1989 AAAS Annual Meeting

San Francisco Hilton, 14–19 January

Preconvention Program

You are cordially invited to join with your fellow members of the scientific community at the **155th National Meeting of the American Association for the Advancement of Science.**

The AAAS Annual Meeting has traditionally served as the crossroads of science, a common ground on which researchers and educators from all fields of science and technology can come together, both to learn about new developments in their specialties and to gain a better understanding of science as a whole.

This year we will present one of the largest and most comprehensive programs ever, with over 250 symposia and technical sessions in the **Physical Sciences, Life Sciences, Social Sciences, Science Education,** and **Science Policy.** We've also organized comprehensive three-day seminars on two of the hottest topics in biotechnology: **The Process of Protein Folding,** and **Plant Molecular Biology/Genetic Engineering for Agriculture.**

And there's more! You can hear major plenary lectures by 15 world-renowned scientists, sample current research in a full series of poster presentations, participate in hands-on workshops, and see some of the year's best science films.

Plus, you'll be getting two meetings for the price of one, because all AAAS Annual Meeting registrants will have full access to the concurrent Joint Winter Meeting of the American Association of Physics Teachers and the American Physical Society.

Our 1989 Meeting also offers a feature that is truly unique — *San Francisco!* Come to the home of the cable car, the Golden Gate Bridge, and Fisherman's Wharf, sample a host of different cuisines and fine wines, and enjoy the mild California climate in mid-January.

Register now at special advance registration discounts, then join us in San Francisco for a stimulating week at the best AAAS Annual Meeting ever!

—ARTHUR HERSCHMAN

Meeting at a Glance

Over 250 General Sessions

Physical Sciences and Technology. Chaos; Frontiers; Mathematics, Statistics and Computing; Physics; Chemistry; Astronomy; Planetary Science; Geology; Oceanography; Atmospheric Science; Climate; Engineering and Technology; Popular Science 588

Life Sciences and Technology. General Life Science; Protein Folding; Plant Molecular Biology; Receptors; Retroviruses; AIDS; Molecular and Cellular Biology; Medicine and Health; Ecology and Ecosystems; Agriculture 590

Social and Behavioral Sciences. Psychology; Neurobehavior; Anthropology; Social and Political Science; Economics; Competitiveness; History, Philosophy and Ethics 594

Science and Technology Education. Science and Technology Education; Outreach to Minorities and the Public 597

Science and Technology Policy. Risk; Arms Control and National Security; Science and Technology Policy 599

Comprehensive 3-Day Seminars

The Process of Protein Folding 593
Plant Molecular Biology/Genetic Engineering for Agriculture 593
Call for Seminar Poster Papers 592

Plenary Lectures

Arthur Bienenstock; J. Michael Bishop; William T. Golden; John L. Heilbron; Donald Kennedy; Mary-Claire King; Robert P. Kraft; Allan G. Lindh; Walter E. Massey; Frank Press; Frederic M. Richards; Josef S. Schell; Peter Schultz; Shoji Tanaka; Allan C. Wilson 595

Additional Features

Advance Registration Discounts ..... facing page
Admission to AAPT/APS Joint Meeting 589
Discount Airfares to San Francisco 598
Invitation to Exhibit 591
Meeting Information 600
SB&F Science Film Festival 601

Key to Dates and Times *(For the sessions listed on the following pages):*
"Sat" = 14 Jan., "Sun" = 15 Jan., "Mon" = 16 Jan., "Tue" = 17 Jan., "Wed" = 18 Jan., "Thu" = 19 Jan.; "am" = 8:30 am to 11:30 am, "pm" = 2:30 pm to 5:30 pm.

Physical Sciences & Technology

Frontiers; Chaos

Frontiers of the Physical Sciences: 1989 *(Thu/am-pm).* Optical astronomy observations; aviation weather hazards; material dating. *Rolf M. Sinclair, Richard Zare, John McCarthy, George Rapp, Jr., Richard A. Muller, Michael H. Freedman, Ian Gatley*

Science and Technology in China *(Wed/am-pm). Lu Jiaxi*

Chaos and Dynamical Systems *(Sun/am).* Iteration; mechanics; fluids. *Robert L. Devaney, Steve Smale, Jerrold E. Marsden, Philip J. Holmes*

Chaos *(Sun/pm; Mon/am-pm; Tue/am-pm).* Quantized systems; turbulence; global affairs; celestial systems. *Richard M. Schori, Saul Krasner, Alvin M. Saperstein, William M. Schaffer, Daniel Kleppner, Ronald F. Fox, Chera Sayers, Harry L. Swinney, Parviz Moin, Eric Kostelich, Roderick V. Jensen, Peter M. Koch, Arnold Mandell, Jack Wisdom, Edward A. Spiegel, Oded Regev, Paul E. Rapp, Gottfried J. Mayer-Kress, K. R. Sreenivasan, Ary Goldberger, Joseph Ford, Walter Freeman, Charles Van Atta, Michele Boldrin*

Mathematics, Statistics & Computing

Statistical Description and Modelling of Spatial Variability: Theory and Applications *(Sun/am-pm; Mon/am).* Interpolation; geostatistics; agroecosystems; geographic information systems. *Paul Switzer, Jack Dangermond, Donald E. Myers, Evan Englund, George Flatman, Goro Uehara, Kenneth G. Cassman, Art B. Owen, Yehuda Vardi, Michael L. Stein, Michael F. Goodchild, Stephen J. Walsh, John Estes*

Logic Today *(Wed/am).* Nonstandard mathematics; computer programming; semantics. *Harvey Friedman, Kenneth L. Manders, H. Jerome Keisler, Dana Scott, Stephen G. Simpson*

The Next Generation of Neural Nets *(Wed/pm).* Modularity; computational learning theory. *David H. Sharp, Eric Mjolsness, David Haussler, John S. Denker, David E. Rumelhart, Dana H. Ballard*

Computational Neural Networks for Perception and Behavior *(Thu/am).* Neural mapping; mapping sensory-motor coordination; visual-acoustic fusion. *Michael Kuperstein, Eric L. Schwartz, Ennio Mingola, Gary Lynch, John C. Pearson*

Psychobiological Models of Parallel Processing in the Perception of Time, Space, and Number *(Thu/pm).* Mathematical and information-processing models; animal cognition. *Warren H. Meck, Christina L. Williams, David S. Olton, Russell M. Church, John Gibbon*

Physics

High-Energy Physics: New Insights and New Aspirations *(Sun/am).* Colliders; cosmic rays. *Chris Quigg, Jonathan Dorfan, Roy F. Schwitters, James W. Cronin*

High Precision in Contemporary Physics *(Sun/pm).* Single ion; neutral atoms; parity violation; hydrogen. *Steven Chu, Barry Taylor, Eugene Commins, Ronald Geballe, E. Norval Fortson, Hans Dehmelt*

Synchrotron Radiation *(Mon/am-pm; Tue/am-pm).* Accelerator physics facilities; X-ray diffraction and absorption studies; medical imaging. *Herman Winick, Keith O. Hodgson, Robert A. Scott, Edward Rubenstein, William A. Bassett, Sung-Hou Kim, Samuel Krinsky, Michael L. Knotek, R. Paul Phizackerley, Joe Wong, Friedrich Hoffmann, Brian P. Tonner, Sean M. Brennan, Sebastian Doniach, Joseph V. Smith, David E. Moncton, Jay N. Marx, Keng S. Liang, Owen R. Melroy, Swapan Chattopadhyay, Robert J. Madix, Gordon E. Brown, Jr., Brian Stephenson*

Physics of the Atmosphere *(Wed/pm).* Lightning; optical phenomena; clouds; precipitation. *Andrew J. Heymsfield, Craig F. Bohren, E. Philip Krider, Alistair B. Fraser, Stephen B. Fels*

Scanning Tunnelling Microscopy: Fundamental Studies *(Tue/am-pm).* Metals; three-dimensional imaging; semiconductor interfaces. *John Foster, G. Travaglini, Seymour P. Keller, H.K. Wickramasinghe, Robert Wilson, Douglas Bell, T. Albrecht, Paul Hansma, Y. Kuk, Randall M. Feenstra*

Monte Carlo Methods and Statistical Mechanics *(Tue/pm).* Simulated annealing; quantum dynamics; stochastic relaxation; field theories. *Nicholas C. Metropolis, Larry Goldstein, Stuart A. Geman, G.S. Guralnik, J.D. Doll, Brosl Hasslacher*

Feynman Memorial *(Wed/am-pm). Laurie M. Brown, James D. Bjorken, Murray Gell-Mann, David Pines, Freeman Dyson, Julian Schwinger, David Goodstein, Daniel Hillis, Hans Bethe*

Physics of the Atmosphere *(Wed/pm).* Lightning; optical phenomena; clouds; precipitation. *William H. Beasley, Craig F. Bohren, E. Philip Krider, Stephen B. Fels, Alistair B. Fraser*

Superconductivity Today *(Thu/am).* Chemistry and physics of metallic oxides. *Theodore H. Geballe, Arthur W. Sleight, C.W. Chu, Robert B. Laughlin*

Technical Session

Inertial Confinement Fusion: Stellar Conditions in the Laboratory *(Thu/pm). Donald L. Correll, Thomas J. Fessenden, Sheldon L. Kahalas, Robert L. McCrory, John P. VanDevender, Erik Storm, E. Michael Campbell*

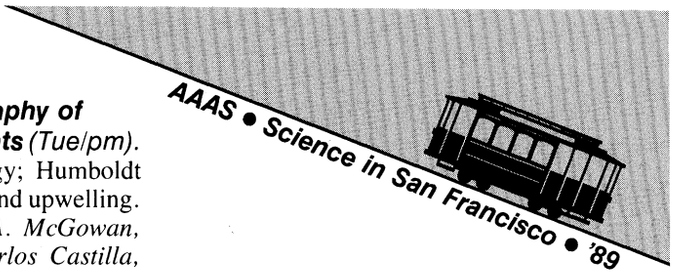
Chemistry

Frontiers in Chemistry *(Mon/am-pm; Tue/am-pm).* Chemical dynamics; organometallic chemistry; inorganic and bioorganic chemistry. *Richard N. Zare, Robert G. Bergman, Neil Bartlett, François N. Deiderich, Yuan C. Lee, Harry B. Gray, Robert H. Grubbs, Peter B. Dervan, John I. Brauman, James P. Collman, Thomas C. Bruice, Ronald Breslow, K. Peter C. Vollhardt, C. Bradley Moore, Glenn T. Seaborg, Barry M. Trost*

Astronomy; Planetary Science

The Farthest Things in the Universe *(Mon/am).* Quasars; background radiation; distant galaxies. *Jay M. Pasachoff, Philip Lubin, Hyron Spinrad, Patrick S. Osmer*

Pulsars: Young and Old *(Mon/pm).* Binary and millisecond pulsars. *Donald C. Backer, David Pines, Jonathan Arons, David J. Helfand*



The Path of Life: From the Big Bang to the Big Brain *(Tue/am-pm).* Nucleosynthesis; extraterrestrial organic matter; terrestrial life; fossil records. *Bevan M. French, David W. Deamer, Jennifer A. Kitchell, Harold P. Klein, John R. Cronin, Lewis E. Snyder, Preston Cloud, Jill C. Tarter, Stanford E. Woolsey, Stanley M. Awramik, Karl W. Flessa, Jay M. Pasachoff*

