Science: Our Common Heritage

Public Lectures

- **AAAS Keynote Lecture (3 Jan., 8:30 p.m., SFH).**
  Simon Ramo (Director, TRW, Inc., Redondo Beach, California).
  *Technological Innovation in the U.S. in the 1980s.*

- **George Sarton Memorial Public Lecture (4 Jan., 1:30 p.m., SFH).**
  Charles C. Gillispie (Dayton-Stockton Professor of the History of Science, Princeton University).
  *Is the Inwardness of Science Extrinsic to Its History?*

- **AAAS Public Lecture (4 Jan., 8:30 p.m., SFH).**
  Rolasyn S. Yalow (Senior Medical Investigator, VA, Veterans Administration Hospital, Bronx, N.Y.).
  *Radioimmunoassay—A Serendipitous Tool for Biology and Medicine.*

- **AAAS Public Lecture (5 Jan., 1:30 p.m., SFH).**
  John M. Ziman, Professor of Physics, University of Bristol, England.
  *Science—The New Model.*

- **AAAS Public Lecture (5 Jan., 8:30 p.m., SFH).**
  Abraham Pais (Professor of Physics, Rockefeller University).
  *Reflections on Einstein’s World.*

- **AAAS Public Lecture (6 Jan., 1:30 p.m., SFH).**
  John R. Pierce (Professor of Electrical Engineering, California Institute of Technology).
  *Scientific Communication and Science.*

- **AAAS President’s Public Lecture (6 Jan., 8:30 p.m., SFH).**
  Kenneth E. Boulding (President, American Association for the Advancement of Science; Professor of Economics, University of Colorado).
  *Science: Our Common Heritage.*

- **Phi Beta Kappa Public Lecture (7 Jan., 1:30 p.m., SFH).**
  William A. Nierenberg (Director, Scripps Institution of Oceanography; Vice Chancellor of Marine Sciences, University of California at San Diego).
  *Cyrano, Physics—and Possibly Aristotle.*

- **AAAS Public Lecture (7 Jan., 8:30 p.m., SFH).**
  Victor F. Weisskopf (Institute Professor of Physics, Massachusetts Institute of Technology).
  *Science, Technology, and Culture.*

1. **General Interest**

   - **Frontiers in the Social Sciences (4 Jan., 9:00 a.m., SFH):** Culture after sociobiology, aging from birth to death, psychology in public policy.
     - Priscilla Reining, David L. Sills, Paul Bohannan, Matilda White Riley, Charles A. Kiesler.

   - **Co-Chairmen’s Symposium: Very Large Scale Integrated Circuits—Implications for Our Society (4 Jan., 2:30 p.m., SFH):** Technology, implications for science, economic implications, implications for society.

   - **Youth Symposium: Frontiers of Science (5 Jan., 9:00 a.m., 2:30 p.m., SFH):** Accidents, discoveries, and the prepared mind; Jupiter fly-by; observing galaxies; meaning of porpoise sounds.
     - David S. Saxon, Edward L. Ginzton, W. M. Laetsch, Jaime Oaxaca, Hubert Alyea, Arthur Lane, Sandra Faber, Kenneth S. Norris.

   - **The Frontiers of the Natural Sciences (6 Jan., 9:00 a.m., 2:30 p.m., SFH):** Voices of whales, terrestrial planets, black holes, chemistry, statistics and ESP, x-ray astronomy.

2. **Science Centennial**

   - **Judgment, Ritual, and Technology in Scientific Communication: The Role of the Editor (5 Jan., 9:00 a.m., 2:30 p.m., SFH):** Human element, scientific element, historical editing of scientists’ writings, quality, judgment, standards, primary-secondary interface.

   - **The Centennial of Science (6 Jan., 9:00 a.m., SFH):** Scientific enterprise 1880, survival 1880–1895, Cattell 1894–1944, past and future.
     - Philip H. Abelson, Daniel J. Kevels, Jeff Sturchio, P. Thomas Carroll, Sally Gregory Kohlstedt, Michael M. Sokal.

