal, the John F. Baldwin Deep Water Ship Channel, and urban storm runoff.

**NASA-Ames Research Center** (Friday, 1 March—morning)

Ames Research Center was established in 1940, to conduct aeronautical research. Science joining NASA in 1958, additional studies include astronautics, life sciences, and spacecraft development. The center is staffed by approximately 1700 personnel. Research facilities such as wind tunnels, motion simulators, and research aircraft will be shown.

It is suggested that you sign up early for the above tours. Tickets will be available for sale at the Ticket Desk located in the East Lounge of the San Francisco Hilton Hotel from 24 February to 1 March.

# AAAS Annual Meeting : San Francisco

# Registration

24 February-1 March 1974

(D)

## ADVANCE REGISTRATION FORM

- Enclosed is \$17 Registration Fee (Program and Convention Badge)
- Enclosed is \$22 Registration Fee (including spouse) (One Program and two Convention Badges)
- Enclosed is \$8 Young People and Student Registration Fee (Program and Convention Badge)

Are you a AAAS member?  Yes  No  
Is this your first AAAS Meeting?  Yes  No

Please check your primary reason for attending the AAAS meeting.  
 To participate in the program  To attend certain general sessions  Other

### NOTE: PROGRAMS AND BADGES WILL NOT BE MAILED IN ADVANCE.

On or about 1 February, a program summary and a receipt will be mailed to each registrant. Please present your receipt at the ADVANCE REGISTRATION DESK at the San Francisco Hilton Hotel to pick up your program and badge.

Miss Ms. Mrs.  
Dr. Mr. \_\_\_\_\_  
(Last Name) (First) (Middle Initial)

MULTIPLE REGISTRATION: \_\_\_\_\_  
(List full name for spouse and other registrants)

MAILING ADDRESS: \_\_\_\_\_  
(For receipt and program summary) (Street) (City/State) (Zip Code)

INSTITUTION OR COMPANY: \_\_\_\_\_  
(City) (State) (Zip Code)

CONVENTION ADDRESS: \_\_\_\_\_  
Arrival date: \_\_\_\_\_ Departure date: \_\_\_\_\_

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

## OFFICE AND SESSION LOCATIONS

**San Francisco Hilton:** AAAS Headquarters Office; On-Site Registration Desk; Advance Registration Desk; Information Desk; Ticket Sales Desk; Message Center; Session Aides; Press Headquarters; AAAS Sciencephere (Exhibits); Science Film Festival; Invited Lectures.

*Symposia Topic Areas\*:* Energy and Society; Space Technology; Health and Behavior (Neurological Systems; Function; Drug Use and Drug Abuse); Population Trends; Environmental Evolution; Species Organization; Scientists and Government; Technology Assessment.

**St. Francis:** AAAS Office; Session Aides.

*Symposia Topic Areas\*:* Mathematics; Physical Universe; Engineering; Computer Technology; Environmental Education and Assessment; Animal Behavior; Land Use and Planning.

**Sheraton-Palace:** On-Site Registration Desk; Information Desk; AAAS Office; Session Aides.

*Symposia Topic Areas\*:* History; Philosophy of Science; Health Systems and Policy; Food; Control Mechanisms; Educational Policies and Trends; Minorities.

\*See Preliminary Program for the precise locations of individual symposia.

**Child Care Services:** Two agencies have been recommended for attendees requiring baby-sitting services. For further information contact:

Bristol Agency  
540 O'Farrell Street  
San Francisco, CA 94102  
TEL: (415) 776-9100

The French-American Agency  
133 Geary  
San Francisco, CA 94108  
TEL: (415) 781-3889

**Travel:** AAAS does **not** provide group travel arrangements for the San Francisco meeting. Please check with your travel agent or airline for the most economic air fares.

East Coast members are reminded that some airlines make available substantial reductions in air fares when reservations are made 90 days in advance for flights from New York City, Boston, Philadelphia, Baltimore, and Washington to San Francisco.

# Reservations

## HOTEL RATES\* (Per Day)

The American Association for the Advancement of Science will hold its 1974 Annual Meeting in San Francisco, California, 24 February-1 March. The AAAS registration desks will be located at the San Francisco Hilton and Sheraton-Palace hotels. The following hotels will be used for housing:

Hotel	Single	Double	Twin	Suites†	Parking
1) SAN FRANCISCO HILTON ✕ (Headquarters Hotel) Mason and O'Farrell Streets (a) Main Building Rates	\$22 25 29 32 34	\$30 33 37 40 42	\$30 33 37 40 42	\$74 and up	Free parking for registered guests on 5th through 11th floors in Main Building (subject to availability). \$3.25 maximum charge for 12 hours; up to 24 hours add \$0.75. \$4.25 24 hours with in and out privileges for registered guests.
(b) Tower Rates	\$37	\$45	\$45	\$95 and up	
2) HOTEL ST. FRANCIS ✕ Union Square	\$22 26 30 34	\$28 32 36 40	\$28 32 36 40	\$65 and up	\$4.50 24 hours with in and out privileges for registered guests.
3) SHERATON-PALACE HOTEL ✕ 639 Market Street	\$23	\$27	\$27	\$43.50 and up	Commercial parking adjacent to hotel: \$3.75 & \$2.25 24 hours.
4) SIR FRANCIS DRAKE HOTEL ★ Powell and Sutter Streets	\$24	\$29	\$29	\$66 and up	\$4.50 24 hours with in and out privileges for registered guests.

\* San Francisco Room Tax, 6%; \$4 to \$8 additional charge for cots and rollaway beds. If rate specified is not available, the next available higher rate will be assigned.

† One bedroom parlor suites; rates for larger suites available upon request.

✕ Up to two children accommodated at no extra charge if they occupy same room as parents.

★ Children under age 12 accommodated at no extra charge in same room with parents; three persons per room maximum.

### HOTEL RESERVATIONS FORM

(No reservations by telephone)

Mail to: AAAS Housing Bureau  
260 Fox Plaza  
San Francisco, CA 94102

CHOICE OF HOTEL: First \_\_\_\_\_ Second \_\_\_\_\_ Third \_\_\_\_\_

ROOM:  Single  Double  Twin  Suite Preferred Rate \$ \_\_\_\_\_

ARRIVAL: Date \_\_\_\_\_; \_\_\_\_\_ a.m. \_\_\_\_\_ p.m. Be sure to list definite arrival and departure date and time. Hotel reservations will be held only until 6 p.m. unless otherwise specified.

DEPARTURE: Date \_\_\_\_\_; \_\_\_\_\_ a.m. \_\_\_\_\_ p.m.

#### NAMES AND ADDRESSES OF ALL OCCUPANTS OF ROOMS

(Reservations received after 25 January 1974 cannot be assured)

Name \_\_\_\_\_ Name \_\_\_\_\_

Address \_\_\_\_\_ Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Name \_\_\_\_\_ Name \_\_\_\_\_

Address \_\_\_\_\_ Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Individual Requesting Reservations \_\_\_\_\_