Apollo Plus 20: The New Moon, the Earth, and the Universe *(Thu/am).* Geology; time; cosmic records; moon's origin. *David J. Stevenson, Laurence E. Nyquist, Ralph B. Baldwin, James R. Arnold, G. Jeffrey Taylor, Bevan M. French, Jay M. Pasachoff*

Geology; Oceanography

The Circum-Pacific Map Project: A Success Story of International Cooperation *(Tue/am).* Energy resources; tectonics; computer-based graphics. *George Gryc, Kenneth J. Drummond, Michel T. Halbouty, Frances R. Mills, John A. Reinemund, George W. Moore*

The Nature of Large Earthquakes: A New Phase in Cooperative Research Between U.S. and Chilean Scientists *(Wed/pm).* Seismic potential; high-resolution mapping. *Sergio Barrientos, Karen C. McNally, Diana Comte, Edgar Kausel, Hiroo Kanamori, James Dewey, Joaquin Monge*

The Arctic: A New Key to World Climate and Resources *(Thu/am-pm).* Untapped natural resources; atmosphere-ocean-ice dynamics. *Peter W. Barnes, Keith A. Kvenvolden, Ralph J. Cicerone, Steve M. Blasco, David L. Clark, Ernest Fred Roots, Arthur H. Lachenbruch, Wilford F. Weeks, Walter W. Nassichuk, John T. Andrews, Kenneth J. Bird, Arthur Grantz, Juan G. Roederer*

Comparative Oceanography of Pacific Boundary Currents *(Tue/pm).* Benthic and pelagic ecology; Humboldt current system; circulation and upwelling. *Patricio A. Bernal, John A. McGowan, Robert L. Smith, Juan Carlos Castilla, Tomas Fonseca*

Mechanisms of Physical/Biological Interactions in Ocean Processes *(Wed/am-pm; Thu/am-pm).* Turbulence; microscale and mesoscale linkages; food chain; remote sensing; *in situ* observations; models. *Timothy J. Cowles, Ann Bucklin, Kenneth Denman, Brian Rothschild, Jack Costello, Mimi Koehl, Peter Wiebe, Gary Hitchcock, Peter Ortner, David Mackas, Mark Abbott, Rudi Strickler, William Hammer, Timothy Granata, George Jackson, Joseph Wroblewski, Eileen Hofmann, James Kremer*

Atmospheric Science; Climate

Effects of Global Change on Vegetation and Crops *(Sun/am).* Elevated CO_2; crop production; modelling global vegetation. *Eugene S. Tackle, Kenneth J. Frey, Bruce Kimball, John Eddy, Allen Solomon, Cynthia Rosenzweig, Martin Parry*

Potential Impacts of Climate Change on California *(Sun/pm).* Ozone; agriculture; water management. *Stanley M. Greenfield, Dennis Tirpak, Daniel P. Sheer, M.K. Liu, Daniel J. Dudek, Philip B. Williams*

Climate Change and U.S. Water Resources *(Mon/am).* Irrigated agriculture; urban water systems. *David M. Burns, Dean F. Peterson, Norman J. Rosenberg, Peter H. Gleick, Harry E. Schwarz*

Policy Implications of Climate Change *(Mon/pm).* Impact mitigation, prevention, and adaptation. *Mark Meo, Helen M. Ingram, Frederick W. Cubbage, Donald F. Boesch, Stephen H. Schneider*

Weather and Climate: The Solar Variability and QBO Connections *(Tue/am).* Thermosphere response; stratosphere-troposphere coupling; tropospheric dynamic responses. *Marvin A. Geller, Raymond G. Roble, Karin Labitzke, Gerald M. Keating, Brian A. Tinsley*

Engineering & Technology

New Technology for People with Disabilities *(Mon/pm).* Use of electrical brain signals; robotic hand; verbal communication aid. *James Kramer, Virginia W. Stern, Lawrence A. Scadden, Deborah Gilden, David L. Jaffee, Erich E. Sutter, Jacquelyn Brand*

Statistics in Product and Process Design: From Eli Whitney to the Present *(Wed/am).* New concepts and methods; productivity; social implications. *William A. Golomski, Adnan Aswad, Hilario L. Oh, Michael S. Flynn, F. Timothy Fuller*

The New Hypersonics: Can an Airplane Fly to Orbit? *(Thu/am-pm).* Technical difficulties; aerodynamics and propulsion; potential applications. Robert Barthelemy, Robert M. Williams, Thomas A. Heppenheimer, Frederick S. Billig, James O. Arnold, Robert A. Jones, Roger Schaufele, Wolfgang Demisch

Popular Science

Science for the Naked Eye; or, The Physics of Everyday Experience, XVI *(Sun/am-pm). Rolf M. Sinclair, Richard Morris, John Allen Paulos, Robert Miller, Karen McNally, Paul Hewitt, David Em*

Chemistry Is Fun! *(Wed/am).* Interactive chemistry exhibits; pre–high-school chemistry. *Jacqueline Barber, Ilan Chabay, David A. Katz*

The Science and Technology of Winemaking in California *(Wed/pm).* Sensory perception and chemistry of taste; climate and soil; economics; fermentation technology. *Albert H. Teich, Jill H. Pace, Harvey Steiman, Kirby Moulton, Cornelius S. Ough, Barry Jackson, Don Williams*

Admission to AAPT/APS Joint Winter Meeting

The American Association of Physics Teachers and the American Physical Society will hold their 1989 Joint Winter Meeting in San Francisco, concurrently with the AAAS Annual Meeting.

Registrants at the 1989 AAAS Annual Meeting will have free access to all AAPT/APS general sessions, which will be located in the St. Francis Hotel, one block away from the San Francisco Hilton.

For a full program of the AAPT/APS Joint Winter Meeting, see the December 1988 issue of *The AAPT Announcer*, or write (after November 15) to AAPT, 5112 Berwyn Road, College Park, MD 20740.

Life Sciences & Technology

Seminar: The Process of Protein Folding

(Sun/am-pm; Mon/am-pm; Tue/am-pm). For a full description of this special-registration seminar, see page 593.

Seminar: Plant Molecular Biology/ Genetic Engineering for Agriculture

(Sun/am-pm; Mon/am-pm; Tue/am-pm). For a full description of this special-registration seminar, see page 593.

General Life Science

Frontiers of the Life Sciences *(Wed/am-pm).* Cancer etiology; protein engineering and oral therapies; blood-brain barrier and drug delivery; agricultural biotechnology; neurobiology; cognitive neuroscience; spiders as models; DNA and phylogeny. *Ronald T. Borchardt, Arnold S. Relman, Susan E. Riechert, Robert A. Weinberg, Joe L. Key, Michael J. Levine, Bruce L. Umminger, Michael S. Gazzaniga, Zach W. Hall, Charles G. Sibley*

Salt and Life *(Thu/am).* Osmoregulation; marine salinity; salt deposits. *John Yopp, Lynn Margulis, Gregory Hinkle, Ellen Weaver, William Holser, James Morgan, Peter Maloney*

Opportunities in the Biological Sciences *(Thu/pm).* NRC survey; research opportunities. *John E. Burris, Peter H. Raven, Mary Lou Pardue, Charles R. Cantor, Thomas D. Pollard, Daniel Hartl*

Receptors; Developmental Biology

The Structure and Mechanism of Action Receptors *(Sun/am-pm; Mon/am).* Receptors: steroid, andrenergic, PDGF, NMDA, nicotinic acetylcholine, peptide hormone, insulin, hormone, protein kinase C, aspartate. *Daniel E. Koshland, Jr., Jeremy Thorner, Robert J. Lefkowitz, Shosaku Numa, R. Suzanne Zukin, Lewis T. Williams, William J. Rutter, Yasutomi Nishizuka, Arthur Karlin, Sung-Hou Kim, William A. Catterall, Ronald M. Evans*

Developmental Biology and Gene Expression *(Mon/pm; Tue/am-pm; Wed/am).* Cross-phyla comparisons; protein conservation for regulatory purposes. *Gerald M. Rubin, Corey S. Goodman, Robert T. Tjian, Steven McKnight, Bruce Baker, Mark Ptaschne, Elliot M. Meyerowitz, Kathryn Anderson, Douglas Melton, Phil Leder, Ira Herskowitz, Corey S. Goodman, David Hogness, Robert Horvitz, Paul M. Wasserman, Robert Roeder, Thomas M. Jessell, Gerald Rubin*

Retroviruses; AIDS

Retroviral Infection of Animals as Models of Human Disease *(Mon/am-pm).* Retroviruses; viral gene expression; oncogenes. *Murray B. Gardner, Preston Marx, Ronald C. Montelaro, Niels Pedersen, Linda Lowenstine, Edward Hoover, Opendra (Bill) Narayan, Paul Luciw, Ronald Desrosiers, Nancy East*

Retroviruses and Oncogenes *(Tue/am-pm; Wed/am-pm).* Envelope proteins; retroviral replication; regulation of HIV gene expression; pathogenesis; growth factors; recessive oncogenes. *Harold Varmus, Eric J. Stanbridge, Stephen P. Goff, Russell Ross, Malcolm A. Martin, Eric Hunter, Owen N. Witte, Tom Curran, Robert Weinberg, John D. Minna, Dan R. Littman, Flossie Wong-Staal, Patrick O. Brown, Rudolf Jaenisch, Irving Weissman, Hidesaburo Hanafusa, Gordon Gill, Nancy H. Hopkins, Frank McCormick, Douglas Hanahan, John N. Brady*

Modelling the AIDS Epidemic *(Sun/am).* Assessing intervention strategies and sexual behavior. *Agnes M. Herzberg, P.A. Lachenbruch, Stephen W. Lagakos, Dale Preston, Mimi Kim, Mitchell H. Gail, Steve Piantadosi*

Psychoimmunological Factors in Progression of HIV Infection *(Sun/pm).* Conditioned immune response; behavioral oncology; stress and immune system response. *Karl Goodkin, Lydia Temoshok, Janice K. Kiecolt-Glaser, Karl Goodkin, Michael H. Antoni, George F. Solomon*

Chemotherapy of AIDS *(Thu/am).* Nucleotides; molecular targeting; computer graphics; animal retroviruses. *Irwin D. Kuntz, Jr., Martin Rosenberg, David W. Barry, George L. Kenyon, Paul A. Volberding*

Clinical Trials of AIDS Drugs and Vaccines: Issues of Science, Ethics, and Confidentiality *(Thu/pm).* Maintaining patient confidentiality; legal and ethical problems; NIH role. *Marvin Zelen, Deborah Runkle, Stuart L. Nightingale, Richard D. Gelber, Daniel F. Hoth, Lawrence Corey, William J. Curran*

Molecular & Cellular Biology

Mathematics and Molecular Biology *(Sun/pm).* DNA sequencing; protein structure. *Michael S. Waterman, Eric S. Lander, James H. White, Samuel Karlin*

The Human Genome Project: Progress and Prospects *(Tue/am-pm; Wed/am).* Status of human gene and linkage maps; ordering strategies; automation and DNA sequencing technology. *Anthony V. Carrano, Robert B. Weiss, C. Thomas Caskey, Helen Donis-Keller, Raymond L. White, Maynard V. Olson, Charles R. Cantor, George I. Bell, Richard M. Myers, Charles DeLisi, Victor A. McKusick*