   - **Communicating Science (6 Jan., 2:30 p.m., SFH):** Perspective: life, physical, and social sciences, and the public; future needs and opportunities.
     - Mary E. Corning, Derek de Solla Price, Philip H. Abelson, Ar-
### Schedule of Contributed Papers

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

- **Poster Session I** *(4 Jan., 10:30 a.m.–11:45 a.m.)*.  
  *Physical Sciences.*

- **Poster Session II** *(4 Jan., 12:15 p.m.–1:30 p.m.)*.  
  *Conservation and Environment.*

- **Poster Session III** *(4 Jan., 2:00 p.m.–3:15 p.m.)*.  
  *Physics and Chemistry in Biology.*

- **Poster Session IV** *(5 Jan., 10:30 a.m.–11:45 a.m.)*.  
  *Ecology and Agriculture.*

- **Poster Session V** *(5 Jan., 12:15 p.m.–1:30 p.m.)*.  
  *Cell Biology, Virology, Oncology.*

- **Poster Session VI** *(5 Jan., 2:00 p.m.–3:15 p.m.)*.  
  *Health Care, Medicine, Physiology.*

- **Poster Session VII** *(6 Jan., 10:30 a.m.–11:45 a.m.)*.  
  *Pharmacology and Nutrition.*

- **Poster Session VIII** *(6 Jan., 12:15 p.m.–1:30 p.m.)*.  
  *American Junior Academy of Science: Research Papers by High School Students.*

- **Poster Session IX** *(6 Jan., 2:00 p.m.–3:15 p.m.)*.  
  *Education, Child Development, Aging.*

- **Poster Session X** *(7 Jan., 10:30 a.m.–11:45 a.m.)*.  
  *Clinical and Experimental Psychology.*

- **Poster Session XI** *(7 Jan., 12:15 p.m.–1:30 p.m.)*.  
  *Social Sciences.*

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3. **Physics, Chemistry, and Astronomy**

**Nonfuel Uses of Petroleum, Petrochemicals (4 Jan., 9:00 a.m., SFH):** Polymers, heterogeneous catalysis and homogeneous catalysis, food and feed.


**A Star Is Born (4 Jan., 9:00 a.m., SFH):** Where do stars form, molecular clouds, earliest stages, stellar evolution.

Frank H. Shu, Leo Blitz, Peter H. Bodenheimer, Leonard V. Kuhi.

**The First Billion Years of the Earth’s Existence (4 Jan., 2:30 p.m., SFH):** Solar system, the Earth, life, evolution.


**Discoveries Made by Recent Planetary Spaceprobes (5 Jan., 2:30 p.m., SFH):** The surfaces, geological evolutions, Jupiter, Venus.

Bradford A. Smith, Donat G. Wentzel, Tobias C. Owen, David Morrison, Laurence Soderblom, Andrew P. Ingersoll, Lawrence Colin.

**Archeoastronomy and the Roots of Science (6 Jan., 9:00 a.m., 2:30 p.m., SFH):** Megalithic astronomy: observatories: mesoamerican astronomy: Maya, Aztec, and Inca: medicine wheels: California; Egyptian.


**Science for the Naked Eye: Or the Physics of Everyday Experience, VII (7 Jan., 9:00 a.m., 2:30 p.m., SFH):** Shroud of Turin, looking down on geology, music from bottles and tubes, bicycle riding, art discovery and restoration, computer-generated films.


**Frontiers of Physics and Their Industrial Applications (8 Jan., 9:00 a.m., SFH):** Surface physics, silicon technology, beam technologies.

D. Allan Bromley, Stig B. Hagstrom, Gerhard H. Parker, Donald Hammond.

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4. **Geology and Climate**

**Focus on the San Andreas Fault: Research Frontiers and Social Impacts (4 Jan., 9:00 a.m., 2:30 p.m.; 5 Jan., 8:30 a.m., SFH):** Earthquakes, geological studies, mitigating hazards, seismic zonation, public response, engineering misconceptions, critical structures, earthquake predictions, ethnicity and credibility, trauma and children, field trip.

Raymond Sullivan, Raymond Pestrong, Bruce A. Bolt, Kerry E.

Environmental Setting of Early Man Sites (5 Jan., 9:00 a.m., SFH): Laetolil beds, rift valley setting, lower Omo Valley, Hadar site, Siwalik group, Cagayan Valley.


Environmental and Societal Consequences of a Possible CO₂-Induced Climate Change (5 Jan., 2:30 p.m., SFH): Ocean biota and cryosphere, biosphere, agriculture, social and institutional responses, quantifying benefits and costs.


The Impact of Climate on Food Supplies (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Food supplies, societal factors, anticipating impact, information systems, applied technology, weatherproofing crops.