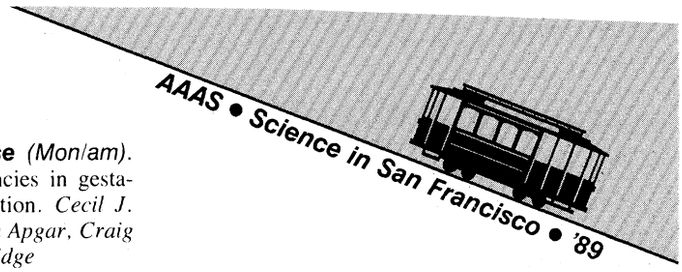
New Visions of Proteins: NMR and Computer Graphics *(Wed/am-pm).* Modelling peptide and protein structures; distance geometry; two-dimensional spectroscopy. *Katherine A. Baum, H. Jane Dyson, Helga Thorvaldsdottir, Jane M. Burridge, Angela M. Gronenborn, Jane S. Richardson, Rachel E. Klevit, Jane M. Thornton, Elizabeth D. Getzoff, Lila M. Gierasch*

The Emerging Science of Recombinant Protein Toxicology *(Thu/am).* Animal vs. human safety evaluation. *B.J. Marafino, Jr., Dale E. Johnson, Terence J. Hayes, Jack H. Dean, Lynn C. Anderson, Ruth E. Billings, Joanne R. Kopplin*

Technical Sessions

IgG4: A Unique Subclass of Antibodies *(Sun/am).* Developing assays; immunity; autoimmunity. *Georges M. Halpern, John R. Scott, Richard B. Moss, Douglas C. Heiner, Jeffrey Short, Kyuchan Kim*

Angiotensin and Atrial Natriuretic Peptide in Tissues: Genetic Regulation and Function *(Sun/pm).* Renin secretion and regulation; anterior pituitary secretion. *William F. Ganong, Christian F. Deschepper, M. Ian Phillips, David G. Gardner, Timothy L. Reudelhuber, Marianne K. Steele*



Medicine & Health

Designer Drugs *(Sun/am-pm).* Medical chemistry; legal status; MPTP; MDMA; PCP; public health perspective. *J. William Langston, Reese Jones, Daniel X. Freedman, Lester Grinspoon, Edward F. Domino, Stephen J. Peroutka, Alexander Shulgin, Solomon H. Snyder*

Factors That Control Nerve Regeneration *(Mon/am).* Growth cones; extracellular matrix components; growth inhibition. *William D. Matthew, Martin E. Schwab, Randall N. Pittman, Jonathan A. Raper, Paul H. Patterson, Louis F. Reichardt*

Health Implications of Smokeless Tobacco *(Mon/pm).* Epidemiology; histopathology; physiological and pharmacological effects. *Sol Silverman, Jr., Ernest Newbrun, Herbert H. Severson, Edward J. Shillitoe, Virginia L. Ernster, Neal L. Benowitz*

The Evolving National Program for the Assessment of the Quality of Medical Care *(Wed/am).* Theoretical framework; measurement and applications; consumer information. *R. Clifton Bailey, Henry Krakauer, Kathleen N. Lohr, Paul B. Batalden, Jane E. Sisk, James R. Murphy*

Advances in Medical Imaging Methods *(Thu/pm).* PET; MRI; magnetoencephalography. *Michael E. Phelps, James S. Robertson, Michael D. Crisp, Donald O. Elliott, Michel M. Ter-Pogossian, Edward R. Flynn, Alfred P. Wolf*

Technical Sessions

Zinc in Health and Disease *(Mon/am).* Zinc metabolism; zinc deficiencies in gestation, alcoholism, and malnutrition. *Cecil J. Smith, Jr., Herta Spencer, Jean Apgar, Craig J. McClain, Michael K. Hambidge*

High-Tech Imaging Developments Applied to Medicine *(Mon/pm).* Fiber optics; high-resolution, color, and 3-D imaging; archiving and laser disks; digital array handling. *Robert Langridge, Robert S. Ledley, Mehrdad Soumekh, Robert Hindel, Michael W. Vannier*

Mechanisms of Renal Calcium Handling: Implications for Health and Disease *(Wed/am).* Kinetic analysis; binding protein; extrusion; channels. *Erich E. Windhager, Wilfred D. Stein, Felix Bronner, Sylvia Christakos, Roger A.L. Sutton, Leon C. Isaacson*

Ecology & Ecosystems

Ecological Succession Theory Applied to Conservation and Land Use Management *(Tue/pm).* Ecosystem recovery; mechanisms of succession; range and forest management. *Wayne P. Sousa, Stephen M. Freedman, Eugene P. Odum, James A. MacMahon, H.H. Shugart, Gary W. Barrett*

Resilience of Arid Lands to Natural and Human-Caused Perturbations *(Wed/am-pm).* Hydrology: groundwater circulation and lake eutrophication; bighorn extinction. *G. Fred Gifford, Edith B. Allen, Carol S. Breed, Walter G. Whitford, Walt E. Westman, Charles R. Goldman, Christopher J. Duffy, Joel Berger, Nicholas Lancaster, Kenneth G. Reynard, Ronald P. Neilson, Stanley A. Schumm, Julio L. Betancourt*

Oil Exploration on the Continental Shelf: Impacts on Fisheries, Policy, and the Mediation Process *(Thu/pm).* Seismic exploration and the northern anchovy; industrial and fisheries views. *Richard E. Pieper, William F. Grader, Alana S. Knaster, Joyce F. Bradley, Larry G. Bowles*

The Drought of 1988 and Implications for the Future *(Thu/am).* *Priscilla Reining, Stanley Changnon, Dianne Rocheleau*

Technical Sessions

Agroforestry: A Global Perspective on Potentials and Constraints *(Sun/pm).* Biological and social perspectives; expansion in United States and developing world. *Remko Vonk, Nancy L. Peluso, Dianne Rocheleau, John W. Bruce, Rick Knoll, Louise Fortmann, Lynn Huntsinger*

Agricultural Impacts on Groundwater *(Tue/am).* Groundwater contaminants; pesticide and herbicide chemistry. *John F. Shroder, Jr., John D. Vitek, Jessica T. Kovan, Douglas C. Kent, Patrick J. Shea, Scott C. Fleetwood, Dennis D. Weisenburger, Lon Drake, James S. Schepers, Thomas E. James*

Life Sciences & Technology

(continued)

Agriculture and Groundwater Quality *(Tue/pm).* Pesticides; conservation tillage; nitrogen management. *James L. Anderson, Charles S. Helling, Kenneth P. Cantor, Ronald F. Follett, Victor J. Kimm, Charles M. Benbrook*

Advances in Forest Science *(Thu/am).* Semiochemicals; atmospheric pollutants; symbiotic fungi; biotechnological advances. *Thomas Miller, John W. Moser, Jr., Arthur H. Johnson, Ronald R. Sederoff, Donald H. Marx, Gary E. Daterman, Sharon Long, Pappachan Kolattukudy, Hans Van Etten, Christen D. Upper, Brian Staskawicz*

Agriculture

Genetic Resources at Risk: Scientific Issues, Technologies, and Funding Policies *(Mon/am).* Valuation criteria; plants; *Drosophila;* endangered species. *Calvin O. Qualset, Kenneth J. Frey, Charles M. Rick, Kurt Benirschke, Thomas C. Kaufman, Major M. Goodman, James Willet*

Crop Breeding Criteria and Agricultural Development *(Mon/pm).* The Third World; sociocultural criteria; biotechnology; germ plasm conservation; pest/pathogen evolution. *David A. Cleveland, Anne E. Ferguson, Susan L. Sprecher, Jack R. Kloppenberg, Jr., John S. Niederhauser, John Vandermeer, Ivan W. Buddenhagen, Ellen Messer, Laura C. Merrick, Gary Nabhan*

Ecology and Management of Grazing Systems *(Tue/am).* Plant-animal interface; range and soil science; humid and arid regions. *Walter F. Wedin, Dwayne R. Buxton, Michael P. Russelle, Carlton S. Herbel, Arthur G. Matches, Samuel W. Coleman, Carl S. Hoveland*

Opportunities for Improved Crop Productivity Under Drought Conditions *(Wed/pm).* Plant physiology; germ plasm; irrigation technology; weather forecasting. *Thomas R. Sinclair, Roberta H. Smith, Stephen L. Rawlins, Dale F. Heermann, John S. Boyer*

Prospects for Improving Biological Nitrogen Fixation *(Wed/pm).* Plant-microbe interaction; hydrogenase; site-directed mutagenesis; nitrogen-fixing genes. *Dennis R. Dean, William E. Newton, Harold J. Evans, Michael J. Merrick, Gary P. Roberts, Frank C. Cannon, Gary Stacey, Robert L. Robson*

Biotechnology on the Farm: Developments and Impacts in Production Agriculture *(Thu/am).* Strategies of product development and distribution; biotechnology in plant, animal, and microbial sciences. *Joseph J. Molnar, James N. Seiber, Marshall Phillips, Ralph W.F. Hardy, Robert T. Fraley, Sandra Orr Archibald*

Technical Sessions:

Impact of Foreign Aid on U.S. Agriculture *(Sun/am).* Effectiveness; Third World economic development and import markets; U.S. agricultural competitiveness. *Gary Vocke, James P. Houck, Earl D. Kellogg, Robert L. Thompson, C. Edward Schuh*

Treatment of Food by Ionizing Radiation *(Thu/am).* Policy issues; economics; safety. *Dennis G. Olson, Frank P. Hungate, Faye M. Dong, Farid E. Ahmed, Christine M. Bruhn, Walter M. Urbain, Clyde A. Takeguchi, Tanya Roberts*

The Pyrethroid Insecticides: A Scientific Advance for Human Welfare? *(Thu/pm).* Pest control; chemistry; economics; public health; environmental concerns. *Michael Elliott, C. Inglesfield, Jake R. Phillips, Ian A. Watkinson, Donald E. Nye, Masachika Hirano, J.P. DeMoute, S.W. Carter, Ian R. Hill*

Call for Seminar Poster Papers

Presenting a contributed paper at a **seminar** poster session is **open only to registrants of that seminar.** These poster sessions offer an opportunity for seminar registrants to present their own research that is directly related to the seminar topics. All proposed papers must be received by AAAS no later than 1 December 1988. Each accepted paper will be assigned a 4′ × 6′ bulletin board for 1½ hours. Abstracts of accepted papers, if prepared in the format described below, will be copied and distributed to seminar registrants at the meeting.

Preparation of Abstract:

■ Copy must be typed on white paper to fit within a 5″ square. Use only a typewriter or a letter-quality printer. ■ Indent, space, underline, and capitalize as in the example; do not double space the body of the text. ■ Use reproducible black ink for all hand-lettering. ■ Do not box abstract or cut and paste it onto another piece of paper.

Submission of Abstract:

■ Above the 5″ square, type the title of the seminar and your complete name, address, and phone number. You will be contacted prior to the meeting regarding scheduling. ■ Send original plus 2 copies of the abstract **with your advance registration form** no later than 1 December 1988 to:

Seminar Abstracts
AAAS Meetings Office, Room 837
1333 H Street, NW
Washington, DC 20005

Deadline for Seminar Poster Paper Abstracts: 1 December 1988

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Indent Five Spaces and Type Title in Upper and Lower Case Letters and Underline. AUTHOR'S NAME IN UPPER CASE (Institution Name in Upper and Lower Case), SECOND AUTHOR (Institution).*

Skip one line and type abstract. The full width of the column of typed material should be 5 inches (12.7 cm) and must not extend beyond that. The total length of the material, from top of title to bottom of footnotes, must not exceed 5 inches (12.7 cm). Abstracts that exceed these parameters will be returned. All special symbols and signs that must be hand lettered (e.g., π) should be rendered in reproducible black ink as clearly and carefully as possible. The entire submission should be of camera-ready quality so that it can be photographed, turned into a plate, and printed. The printed abstract will be about 2/3 the size of the typed version. Avoid paragraphing as this wastes space. However, you may use your allotted space to neatly letter equations and diagrams as you deem necessary,

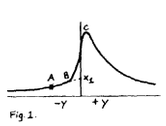

Fig. 1.

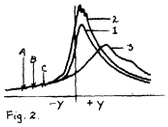

Fig. 2.

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Life Science Seminars

The following 3-day seminars will feature in-depth presentations by leading researchers at the cutting edge of their respective fields. **Note:** Space is limited, and special registration is required. See the registration form on page 586.

The Process of Protein Folding

(Sunday, 15 January, through Tuesday, 17 January)
Organized by JANE RICHARDSON *(Duke)* and IRWIN KUNTZ *(UC–San Francisco)*.

Emphasis will be on the new interactions between theory and experiment, the characterization of early folding intermediates, and the power to tailor the proteins and their fragments to test folding hypotheses.

Sessions include:

Theoretical Models *(Sun/am)* Monte Carlo models; conformational and sequence spaces; diffusion-collision model; "fitness landscapes." HAROLD SCHERAGA *(Cornell);* JEFFREY SKOLNICK *(Washington U., St. Louis);* KEN DILL *(UC–San Francisco);* DONALD BASHFORD *(Harvard);* STUART KAUFFMAN *(U. of Pennsylvania).*

Early Folding Intermediates *(Sun/pm)* Secondary structure formation; peptide model for BPTI; structure of intermediates by H exchange and NMR. CHRISTIAN ANFINSEN *(Johns Hopkins);* ROBERT BALDWIN *(Stanford);* PETER KIM *(Whitehead Inst., MIT);* HEINRICH RODER *(U. of Pennsylvania).*

The Folding of TIM Barrels *(Mon/am)* Barrel geometries; circularly permuted $\beta_8\alpha_8$ barrels; Trp synthetase α and its mutants. JANE RICHARDSON *(Duke);* SHOSHANA WODAK *(Free U. of Brussels, Belgium);* KASPER KIRSCHNER *(Biozentrum, U. of Basel, Switzerland);* ROBERT MATHEWS *(Penn. State).*

Mutational Analysis of Folding *(Mon/pm)* Folding mutants *in vitro* and *in vivo*; mutational stabilization; global suppressors in Staph. nuclease; mutants in BPTI. IRWIN KUNTZ *(UC–San Francisco);* JONATHAN KING *(MIT);* RONALD WETZEL *(Genentech Corp.);* DAVID SHORTLE *(Johns Hopkins);* DAVID GOLDENBERG *(U. of Utah).*

Synthetic Peptides and Proteins *(Tue/am)* Peptide conformations; elastin contraction; ion channels; *de novo* design of model proteins. JANET THORNTON *(Birkbeck College, U. of London, UK);* KENNETH KOPPLE *(SmithKline &French Lab.);* DANIEL URRY *(U. of Alabama);* JAMES LEAR *(Dupont Corp.);* DAVID RICHARDSON *(Duke).*

In vivo *Folding, Processing, and Secretion* *(Tue/pm)* N-terminal processing; folding BPTI *in vivo*; antifolding factor for export in *E. coli.* LILA GIERASCH *(U. of Texas, Dallas);* JOHN SMITH *(Harvard Medical School);* STEVEN ANDERSON *(Rutgers);* PHILIP BASSFORD *(U. of North Carolina, Chapel Hill);* LINDA RANDALL *(Washington State).*

Plant Molecular Biology/ Genetic Engineering for Agriculture

(Sunday, 15 January, through Tuesday, 17 January)
Organized by LAWRENCE BOGORAD *(Harvard)* and ABRAHAM EPSTEIN *(Iowa State).*

Frontline research and new biotechnology methods will be juxtaposed with commercial applications, and each *Biotechnology Showcase* will present the tools of molecular biology being used commercially for genetic engineering.

Sessions include:

Regulation of Gene Expression in Plant Systems I *(Sun/am)* Cell-specific gene expression patterns; oligosaccharins, oligosaccharide fragments; regulation of growth; defense responses. ROBERT B. GOLDBERG *(UCLA);* PETER H. QUAIL *(USDA Plant Gene Expression Center);* PETER ALBERSHEIM *(Complex Carbohydrate Research Center, Athens, GA).* **Biotechnology Showcase 1:** Advanced Genetic Sciences, Inc.; Bayer AG; BioTechnica International, Inc.; Calgene.

Regulation of Gene Expression in Plant Systems II *(Sun/pm)* Nodulin genes; symbiotic nitrogen fixation. SHARON R. LONG *(Stanford);* DESH PAL S. VERMA *(Ohio State Biotechnology Center);* LAWRENCE BOGORAD *(Harvard).* **Biotechnology Showcase 2:** CIBA-GEIGY; Crop Genetics International; DeKalb-Pfizer Genetics.

Molecular Bases of Crop Protection I *(Mon/am)* Cloning of plant genes; crop improvement; herbicide-resistant crops; protease inhibitor gene expression in plants. MARC VAN MONTAGU *(Rijksuniversiteit, Gent, Belgium);* CHARLES J. ARNTZEN *(Texas A&M);* STEVEN H. HOWELL *(Boyce Thompson Inst. for Plant Research, Ithaca, NY);* CLARENCE A. RYAN *(Washington State).* **Biotechnology Showcase 3:** E.I. duPont de Nemours & Co.; Ecogen, Inc.; Hoechst AG.

Molecular Bases of Crop Protection II *(Mon/pm)* Early molecular events in plant-fungus communication; mechanisms for induction of defenses to microbial attack. PAPPACHAN E. KOLATTUKUDY *(Ohio State Biotechnology Center);* BRIAN STASKAWICZ *(UC–Berkeley);* CHRISTOPHER J. LAMB *(Salk Inst., San Diego).* **Biotechnology Showcase 4:** Monsanto; Native Plants, Inc.

Molecular Bases for Crop Improvement *(Tue/am)* Genes affecting pollen fertility and disease susceptibility; manipulating seed storage proteins in wheat. C.S. LEVINGS III *(North Carolina State, Raleigh);* JUNE NASRALLAH *(Cornell);* RICHARD B. FLAVELL *(John Innes Inst., Norwich, UK).* **Biotechnology Showcase 5:** Pioneer Hi-Bred; Plant Genetic Systems; Sandoz Crop Protection; Sungene Technologies Corp.

The Genetic Transformation of Plants *(Tue/pm)* Transfer of genes into cereals; particle propulsion by electric discharge; transformation of plants by microprojectiles; applications for agriculture. INGO POTRYKUS *(Inst. für Pflanzenwissenshaften, Zurich, Switzerland);* WINSTON J. BRILL *(Agracetus, Middleton, WI);* THEODORE KLEIN *(USDA Plant Gene Expression Center);* PETER DAY *(Rutgers).*

Social & Behavioral Sciences

Psychology; Neurobehavior

The Acquisition and Dissolution of Language: Behavioral Evidence for a Biological Program *(Sun/am).* Biological and acquisition studies; mental representation of language; biological programming. *Barbara C. Lust, Barbara L. Finlay, Merrill F. Garrett, Mary Louise Kean, Janet C. Sherman, David N. Caplan, Suzanne Flynn*

The Future of Scientific Psychology *(Sun/pm).* Complementarity; tacit vs. explicit knowledge; cognitive science vs. radical behaviorism. *Ernest R. Hilgard, Eddit Oshins, Giampiero Arciero, Michael J. Mahoney, George S. Howard*

Continuity in Development from Infancy *(Mon/am).* Prediction from early performance; assessment procedures; impact on theories of development. *Thomas J. Tighe, Robert H. Bradley, Joseph F. Fagan III, Arnold Sameroff, Marian Sigman, Byron Egeland*

Mammalian Sleep *(Mon/pm).* Homeostatic mechanisms; deprivation; neural mechanisms; REM sleep. *H. Craig Heller, William C. Dement, Alan Rechtschaffen, Michael Chase, Charles Czeisler, Alexander Borbely, Thomas Roth*

The Brain, Stress, and Health: The Interplay of Biology and Behavior *(Tue/am-pm).* Psychoimmunology; neurochemistry; emotions. *Kenneth H. Tachiki, Carl A. Maida, Norman Cousins, Helen A. Korneva, Arthur S. Kling, Tiffany M. Field, Ronald Glaser, M.H. Aprison, Lydia Temoshok, Seymour Levine*

Biological Foundations of Instinctive Behaviors *(Wed/am-pm).* Neuropeptides; releasing hormones; behavioral mechanisms. *Anneliese A. Pontius, Donald W. Pfaff, Peter Marler, Alan N. Epstein, Fred S. Berlin, Robert A. Prentky, Nori Geary, Ronald Langevin, James M. Dabbs, Jr., Rae Silver*

Technical Sessions:

Constraints on Language Learning and Concept Development *(Sun/pm).* Morphology; syntax; semantics. *Barbara Landau, Stephen Crain, Susan Gelman, Ellen Markman, Ray Jackendoff*

Opening the Mind: Windows to the Brain in Vocal Motor Control *(Mon/am).* Behavioral and neural assessment of vocal motor disorders. *Emily A. Tobey, Terese Finitzo, George V. Kondraske, Sandra Bond Chapman, Michael D. Devous, Sr., Frances J. Freeman, Ben C. Watson, Steven D. Schaefer, Kenneth D. Pool*

Speech-Language Learning and Early Otitis Media with Effusion (OME) *(Mon/pm).* Otitis media: disease process; developmental sequelae; effect on speech, language, and hearing. *Sandy Friel-Patti, J. Patrick Hieber, Terese Finitzo*

Anthropology; Developing Countries

Human Values and Scientific Literacy: Leacock's Multidisciplinary Approach *(Mon/am).* Racism, sexism, and poverty; non-Western countries; liberal arts. *Ethel Tobach, Betty Rosoff, Sylvia Scribner, Paul Levinson, Linnda R. Caporael, Angela Gilliam, Edmund W. Gordon, Vera P. John-Steiner*

A Cross-Cultural Study of Emotional Expression, Language, and Philosophy *(Mon/pm).* Facial expressions; autonomic nervous system correlates; ethnographic and linguistic findings. *George A. DeVos, Robert W. Levenson, Karl G. Heider, Roy G. D'Andrade, Paul Ekman*

Expressions of World View and Cosmology in the Ancient Americas *(Wed/am).* Chacoan Anasazi; Maya; Inca. *Rolf M. Sinclair, Linda Schele, Edwin C. Krupp, Anna P. Sofaer, Gary Urton*

Sustainability and Development *(Sun/am).* Carrying capacity; political viability; equity. *Gilbert S. Omenn, Amy Auerbacher Wilson, Kenneth W. Piddington, Gordon H. Orians, Lynton K. Caldwell, Harvey Brooks, Charles V. Kidd, Theodore Panayotou*

The New Transnationalism and Global Security *(Sun/pm).* Globalism; national security; managing resources. *Nazli Choucri, Amy Auerbacher Wilson, John P. Holdren, Roger Levien, Peter M. Haas, Robert C. North*

Technical Sessions:

Population Policies and Programs in Developing Countries: New Initiatives and Trends *(Tue/am).* Microcomputer models; contraception and family programs; Africa; U.S. role. *Frank H. Oram, Philander P. Claxton, Jr., Henry Cole, George Zeidenstein, Joseph Speidel, Sheldon J. Segal, R. Paul Shaw*

Issues and Impacts of Agricultural Universities in Developing Countries: Brazil, Mexico, Ethiopia, and India *(Tue/pm).* *Gary E. Hansen, William B. Lacy, Cornelia B. Flora, Margaret J. Sarles, Edwin C. Price*

Putting Local Knowledge to Work: Applications for Agricultural Development and Natural Resource Management *(Wed/am).* "Sociotechnically" intensive approaches; Third World; ethnoscientific information. *Jerry Allen Moles, Jere L. Gilles, Dennis M. Warren, Patricia J. Vondal, Michael R. Dove, Adedotun Phillips, Constance M. McCorkle, David Guillet, Yvonne Everett, Jon Sandor, Robert Benfer, Louanna Furbee*

Social & Political Science

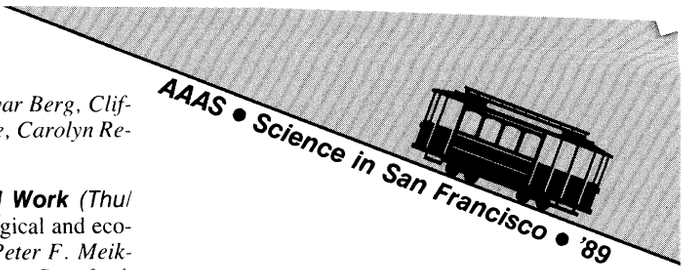
Violence Between Men and Women: The Case of Rape *(Mon/am).* Changes in laws and treatment; race. *Mary P. Koss, Susan B. Sorenson, Neil M. Malamuth, Linda B. Bourque, Carole E. Goldberg-Ambrose, Vivian B. Brown, Gary D. LaFree*

Marriage, Family, and Scientific Careers: Institutional Policy Versus Research Findings *(Mon/pm).* Working couples and parents; industrial and academic responses. *Rae S. Goodell, Marsha Lakes Matyas, Paula Rayman, Ellen Galinsky, Alan Fechter, Jay Belsky, Sue Kemnitzer*

Values, Policy Controversies, and the 1990 Census *(Tue/am-pm).* Minority undercount adjustment; illegal aliens and congressional reappointment. *Rachelle Hollander, Patrick Burns, William P. Butz, Roger Conner, William Petersen, Leon F. Bouvier, Lorna Bade Goodman, Barbara A. Bailar, Charles O. Wood, Jacob Siegel, Jeffrey S. Passel, Rodolfo O. de la Garza, Margo Anderson*

New Data on the American Family *(Wed/pm).* Child care; divorce; the elderly; the Black family. *Joseph E. Potter, James A. Sweet, Sara McLanahan, James A. Sweet, Arline Geronimus, Larry Bumpass, Judith Seltzer*

Religion and Politics: 1988 *(Thu/am).* Christian Right; consequential dimension;



evangelism; televangelism. *Hart M. Nelsen, James L. Guth, Jeffrey K. Hadden, John C. Green, Corwin E. Smidt, K. Jill Kiecolt, Anson Shupe*

Technical Sessions:

Some Results on the Application of Cognitive Laboratory Research Techniques to Survey Methodology *(Sun/am).* Federal agencies' research and application; survey response task. *Cathryn S. Dippo, Barbara M. Means, Judith T. Lessler, Pamela C. Campanelli, Monroe G. Sirken, Clyde Tucker, Mark Palmisano, Judith M. Tanur*

Megacities: Problems and Prospects *(Sun/pm).* Demographic, social, political, economic, and technological causes of growth and decline. *John D. Kasarda, Duane Kissick, Sidney Goldstein, Per Ljung, Dennis A. Rondinelli, Harry W. Richardson, Ellen M. Brennan, Janice E. Perlman*

Theory and Experiment in the Economics of Market Behavior *(Mon/pm).* Stock market behavior; chaos theory; new auction institutions; computer-assisted markets. *Vernon L. Smith, Charles R. Plott, William A. Brock, Stephen J. Rassenti, Kevin A. McCabe*

Sociologists and Statisticians: A Sesquicentennial Partnership *(Wed/pm).* Statistical methods; decision making. *William A. Golomski, S. James Press, Ivar Berg, Clifford C. Clogg, Diane G. Saphire, Carolyn Rebecca Block, Judith M. Tanur*

The Sociology of Technical Work *(Thu/am).* Work conditions; technological and economic factors. *Peter Whalley, Peter F. Meiksins, James M. Watson, Stephen Crawford, Chris Smith, Judith A. Perrolle, Gary A. Downey*

Economics; Competitiveness

Federal Funding of the Academic Physical Sciences *(Tue/am). Barbara Simons, Robert Park, Robert M. Rosenzweig, Philip Anderson, Peter Lax, William Thurston, Burton Richter*

Mineral Resources and Trade in the Pacific Rim *(Thu/pm).* Metals production, trade, and demand; Japan; China. *James P. Dorian, Toshio Sakasegawa, Jun Ma, Gordon R. Peeling, John E. Tilton, M.R. Holthuyzen*

Biotechnology Transport from University to Marketplace: A Cost-Benefit Assessment *(Wed/am).* Collaborative research programs; costs and benefits to university and to community. *Janett Trubatch, Kathi E. Hanna, Roger G. Ditzel, Katharine Ku, David Blumenthal, Paul M. Frison*

Socioeconomics: The Roles of Power and Values *(Wed/pm).* Decision making; industrial organization. *Amitai Etzioni, Edwin Epstein, Drazen Prelec*

Managing American Technology: The Competitive Challenge *(Tue/am).* Contributions from economics, operations research, and sociology. *Mary Ellen Mogee, Daniel Berg, Alden S. Bean, Frederick Betz, Robert DeSio, Richard Foster*

Quality and Its Impact on Competitiveness *(Tue/pm).* Customer satisfaction; product improvement; Germany, Japan, and the United States. *H. James Harrington, Curt W. Reimann, Hermann J. Zeller, J. Douglas Ekings*

Scientific and Technical Information I: The New Information Tech-

Plenary Lectures

Saturday, 14 January:

8:30 pm KEYNOTE LECTURE, "Science and the American Future," **Donald Kennedy** *(Stanford Univ.).*

Sunday, 15 January:

1:00 pm CAREY LECTURE,"Problems and Opportunities for the Decades Ahead: Lots of Them," **William T. Golden** *(AAAS Treasurer).*

1:00 pm "Protein Folding: The Interface of Chemistry and Biology," **Frederic M. Richards** *(Yale Univ.).*

8:30 pm "The Search for Eve," **Allan C. Wilson** *(UC–Berkeley).*

Monday, 16 January:

1:00 pm WATERMAN LECTURE, "Catalytic Antibodies," **Peter Schultz** *(UC–Berkeley).*

1:00 pm "The Study of Gene Expression, Regulation, and Growth Control in Plants," **Josef S. Schell** *(Max Planck Institut, Cologne, FRG).*

8:30 pm "Resource Allocations for Science: A New Approach," **Frank Press** *(NAS).*

Tuesday, 17 January:

1:00 pm SARTON LECTURE, "The Politics of the Meter Stick," **John L. Heilbron** *(UC–Berkeley).*

Tuesday, 17 January (continued):

1:00 pm "Present and Future Opportunities for Synchrotron Radiation Research," **Arthur Bienenstock** *(Stanford Synchrotron Radiation Laboratory).*

8:30 pm AAAS PRESIDENT'S LECTURE: "From the President of the AAAS to the President of the United States — Greetings," **Walter E. Massey** *(U. of Chicago).*

Wednesday, 18 January:

1:00 pm "Optical Astronomy in California: Forging Ahead with the Grand Tradition," **Robert P. Kraft** *(Lick Observatory, UC–Santa Cruz).*

1:00 pm "The Molecular Genetics of Cancer," **J. Michael Bishop** *(UC–San Francisco).*

8:30 pm "Genetics and the Disappeared: The Search for Two Generations," **Mary-Claire King** *(UC–Berkeley).*

Thursday, 19 January

1:00 pm "Physical Properties and Physical Picture of High-Temperature Superconducting Oxides," **Shoji Tanaka** *(Univ. of Tokyo).*

1:00 pm "Earthquake Prediction: On the Verge...," **Allan G. Lindh** *(U.S. Geological Survey, Menlo Park, CA).*

Social & Behavioral Sciences
(continued)

nologies *(Sun/am).* New information technologies; transfer of information; accessibility. *Elliot R. Siegel, Douglas Van Houweling, Donald Porter, Peter Hernon, Mike Roberts, Van A. Wente, Jane Caviness, Michael J. McGill*

Scientific and Technical Information II: Public Policy Issues *(Sun/pm).* Governmental and industrial perspectives; limited access for scientists; economic advancement. *Jane Bortnick, Ralph J. Thomson, Anthony G. Oettinger, Mitchel B. Wallerstein, Leo Young, Robert L. Park*

Interdisciplinary Research Initiatives: Significance, Development, and Implications for Science and Technology *(Mon/am).* Federal and NSF initiatives; industry-university linkages; future trends; energy research centers. *Steven Ballard, Roland W. Schmitt, Timothy A. Hall, Christopher T. Hill, Albert R.C. Westwood, Don E. Kash*

Global Economic Competitiveness Through Effective Management of Industrial R&D *(Mon/pm).* Biotechnology; aerospace; cultural change. *Albert R.C. Westwood, Charles F. Larson, Robert E. Leach, S. Alan Heininger, Peter Cannon, George F. Farris*

Technical Sessions:

Measuring Innovation: What Is the State of the Art? *(Tue/pm).* R&D investments; personnel; bibliometrics; patents. *Theodore W. Schlie, Daryl E. Chubin, Mary Ellen Mogee, Michael B. Albert, John R. Chirichiello, Daniel Berg, J. David Roessner*

Technology, Economic Development, and the States *(Wed/am).* University-industrial relations; technology innovation; state policies for industrial growth. *Jurgen Schmandt, Richard P. Barke, Edward Malecki, Irwin Feller, Ann O'M. Bowman, Gregory A. Daneke*

Sharing Scientific Data: A Cross-Disciplinary Examination of Accomplishments, Problems, and Prospects *(Wed/pm).* Locating, documenting, and archiving data; international data sharing. *Joan E. Sieber, Roy L. Jenne, Douglas Blanchard, Martin H. David, Vivian Weil, Robert F. Boruch, V. Jeffery Evans, Douglas R. White*

Developments in the Use of Federal Government Economic Statistics for Scientific Research *(Thu/am).* Census data; gender, health, income, and spatial studies. *Karen R. Polenske, Kenneth Hansen, F. Thomas Juster, Forrest B. Williams, Dorothy P. Rice, Sherman Robinson*

History, Philosophy & Ethics

Current Issues in Social Science Explanation: Laws, Mechanisms, Actions, and Intentions *(Thu/am).* Intentionality; action explanations; generic assertions. *Andrew P. Vayda, Rex Martin, Arthur L. Stinchcombe, George C. Bond, James Farr, John R. Searle*

Evolutionary Theory, Economics, and Political Science: An Emerging Theoretical Convergence *(Thu/pm).* Cooperation and social norms; rational choice theories; sociality and moral behavior. *Roger D. Masters, J. Philippe Rushton, Robert H. Frank, Mancur Olson, Jr., David Barash, Albert O. Somit*