Oceans from Space: Environmental Management from on High (7 Jan., 9:00 a.m., SFH): Coastal zone color-scanning, satellite oceanography, West Coast fisheries, shipping surveillance, marine environmental management.

Michael J. Herz, William A. Nierenberg, Robert C. Wrigley, Robert L. Bernstein, Laurence C. Breaker, Donn C. Walklet, John R. Apel.

New Horizons for Marine Geosciences (8 Jan., 9:00 a.m., 1:30 p.m., SFH): Continental margins, Antarctica, climate change, sedimentation and dynamics, man’s structures, man-in-the-sea, deep-sea drilling, mineral resources, hydrocarbon resources, waste space, radioactive disposal.


5. Engineering and Technology

The Factory of the Future (4 Jan., 9:00 a.m., 2:30 p.m., SFH): State of the technology, economic and social implications.


Space Policy for the 1980s: A New Era of Space Utilization (5 Jan., 9:00 a.m., SFH): Future policies and programs, science and exploration, military uses, commercial potentials.

John M. Logsdon, Ronald M. Konkel, Thomas Burke, Louis Friedman, Robert Davis, Gilbert Keyes, Jerry Grey.


John W. Senders, David Meister, Alan D. Swain, Donald Norman.

Macroengineering: The Rich Potential (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Planning, mystery of success, water resources, space industrialization, Third World, solar research, orbiting platforms, waste disposal, orbital research habitats.


International Comparisons of the Impact of Government Policies on Industrial Innovation (7 Jan., 9:00 a.m., SFH): Recent developments, West Germany, international trends, industrial performance, innovation gap.


Soft and Hard Technology—Coexistence or Divergence? (7 Jan., 2:30 p.m., SFH): Emerging social and political trends, energy programs, energy technology, tough technology, space industrialization, value choices.


Issues Affecting the Future of Personal Transportation (8 Jan., 9:00 a.m., SFH): Conflicting social goals, passenger car, public transportation, post-1985 motor vehicle, mileage standards, socially acceptable vehicle.


Technology, International Economics, and Public Policy (8 Jan., 9:00 a.m., SFH): Industrial competence, innovation, U.S. technology, economic change, OECD.


6. Energy Development


Chemical Solar Energy Conversion (4 Jan., 2:30 p.m., SFH): Petroleum plantations, solarchemical storage, nitrogen fixation, heat energy.


Solar Energy Development: Implementation and Implications (5 Jan., 9:00 a.m., 2:30 p.m., SFH): Solar alternatives and initiatives, industrialist’s view, solar transition, political ramifications, environmental benefits.


Uranium Resources—Impact on the Nuclear Energy Option (6 Jan., 9:00 a.m., SFH): Supply outlook, mining viewpoint, security without the breeder, nuclear industry, international implications.

Daniel Berg, John A. Patterson, James F. Davis, Frank von Hippel, Karl Cohen, Philip J. Farley.
7. Energy and Environment

Energy, Economics, and the Environment (4 Jan., 9:00 a.m., 2:30 p.m., SFH): Ecology, the poor, employment, strategic planning, state government, critical interactions, human settlement, regional growth, natural and man-built systems, economics, solar transition, nuclear future.


Energetic and Ecological Economics (5 Jan., 9:00 a.m., 2:30 p.m., SFH): Economic valuation, energy cost of energy, demandcontrol, biophysical foundation, politics.

Herman E. Daly, Alvaro F. Umaña, Nicholas Georgescu-Roegen, Bruce M. Hannon, Kenneth Arrow, Kenneth E. Boulding, Garrett Hardin, Robert Constanza, Barry Commer.

Public Attitudes Toward Resource Conservation and Energy (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Attitudes, values, and public policy; supply versus demand; nuclear energy; risk-benefit attitudes; problems of measurement; energy shortage beliefs; the future; conservation policies.


Tragedy of the Commons (7 Jan., 2:30 p.m., SFH): Health-care commons, immigration policy and practice, our genes, limits of sharing.

Carl J. Bajema, Garrett Hardin, Roger Conner.

Potential Role and Impacts of Decentralized Renewable Energy Systems (8 Jan., 9:00 a.m., 1:30 p.m., SFH): Small-scale systems, political realities, comparative analysis, social necessity or choice, solar prospect, complexity and scale, renewable and nuclear strategies, environmental dimension.

Mark D. Levine, Paul P. Craig, Jerome M. Weingart, Emilio E. Varanini III, Barry Hyman, Charles J. Ryan, Luther P. Gerlach, Denis Hayes, Måns Lönroth, John P. Holdren.