50th Anniversary of Nuclear Fission *(Mon/pm). Organized by the American Physical Society*

History of Science I: Forgotten Episodes *(Tue/am). John S. Rigden, Ronald E. Mickens, Rogers J. Newman, Herman R. Branson, Kenneth R. Manning*

History of Science II: Uneasy Careers and Intimate Lives—Great Women in Science During the Late 1800s and the 1900s *(Tue/pm).* Characteristics and developmental factors of successful women scientists. *Pnina G. Abir-Am, Stephen G. Brush, Caroline L. Herzenberg, Sallie A. Watkins, Robert G. Sachs, Peggy Aldrich Kidwell*

Science Advice to the President: The First 200 Years *(Wed/pm).* Historical perspective on advisory mechanism. *Michael D. Crisp, Glenn T. Seaborg, A. Hunter Dupree, Carroll W. Pursell, Herbert F. York, Robert V. Bruce*

Not in My Backyard: Where Can Biomedical Research Be Done? *(Tue/pm).* Scientific, legal, and ethical issues. *Larry N. Horton, Albert H. Teich, Allan C. Mazur, Sheldon Krimsky, Jere E. Goyan, George M. Carr, Betty-ann Hoener*

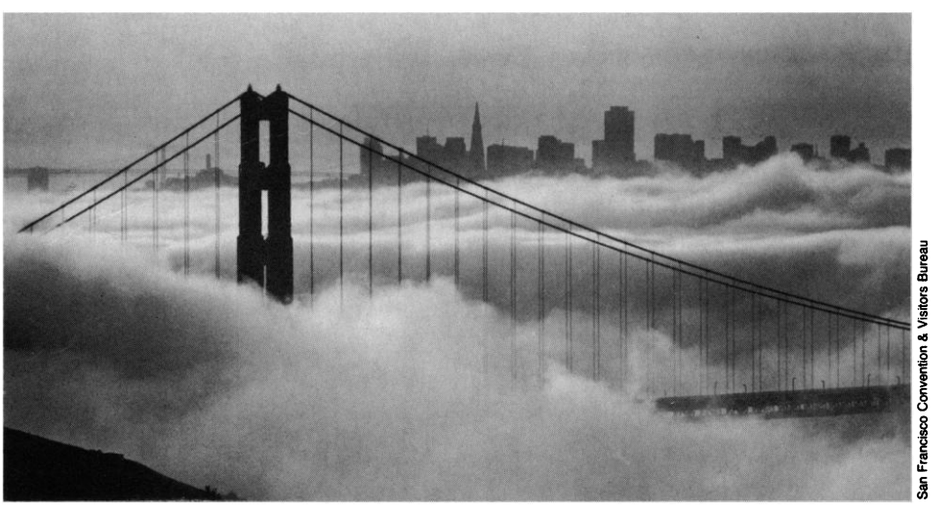
Responding to Allegations of Fraud and Misconduct in Science *(Wed/am).* University experiences; due process; whistleblower's perspective; federal policies. *Albert H. Teich, Bruce W. Hollis, Paul J. Friedman, Rosemary Chalk, Robert M. Anderson, Carol R. Scheman*

Evaluating the Human Genome Project *(Wed/pm).* Civil liberties; medical practice and public health; relevance of genetic diversity. *Nachama L. Wilker, Ruth Hubbard, Richard C. Lewontin, Raymond L. White, Philip L. Bereano, Anne Fausto-Sterling, Melanie Tervalon*

Defending Human Rights with Genetics and Forensic Evidence *(Mon/am).* DNA sequence analysis and its applications in Argentina. *Cristian Orrego, Kari Hannibal, Barbara Mishkin, Clyde C. Snow, Svante Pääbo, Mary-Claire King*

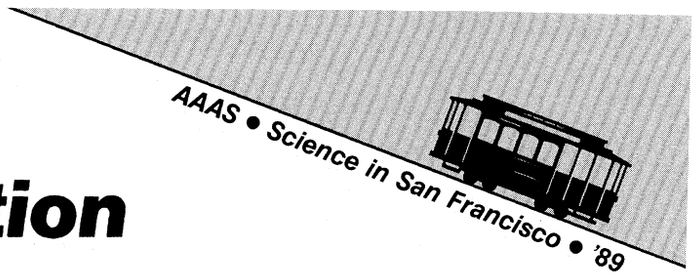
Torture Rehabilitation Under Repressive Regimes *(Mon/pm).* Argentina; Chile; South Africa; the Philippines. *Janet Gruschow, Kari Hannibal, Elizabeth Lira, June Pagaduan-Lopez, Juan Jorge Farina, Paul Davis*

Science, Engineering, and Ethics: New Directions in Ethics and Values Studies (EVS) *(Tue/am).* Public policy; philosophy; global impacts; advanced training. *Amy C. Crumpton, Mark S. Frankel, Michael H. Glantz, Judith P. Swazey, Leonard A. Cole, Caroline Whitbeck, David A. Bella*



San Francisco Convention & Visitors Bureau

Science & Technology Education



Science Instruction

Science for All Americans: Implications of Project 2061 for Future Science Education *(Sun/am).* Teacher education; testing; instructional materials and technology; school reorganization. *Patricia Warren, F. James Rutherford, Elizabeth Stage, Decker F. Walker, Lee S. Schulman, Robert F. Tinker*

Research in Physics Education I: Applications of Research on Conceptual Understanding and Problem Solving *(Mon/am). Fred Goldberg, Alan H. Schoenfeld, Lillian C. McDermott, Peter Licht, Hans Niedderer*

Research in Physics Education II: Applications of Cognitive Science *(Mon/pm). John T. Bruer, Jim Minstrell, Jill H. Larkin, Marianne Wiser, Frederick Reif*

Computer-Based Curricula for Qualitative Understanding of Physics *(Wed/pm).* Curriculum reform; problem solving; elementary abstract physics. *Joanne Striley, Marcia C. Linn, Barbara Y. White, Jeremy Roschelle, Ruth W. Chabay*

The AIP/AAPT Survey of High School Physics Teachers: Views and Consequences *(Mon/am).* Teacher reactions; urban schools. *John W. Layman, Steven Iona, Carol Escobar, Douglas Campbell, M. Neuschatz*

Computational Physics *(Thu/am).* Undergraduate curriculum; computer-inspired projects. *J. Richard Christman, R.R. Borchers, Charles Misner, Joseph K. Daugherty*

Development of Thinking Skills in the Sciences and Mathematics *(Sun/pm).* Intellectual growth; training methods; thinking strategies. *Diane F. Halpern, Robert Glaser, John D. Bransford, Jose P. Mestre, Richard E. Mayer, James G. Greeno*

Science and the Liberal Arts *(Mon/pm).* Need for students to learn the nature of science; implications for life in American society. *Audrey B. Champagne, Ethyle R. Wolfe, John S. Rigden, Frank H. Westheimer, Roland W. Schmitt, Alphonse Buccino*

Science Education on the Pacific Rim: Challenges and Opportunities *(Tue/am).* China; Colombia; Korea; Japan; implications for U.S. curricular change. *Victor J. Mayer, LaMoine Motz, Isaac Eliezer, Chin Chi Chao, John T. Shimozawa, Floyd E. Mathias, Jae Sool Kwon, Marjorie Gardner*

Ability Testing: Uses, Consequences, and Conflicts *(Wed/am).* Use in education and industry; costs and benefits; legal conflicts. *Thomas J. Tighe, Rogers Elliott, Robert L. Linn, Lorrie A. Shepard, Linda S. Gottfredson, John B. Carroll*

Creativity in the Mathematical Sciences: The Many Faces of Our Dilemma *(Wed/pm).* Talent search and development in math, physics, chemistry, and life sciences. *Arnold E. Ross, Peter Lax, Ben-Ami Blau, Vera John-Steiner, Robert Coleman, Rolf F. Barth, Ronald D. Scheid, Charles Fefferman, Charles W. Misner*

Technical Sessions:

Geology: The Neglected Science in Precollege Education *(Sun/am).* Importance of geology in education and public understanding; academic strategies; political consequences. *E-An Zen, Joyce R. Blueford, Jean Frances DeMouthe, L. Thomas Tobin, Marvin E. Kauffman, John R. Carpenter, Robert Streitz*

The National Laboratories as Partners in Science Education *(Mon/am).* Precollege science programs. *Robert W. Springer, Camille Minichino, Lucille E. Day, Marjorie G. Bardeen, Gilbert R. Marguth, Karl J. Swyler, Irene D. Hays, Hector Timourian, Judith C. Kaye, Wayne L. Stevenson, Linda C. Cain, Roland J. Otto*

Earth Systems Education: Reforming the Curriculum Content Regarding Planet Earth *(Sun/pm).* Content and approaches for curriculum renovation. *Victor J. Mayer, Frank Ireton, Rosanne W. Fortner, Jere H. Lipps, Audrey B. Champagne, John Carpenter, Ari Korporaal, Warren Yasso*

Exemplary NSF-Funded Science and Mathematics Programs *(Tue/pm).* Teacher training; minority access; math and science networks. *Robert Aiken, Madeleine J. Long, Gerald Skoog, Theodore L. Reid, Phil Wagreich, Harvey Keynes, Marvin Druger, Burton Voss, Arnold A. Strassenburg*

Invited and Contributed Session on Computers in Physics *(Wed/am). Marvin DeJong, John Risley*

Perspectives and Emerging Approaches for Assessing Higher-Order Thinking in Mathematics *(Wed/am).* Test development; national and state experiences; belief systems. *Elizabeth K. Stage, Sandra P. Marshall, Gerald Kulm, Alan H. Schoenfeld, Eva Baker*

Outcomes Assessment of Undergraduate Physics Programs *(Mon/pm).* State and private accrediting agencies. *Rexford E. Adelberger, Richard L. Burns*

Looking into Windows: Qualitative Research in Math and Science Education *(Wed/pm).* Research and evaluation techniques; elementary through college levels. *Jane Butler Kahle, Judith L. Meece, Floyd H. Nordland, James J. Gallagher, Joseph D. Ruhl, Kenneth G. Tobin*

College Student Research Papers *(Thu/am). Ollin J. Drennan*

Science Education Improvement Activities of AAAS Affiliates *(Thu/pm). Sylvia A. Ware, Lorelle M. Young, Gerald Kulm, Alfred B. Willcox, Andrew J. Verdon, Jr., Edward J. Poziomek, Brian B. Schwartz, John W. Layman, Andrew Fraknoi*

Reforming the Life Sciences Curriculum: K–12 *(Thu/pm). Rodger W. Bybee, Joseph D. McInerney, John A. Moore, Paul DeHart Hurd*

Workshops:

Teaching Scientific Writing as an Integral Part of Training Scientists: Approaches at the Graduate Level and Beyond *(Wed/am).* Discussion of approaches in use at graduate, postdoctoral, and professional levels. *Barbara J. Gastel, Susan L. Abrams, Mimi Zeiger, Eugene H. Schmitz*

Graduate Studies in Science and Engineering: Games Your Advisor Should Have Taught You *(Tue/am).* Strategies to retain female and minority students; financial aid; developing professional skills. *Marsha Lakes Matyas, William A. Lester, Howard G. Adams, Lilli S. Hornig, Susan T. Hill*

The State Academies of Science: Stimulating Interest Through Junior Academies *(Wed/pm). James H. Shaddy, Dean Decker, Lynn Elfner, William Schmitt, Bill Surver, Gloria Takahashi, Don Jordan*

(continued)

Science & Technology Education
(continued)

Outreach to Minorities & the Public

Science Acculturation Among the Young *(Sun/am-pm).* Decay of interest; gender and minority differences; informal learning strategies. *Valerie Crane, Ray Hannapel, Benjamin Bloom, Mark St. John, Michael Cole, Tom Hilton, Marcia Linn, Michael Templeton, Valerie Crane, Twyla Liggett, Kathryn Sloane, Yolanda George*

Symposium of the APS Committee on Minorities: The Scholarship Program for Minority Undergraduate Physics Majors *(Mon/am).* History of program; lasers; thin films; superconductors; scintillation detectors; magnets; race newtron detection. *J. D. Garcia, Jr., William J. Evans, Angela W. Shields, Patrick R. Harper, Michael R. Davis, Gwyneth Hufford, Alicia A. Clay, Stephen C. McGuire*

Multiple Strategies to Increase Female, Minority, and Disabled Students' Participation in Mathematics and Science *(Thu/am).* Precollege level programs and their impacts. *Nancy Kreinberg, Deanna Banks Beane, Cheryll M. Hawthorne, Libby Palmer, Linda L. DeLucchi, Ellen Wahl*

Popularizing Science *(Wed/pm).* Professional organizations; science writers; television. *David J. Rhees, John C. Burnham, Stephen Hilgartner, Dorothy Nelkin, Bruce V. Lewenstein, George Gerbner*

Women in Physics: Why So Few? *(Thu/am). Janice Button-Shafer, William W. Havens, Jr., Beverly F. Porter, Barbara Wilson, Vera Kistiakowsky, Jackie Eccles, Mary Beth Ruskai*

Broadening Participation in Science and Engineering *(Sun/am-pm). Sheila Widnall, Sue Kemnitzer, Jamime Escalante, Ann Reynolds, Jaime Oaxaca, Pat Hubbard, Claire E. Freeman, Howard Adams, Patricia McGill Smith, Norine Noonan*

Cross-National Measurements of Public Understanding of Science and Technology *(Tue/pm).* Surveys of British, Japanese, Canadian, and U.S. public attitudes toward science. *Jon D. Miller, John Durant, Atsushi Naoi, Geoffrey Thomas, Edna F. Einsiedel*

Hispanic Science Education *(Tue/pm).* Public policy; critical issues; potential solutions. *Eric Munoz, Frank Talamantes, J.V. Martinez, Eloy Rodriguez, Manuel N. Gomez, Pablo Clemente-Colon, Juan A. Bonnet, Jr., Juan Rosario*

The Scientist's Role in Developing Minority Students *(Wed/am).* Biomedicine; engineering; physics; biology; math. *Uri Treisman, Leon Henkin, Raymond B. Landis, Mindy Thompson Fullilove, Frank Talamantes, Frederick Reif*

Technical Sessions

Science and the Public: Toward the Year 2000 *(Mon/am).* Science centers, academies, media, and exhibits. *David A. Ucko, Leighton R. Taylor, Thomas Sachse, Robert L. White, Marjorie H. Gardner, Laurie Garrett, David L. Goodstein*

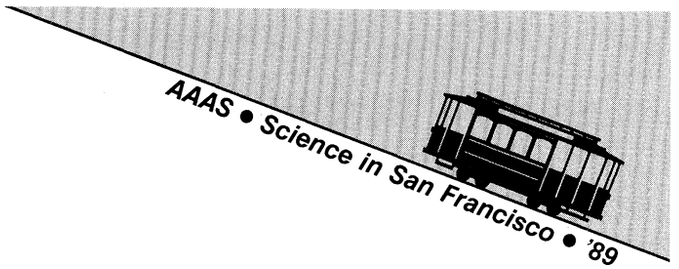
"Only a Theory": Presenting Evolution to the Public *(Mon/pm).* Effective, accurate, and positive presentation of evolution in the classroom, the media, and public settings. *William Thwaites, Eugenie C. Scott, Kate Nyquist, Robert J. Russell, Gerald D. Skoog, G. Brent Dalrymple, Robert M. West*

Beyond Newsprint: Unconventional Science Communication in the Developing World *(Tue/am).* Nonprint media; women as agents; radio reportage in Nepal. *James Cornell, Rosemarie Philips, Achola Pala Okeyo, Prakash Khanal, K.P. Kannan, Miguel Sabido*

Workshop

Communicating Science to the Public: Writing Strategies for Scientists and Engineers *(Tue/pm).* Writing strategies, information packaging for nonscientists, and hands-on practice at writing a newspaper science story. *Carol L. Rogers, Sharon Friedman*

Science & Technology Policy



Risk

Earthquakes and Fruitcakes? Science, the Public, and the Rational Management of Risk *(Sun/am). William R. Freudenburg, William N. Dember, Priscilla Reining, James F. Short, Joanne M. Nigg, Roger E. Kasperson, Steve Rayner, Lola L. Lopes, A. Myrick Freeman III*

Has Risk Assessment Become Too Conservative? *(Sun/pm).* Modification of EPA guidelines; default and biologically based procedures; human epidemiologic and rodent bioassay data. *Robert L. Sielken, Jr., Adam M. Finkel, Kenny S. Crump, John C. Bailar III, William H. Farland*

Risk Assessment and Environmental Policy: New Directions *(Mon/am-pm).* Pharmokinetics; cross-media pollution; decision analysis. *Thomas E. McKone, Leon B. Ellwin, Dale B. Hattis, Jorge H. Berkowitz, Lauren Zeise, Rob Coppock, Wayne R. Ott, D. Warner North, J. Clarence Davies, Cynthia M. Harris, Ken Sexton*

Siting a High-Level Nuclear Waste Repository I: The Policymaking Process *(Tue/am).* Congressional perspective; environmental ethics. *Michael E. Kraft, Riley E. Dunlap, Stephen H. Kale, Benjamin S. Cooper, John Lemons, Thomas H. Isaacs, Luther J. Carter, Robert R. Loux*

Risk Communication: Science and Policy *(Tue/pm).* Case studies; media responsibilities and needs. *William E. Kastenberg, Daphne Kamely, Donald G. Browne, Albert Meyerhoff, Sheldon Krimsky, Tom Meersman*

Life on the Leading Edge: Context and Consequences of Earthquakes, Volcanic Eruptions, and Landslides *(Wed/am-pm).* Hazard prediction; mapping techniques; community response. David K. Keefer, Allison R. Palmer, Earl E. Brabb, David P. Schwartz, George G. Mader, Robert I. Tilling, Ross S. Stein, Donald A. Swanson, Joanne M. Nigg, William M. Brown III, Joseph I. Ziony

Risk Management in the Pacific Rim Countries *(Thu/am).* Common risks; concept disparity; policy options. *J. Eleonora Sabadell, Kazuhiko Kawamura, Kirk R. Smith, Tomitaro Sueishi, Charles Scawthorn, Corazon P.B. Claudio, Riley Chung*

Technical Sessions

Coping with Chronic Technological Disasters *(Mon/pm).* Stress and coping components of nuclear accidents; community responses; invisible contaminants; theater as expressive behavior. *J. Stephen Kroll-Smith, Stephen Robert Couch, Laura M. Davidson, Henry Vyner, Andrew Baum, Ralph H. Turner, Lars Weisaeth, John T. Omohundro*

Municipal Solid Waste Disposal: Incineration and Its Alternatives *(Tue/am).* Technology, policy, and economic issues. *Richard N. L. Andrews, Donald G. Browne, Crutis Travis, J. Brojberg, Richard Dennison, Allen Hershkowitz, Barry Commoner, Michael Frisch*

Siting a High-Level Nuclear Waste Repository II: Public Opinion and Policymaking *(Tue/pm). Michael E. Kraft, Riley E. Dunlap, K. David Pijawka, Paul Slovic, William H. Desvousges, Howard Kunreuther, Julia G. Brody, Judy K. Fleishman, Ronald L. Little, Richard S. Krannich, Bruce B. Clary*

The 1987 National Surveys of Hazardous Waste Management Facilities *(Wed/am).* EPA role; survey instruments; preliminary results. *John L. Warren, Sheryl A. Caldwell, Danny R. Allen, James W. Craig, Patricia C. Smith*

Arms Control & National Security

Implementation of Major Strategic Arms Control Agreements: INF and START *(Sun/am).* Verification; national security and legal implications. *Patricia B. McFate, Sidney N. Graybeal, Roland LaJoie, Manfred Eimer, John B. Rhinelander*

National Security Policy Implications of Commercial Observation Satellites *(Sun/pm).* Troop monitoring; arms control compliance; nuclear nonproliferation. *Michael Krepon, Leonard S. Spector, Hugh De Santis, David Julyan, Roger DeKok*

Implementing a Global Chemical Weapons Convention *(Mon/am).* Secrecy; trade controls; production restrictions; on-site inspections. *Matthew S. Meselson, Gordon M. Burck, Robert Mikulak, Will D. Carpenter, Nikita P. Smidovich, Edward A. Tanzman, Ruediger Reyels*

Negotiated Force Reductions in Europe: Real Opportunity or Chimera? *(Mon/pm). Jonathan Dean, Jane M.O. Sharp, Wolfgang Pordzik, Jennone Walker, Leonard Sullivan, Alexi Arbatov, Jean Klein*

SDI Testing and the ABM Treaty *(Tue/am).* Narrow vs. broad interpretation of ABM. *Thomas H. Johnson, Louis Marquet, Roald Sagdeev, Ashton B. Carter, Antonia H. Chayes*

Biological and Toxin Weapons: The Renewed Threat *(Tue/pm).* Enemy identification; motivation; legal disincentives. *Raymond A. Zilinskas, Barbara H. Rosenberg, David Huxsoll, Erhard Geissler, Jay A. Jacobson, Keith R. Yamamoto*

The Implications of Soviet "New Thinking" About International Security *(Wed/am).* Psychological and political science perspectives. *Gloria Duffy, Jennifer Scheck, Steven Kull, Gail Lapidus, Sidney Drell, Hannes Adomeit, Yevgenii Primakov*

The University of California National Weapons Laboratories and Arms Control *(Tue/7:30–10:00pm).* Historical perspective; bases for concern; public perspective. *Paul P. Craig, Jose Fulco, Karl Hufbauer, Deborah Blum, John Nuckolls*

Space Nuclear Power and Arms Control *(Wed/pm).* Verification: U.S. and Soviet perspectives; electrical power requirements. *David W. Hafemeister, Joseph G. Gavin, Jr., Daniel Hirsch, Roald Sagdeev, George M. Hess*

Technical Sessions

Environmental Concerns Affecting National Defense and Security *(Thu/am).* NEPA; weapons disposal; technical and sociopolitical dimensions. *Sam A. Carnes, Robert B. Braid, Jr., Lynton K. Caldwell, Hugh M. Stirts, Ernest C. Baynard III, Milton Russell, James R. Ambrose, Albert H. Teich*

Science & Technology Policy
(continued)

Technology for Fissile Material Detection Applicable to Nuclear Arms Control Verification *(Thu/am).* Standards for verification; security requirements. *Alex DeVolpi, Robert M. Mozley, Edgar A. Rhodes, Stephen A. Dupree*

Arms Control Without Negotiation: The Role of Unilateral/Independent Initiatives *(Thu/pm).* Reciprocation; procurement restraint; novel strategies. *Bennett Ramberg, Warren Heckrotte, Jonathan Dean, Franklin Long*