8. Environmental and Ecological Science

Costs of Pesticide Usage (4 Jan., 9:00 a.m., STF): Development, registration, and maintenance; agricultural production; regulations; environmental and social costs.


Environmental Toxicology: A Discipline of Growing Importance (4 Jan., 2:30 p.m., STF): Industry's input, the workplace, national toxicology program.

Samuel Elkin, Leon Golberg, Trent R. Lewis, David P. Rall.

The Impact of Regulations on the Introduction of New Chemicals (5 Jan., 9:00 a.m., 2:30 p.m., STF): Toxic Substances Control Act, venture capital, environmental testing, risk assessment, toxic substances, workplace, drug evaluation, occupational health.


Resolving Conflicts Between Development and Wildlife Management on the West Coast (6 Jan., 9:00 a.m., 2:30 p.m., STF): Water and other limiting resources, marine mammals, sources of water, urban and rural areas, air quality, San Francisco Bay area, policies and priorities.

Edward O. Keith, Donald J. Zinn, Frank Gregg, George H. Haggvik, Milton Feldstein, Eugene Y. Leong, B. J. Miller, Terry Bursztynsky, M. Rupert Cutler, Ariel Parkinson, Phillip W. Schneider.

UNESCO's Man and the Biosphere Program (MAB): Interdisciplinary and International Collaboration on Environmental Research (7 Jan., 9:00 a.m., STF): Natural and social sciences, temperate forests, biosphere reserves, arid lands plants, MAB as a coordinator, accomplishments.

Russell M. Burns, John W. Bennett, Donald R. King, Peter F. Ffolliotti, Vernon C. Gilbert, Napier Shelton, Jack D. Johnson, Frederic H. Wagner.

Ecology of the Namib Desert (7 Jan., 2:30 p.m., STF): Strange creatures, the biota, dune ecosystem, demography of small mammals, eco-anatomy.

Mary K. Seely, Gordon L. Bender, David A. Hughes, G. N. Louw, Philip C. Withers, Chris H. Bornman.

Social and Political Implications of Human Impacts on the Desert (8 Jan., 9:00 a.m., 1:30 p.m., STF): American desert, wildlife habitats, human uses, images and perceptions, recreation, naturally functioning processes, desertification, public arid lands, California desert, the future.


9. Biological Science

Surfaces in Biology and Medicine (4 Jan., 9:00 a.m., STF): Gas-liquid surfaces, dust, analytical techniques, cell labeling, adhesion.

Genetic Control of Organelle Assembly at the Molecular Level (4 Jan., 9:00 a.m., STF): Transfer RNA, bacteriophage, virus shell assembly, bacterial flagella, eukaryotic flagella, genes and chromosomes.

Application of Molecular Biology to Agricultural Research (4 Jan., 2:30 p.m., STF): Vector, desirable genes, regeneration, tissue culture, genetic engineering, nitrogen fixation.
David H. Gelfand, Mary-Dell Chilton, Toshio Murashige, Ray Valentine.

Thermoregulation in “Poikilothermic” Animals (4 Jan., 2:30 p.m., STF): Reptiles, terrestrial beetles, fishes, bees.
Bernd Heinrich, Albert F. Bennett, George A. Bartholomew, Jeffrey B. Graham.


Communication and Behavior of Whales (5 Jan., 2:30 p.m., STF): Feeding behavior; vocalizations; migration; songs; gray, killer, humpback, and southern right whales.
Roger S. Payne, August Pivorunas, Kenneth S. Norris, John K. B. Ford, James D. Darling, Katharine B. Payne, Peter L. Tyack.

Biological Time (6 Jan., 9:00 a.m., 2:30 p.m., STF): Sidereal time, circadian clocks, brain mechanisms, growth hormone, motor patterns, developmental timers, insects, human clocks.

Chemistry of Vision (7 Jan., 9:00 a.m., STF): Molecular anatomy, electrical aspects, photoreceptors, rhodopsin, rod cell, visual excitation.

Biological Significance of Bioelectricity (7 Jan., 2:30 p.m., STF): Living state and cancer, conduction in proteins, environmental electromagnetic energy, cell surfaces, regeneration.

Parasite-Host Ecology: Modern Perspectives (8 Jan., 9:00 a.m., 1:30 p.m., STF): Symbiotic associations, infectious diseases, population biology, lizar d malaria, trypanosomiasis, ants and parasitic phorid flies.