National Security and High-Technology Trade with the Soviet Union *(Thu/pm).* Soviet economic future; synfuels; computer exports. *James L. Hecht, Alan B. Sherr, Richard F. Staar, Seymour E. Goodman, Mitchel B. Wallerstein*

Science & Technology Policy

The United Nations' Changing Perspectives for International Science *(Sun/am).* UNESCO; UNCSTD; India; China; United States. *Merton R. Barry, Archibald O. Haller, Jose I. Vargas, Zhaodong Liu, Sergio C. Trindade, William E. Gordon, Vasant Gowarikar*

Science in Japan: Japanese Laboratories Open to U.S. Researchers *(Sun/pm).* Cooperative S&T programs; NRC and NSF initiative programs. *Robert S. Cutler, Ryo Hirasawa, Yutaka Kuwahara, Ronald H. Baney, Charles F. Larson, Charles W. Wallace, Robert G. Latorre, Malcom R. Beasley, Fumio Kodama, Ronald E. Cape, H. Guyford Stever, Chihiro Watanabe*

Perspectives on the American Research University *(Mon/am).* Research and graduate training; historical and comparative perspectives. *Patricia J. Gumport, Burton R. Clark, Martin A. Trow, Roger L Geiger, Robert M. Rosenweig, Charles E. Bidwell*

Issues in Scientific Conflict of Interest Among Universities, Industry, and Government *(Mon/pm).* Historical perspective; peer review in regulations and journals. *Deborah C. Runkle, Robert Stern, Kathi E. Hanna, Arnold S. Relman, Daryl E. Chubin, Henry Etzkowitz, Thomas Tolbert, Sheila S. Jasanoff*

Energy Research and Funding in the 1990s: Status and Future Directions *(Sun/7:30–10:00pm).* Fission electric power; energy efficient building; solar energy. *Ruth H. Howes, Robert Budnitz, H.M. Hubbard, Arthur H. Rosenfeld, William F. Martin*

Technical Sessions:

Chinese Technology and Science Policy *(Sun/pm).* State Science and Technology Commission; U.S./China policy development. *Kazuhiko Kawamura, Alan L. Porter, Alice Hogan, ShiJun Gan, Gongshi Chen, Xing Gan, Yong N. Jiang, Kaill Kan, Xiaosu Gao, Fred Rossini, Anxian Yang, Tingfan Xie*

Academic Science and the Military *(Wed/pm).* Physical sciences; electronics; controversies. *David A. Wilson, Steven Mueller, Elizabeth Urey Baranger, Vera Kistiakowsky, Richard M. Abrams, Leo Young, John O. Dimmock*

Defense Spending as Technology Policy for the United States *(Thu/am).* R&D spending in defense vs. civilian economy. *Richard P. Barke, J. David Roessner, Charles Kimzey, Judith Reppy, Lawrence J. Korb, Allan Shaw, Nestor Terleckyj*

Workshops:

Testifying with Impact *(Sun/am).* Role playing and videotaping will be used to show scientists and engineers how to effectively deliver testimony at legislative hearings. *Stephen D. Nelson, Carol L. Rogers*

Communicating with Policymakers: Strategies for Scientists and Engineers *(Mon/am-pm).* Legislative and regulatory decisions. *Stephen D. Nelson, Aviva Brecher, David W. Hafemeister, Dana Isherwood, Michael D. Crisp, Leonard Weiss, Robert Palmer, Anthony Fainberg, Thomas H. Moss, Norine E. Noonan, Michael L. Telson, Carl Cranor*

Improving Your Chance of Success for NSF Grants *(Thu/am).* Designed primarily for faculty members from institutions and states seeking federal grant support for research and teaching. *Chor Weng Tan, Duncan E. McBride, Judith S. Sunley, James M. McCullough*

Meeting Information

Meeting Location

The 1989 AAAS Annual Meeting will be held at the **San Francisco Hilton Hotel,** 1 Hilton Square, San Francisco, CA; the AAPT/APS Joint Winter Meeting will be held at the same time at the Westin St. Francis Hotel, 335 Powell Street, on Union Square.

Hotel Reservations

The AAAS has reserved guestrooms at reduced convention rates at the **San Francisco Hilton** (see housing reservation form, page 586). The special rates shown are guaranteed only for reservation requests on this official AAAS housing form that are received on or before 16 December 1988 by the San Francisco Hilton.

Meeting Registration

Advance Registration. AAAS members whose registration forms are received on or before 16 December 1988 receive a 25% discount on general registration fees. Although seminar registrations are not discounted, advance registration is strongly recommended since space is limited and these sessions fill up early. Fees may be charged to VISA or MasterCard; no other credit cards are accepted by AAAS.

In early to mid-December, advance registrants will receive a badge and registration receipt, a summary program, and a voucher that can be exchanged at the meeting for the full program, abstracts of papers, and other materials. The registration area is in the East Lounge (Ballroom Level) of the Hilton. Registration hours are as follows: Saturday, 14 January, from 4:00 pm to 8:00 pm; Sunday through Wednesday, 15–18 January, from 8:00 am to 6:00 pm, and Thursday, 19 January, from 8:00 am to 12 noon.

One-Day Registration. A one-day rate is available on site only for members and nonmembers to attend symposia, technical sessions, or workshops; there is no one-day rate for the Seminars.

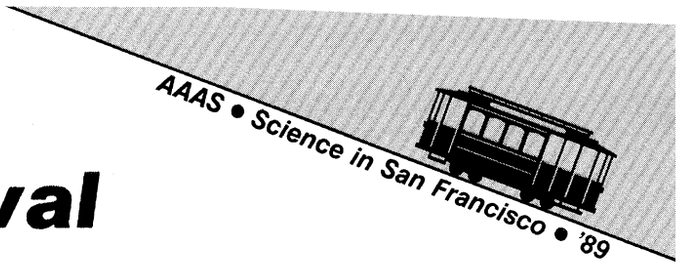
Registration Refunds. The AAAS will refund advance registration fees for all cancellations received by letter or telegram on or before 5 January 1989. Refunds will be mailed after 20 January.

Transportation

Discount Air Fares. For information, see the announcement on page 598.

Airport Buses. The San Francisco Airporter operates between the San Francisco International Airport and the San Francisco Hilton and St. Francis hotels. Buses pick up passengers every 20 minutes outside the baggage claim areas of all airport terminals between 6:20 am and midnight; pickups at the Hilton are between 5:20 am and 11:00 pm. The fare is $4 one way, $7 round trip.

The SB&F Science Film Festival



Festival films have been reviewed and highly rated by scientists writing for the Association's book and film review magazine, *Science Books & Films*. The festival, at the San Francisco Hilton, is open to the public; admission is free.

Sunday, 15 January:

9:30am Four Lives: A Portrait of Manic Depression, *Fanlight Productions*
10:33am Technology in America: The Age of Material Progress, *Coronet Films & Video*
10:54am Technology in America: The Age of Invention, *Coronet Films & Video*
11:15am The Mystery of the Lost Red Paint People, *Bullfrog Films, Inc.*
12:13pm Why Birds Sing, *Coronet Films & Video*
12:45pm Sex, Drugs, and AIDS, *O.D.N. Productions*
1:05pm Fragile Harvest, *Bullfrog Films, Inc.*
1:55pm Voyage to Antiquity, *INA Films*
2:55pm Can We Talk to Animals? *Coronet Films & Video*
3:27pm Popol Vuh: The Creation Myth of the Mayan, *University of California Extension Media Center*
4:00pm The Body Ages, *Perennial Education, Inc.*

Monday, 16 January:

9:30am The Rains Came, *Benchmark Films, Inc.*
10:30am Tail Loss in Lizards, *University of California Extension Media Center*
10:38am Continental Drift and Plate Tectonics, *BFA Educational Media*
10:57am Fire! *Coronet Films & Video*
11:30am The Future Trains, *Coronet Films & Video*
12:03pm Birds of a Feather, *Benchmark Films, Inc.*
1:00pm A Private Universe, *Pyramid Film & Video*
1:20pm Great Lakes: Troubled Waters, *Umbrella Films*
2:20pm Project Takahe, *Wombat Film & Video*
2:53pm Yanomamo of the Orinoco, *Documentary Educational Resources*
3:29pm Riddle of the Joints, *Coronet Films & Video*

Tuesday, 17 January:

9:30am Biogas from the Sea, *Bullfrog Films, Inc.*
10:00am Can AIDS Be Stopped? *Coronet Films & Video*
11:03am Wild Horses of the Nevada Desert, *Peter Dallas*
11:35am Phonons, *The Media Guild*
12:02pm Flying with the Birds, *Talia Productions*
12:34pm The Family of Chimps, *Filmakers Library, Inc.*
1:32pm Can I Drink the Water? *University of California Extension Media Center*
2:02pm Mayan Rainforest Farming, *University of California Extension Media Center*
2:33pm Turn Around, *Lawren Productions*
3:05pm The Quest for Contact: Search for Extraterrestrial Intelligence, *Astronomical Society of the Pacific*
3:40pm How Good Is Soviet Science? *Coronet Films & Video*

Wednesday, 18 January

9:30am Prisoner or Patient? *Pennsylvania State University*
10:23am Science . . . Fiction, *Pennsylvania State University*
11:15am Pine Beauty, *The Media Guild*
11:37am Your Biological Guide to AIDS, *Films Inc.*
12:05pm The Robins Return, *Wombat Film & Video*
12:37pm Biological Control, *The Media Guild*
1:05pm Death of a Star, *Coronet Films & Video*
2:07pm Space Shuttle After-Flight Reports, Vol. 5, *Ricon Enterprises*

Taxis. Rates are $1.40 at the flag drop and 25¢ for each additional ⅙ mile. The fare from the airport to the meeting hotel is about $22. Travel time is approximately 30 minutes, longer during rush hour.

Public Transit. All surface public transportation is operated by the San Francisco Municipal Railway System (Muni). The fare on streetcars and buses is 85¢; transfers are free. Cable car fare is $2. The Bay Area Rapid Transit (BART) has 71 miles of track running between San Francisco and Alameda and Contra Costa counties. Fares depend on distance travelled; for information call 415/778-2278.

Parking. At the Hilton, the valet or self-parking rate is $16 per 24 hours with in and out privileges. There are also three parking areas within one block of the Hilton; rates are about $15 per 24 hours.

Additional Services

Child Care. The concierge at the Hilton can make arrangements with a licensed child-care agency for guests; 24-hour advance notice is requested. Call 415/771-1400 and ask for the concierge.

Message Center. A telephone message center will be operated during registration hours in the AAAS registration area at the Hilton; call 415/771-1400 and ask for the AAAS Message Center.

Resource Center for Disabled Registrants. In addition to accessible meeting and hotel rooms, the following services will be provided through the Resource Center located in the San Francisco Hilton: transportation to and from airports, train stations, and bus terminals; interpreters for the hearing-impaired at all plenary lectures and for other sessions on request; audiotaped program highlights for the visually impaired; assistance in moving within and between the meeting hotels; and emergency repair for wheelchairs. Persons needing special accommodations and services should so indicate on the registration and housing forms. For additional information, contact the **AAAS Project on Science, Technology, and Disability,** 1333 H Street, NW, Washington, DC 20005 (202/326-6667; TTY available).

AAAS Employment Exchange. AAAS has invited corporate and academic recruiters to review employment applications and to interview candidates on site during the Meeting. Resume forms must be received at the AAAS address on or before 15 November 1988; for information and forms, call Jacquelyn Roberts, 202/326-6430.