10. Mathematical Methods in Biomedicine

The Role of Computing Sciences in Plant Disease Epidemiology and Integrated Pest Management (5 Jan., 9:00 a.m., 2:30 p.m., STF): Agro-ecosystems, crop protection, the next decade, insect population models, yield-loss modeling, communications systems, physical data, computer simulators, root disease, multiple component, models.

Some Mathematical Questions in Biology (6 Jan., 9:00 a.m., 2:30 p.m., STF): Blood flow, physiological time, morphogenesis, lichens and tendrils, harvests from the sea, population time-series data.
George F. Oster, Marjorie McCracken, Thomas A. McMahon, Joseph B. Keller, Robert M. May, David R. Brillinger.

Biological Geometry (7 Jan., 9:00 a.m., STF): Growth and form, plant growth, organ deformation, endocardial surface, fractals.
Judith M. S. Prewitt, Fred L. Bookstein, Ralph O. Erickson, Wendy Kuhn Silk, Larry T. Cook, Robert B. Schudy, Benoit B. Mandelbrot.

Stereology: A Mathematical Tool to Explore Three-Dimensional Space from Flat Images (7 Jan., 2:30 p.m., STF): Morphometry, point dispersions, critical mass, normal physiology, the nervous system, neuronal cell specificity, curvature and topology, morphology.

Computers in Drug Design (8 Jan., 9:00 a.m., 1:30 p.m., STF): Structure activity relations, pattern searching, geometry method, graphics, conformational parameters, nucleic acid, three-dimensional structure.

11. Medical Science

Endorphins and Other Endogenous Opiate-Like Substances (4 Jan., 9:00 a.m., STF): History; synthesis, metabolism and binding; anatomic distribution; effects in animals and humans; neuropsychopathology.
Behavioral Medicine: The Biopsychosocial Interface (7 Jan., 2:30 p.m., STF): Personality and stress, childhood malnourishment, community organization, illness prevention, biopsychosocial relationships.

Vistas in Congenital Craniofacial Malformations (7 Jan., 2:30 p.m., STF): Genetics, histocompatibility complex, treatment and habilitation.
Harold C. Slavkin, Michael Melnick, Joseph Bonner, Henry Kawamoto.

Recent Advances in Embryology—Impact for Human Affairs: Developmental Genetics of Early Mammalian Embryos (8 Jan., 9:00 a.m., STF): Early mouse embryo, gene expression, animal models, genetic manipulation, external human fertilization.

Recent Advances in Embryology—Impact for Human Affairs: Experimental Embryology and Birth Defects (8 Jan., 1:30 p.m., STF): Embryonic form and phenotype, extracellular matrices, muscle development, gene expression, developing tissues.

12. Public Health and Health Care

A Retrospect on the International Year of the Child (4 Jan., 9:00 a.m., 2:30 p.m., SFH): Child health and human development, metacognition, children’s manipulation of space, cross-cultural research, adolescents, early childhood intervention, social policy, infant development, genetic disorders, drugs and pregnancy, smoking, alcohol, obstetric medication.


Setting Health Policies for the 1980s (5 Jan., 2:30 p.m., SFH): Medical school, local health agencies, priorities, costs, technology, financing, access, regulation.
Leah M. Lowenstein, Theodore Cooper, John I. Sandson.

Helen B. Holmes, Janice G. Raymond, Belita Cowan, Byllie Y. Avery, Judith M. Levy, Roberta Steinbacher, Ruth Hubbard, Emily E. Culpepper.

Physiological Considerations in Radiation Biology (6 Jan., 2:30 p.m., SFH): Tissue response, tumor response, radiation and hyperthermia, hypoxic cell radiosensitizers, radiation–drug interactions.

REGRESSION OF ATHEROSCLEROSIS IN MONKEYS: IMPLICATIONS FOR HUMAN AHEROGENESIS (4 Jan., 2:30 p.m., STF): Survey of data, pathological evidence, radiographic evidence, hypothetical mechanisms, implications of experiments.

The Measurement of Hypnotic Responsiveness: Its Relevance for Psychological Research and for Clinical Practice (5 Jan., 9:00 a.m., STF): Hypnotic susceptibility, clinical significance and practice, induction profile.
Marion Kenn, Ernest R. Hilgard, Joseph Barber, Fred H. Frankel, David Spiegel.

Self-Regulation of Physiological Response Systems Through Biofeedback: Basic Research and Clinical Applications (5 Jan., 2:30 p.m., STF): Overview; thermal, EEG, and EMG biofeedback; operant conditioning; cardiac response.
Edward Taub, Bernard T. Engel, Joe Kamiya, Johann Stoyva.

Psychoanalytic Self-Psychology: A New Bridge to the Other Behavioral Sciences (6 Jan., 9:00 a.m., STF): Anthropology, psychology, implications for the other behavioral sciences.
Louis A. Gottschalk, Paul H. Ornstein, Mark J. Gehrie, Marian Tolpin, Michael F. Basch.

Psychotherapy: From Practice to Research to Policy (6 Jan., 2:30 p.m., STF): Research, mental health services, cost-effectiveness and benefit, markets, political factors.

Immune Regulation and Oral Disease (7 Jan., 9:00 a.m., STF): Immune homeostasis, autoimmunity, cell-cell interactions, transplantation, dental caries.

A view of Coit Tower on Telegraph Hill, San Francisco
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Microwaves in Biology and Medicine (7 Jan., 9:00 a.m., SFH): Physical and biophysical fundamentals, physiological reactions to intense fields, biological reactions to weak fields, diagnostic and therapeutic applications, exposure limits.


Glenn H. Alcalay, Nathan A. Greenhouse, Hugh S. Pratt, Joseph E. Rall, John W. Gofman.

The Theory and Practice of Preventive Dentistry (8 Jan., 9:00 a.m., STF): Dental caries, periodontal disease, oral cancer control.

Samuel J. Wycoff, Steven J. Silverstein, Edward Green, Sol Silverman, Jr.

13. Economic and Political Science

The Long-Term Roots of Short-Term Decision-Making (4 Jan., 9:00 a.m., SFH): Planning horizons, time perspective of industrialization, two kinds of society, physics of the short-term.


Outlook for Large-Scale Energy Models (4 Jan., 2:30 p.m.; 5 Jan., 9:00 a.m., SFH): Economy-wide and sectoral models, industry, agriculture, transfer and alternatives, large-scale models.


Ending the Nuclear Arms Race (5 Jan., 9:00 a.m., 2:30 p.m., SFH): Nuclear war, hazards of production, military budget, proliferation, socially productive jobs, national security, Salt III, role of scientists.


Science, Values, and the Politics of Agrarian Change in South Asia (6 Jan., 9:00 a.m., 2:30 p.m.; 7 Jan., 9:00 a.m., SFH): New technology, peasant proprietorship, Indian agriculture, rural inequality, green revolution, technology transfer, international and national institutions, political weaponry, agricultural universities, Sri Lanka, dryland agriculture, rice research, China, social agriculture.


Inflation: Passion, Economics, and Statistics (7 Jan., 2:30 p.m., SFH): Unpredictability, effects, shifting causes, econometric models, international economy, slowing price inflation.

William A. Gale, John A. Carlson, Paul D. Evans, Paul H. Earl, Michael R. Darby, Michael J. Bazdarich.

The Contemporary Renaissance of Graphics in Statistics and the Social Sciences (8 Jan., 9:00 a.m., SFH): Schematic representation, data analysis, graphic technology, newspaper graphs, technical communication.

Albert D. Biderman, Howard Wainer, Ramanathan Gnanadesikan, Vincent P. Barabba, Stephen E. Fienberg.

14. Sociology and Anthropology

New Approaches to Explaining Cultural Complexity (4 Jan., 9:00 a.m., SFH): Evolutionary model, agrarian mating systems, economic organization, Yangtze Delta, coastal Peru.


The Interplay of Basic Research and Applied Projects in Anthropology (4 Jan., 2:30 p.m., SFH): Food, development theory, energy scientists.

David G. Mandelbaum, Priscilla Reining, Elizabeth F. Colson, Edgar V. Winans, Laura Nader, Cyril S. Belshaw.

Violence in American Society: Prevalence, Prediction, and Control (5 Jan., 9:00 a.m., SFH): Television, biological substrates, delinquents, victims and aggressors, marital violence, contributions from different disciplines, corruption in American society, the prediction of risk, social control.

Edith Elisabeth Flynn, George Gerber, Kenneth E. Moyer, Paul A. Straub, Murray Strauss, Hans Toch, Marvin E. Wolfgang.

The Anthropology of Medicine: From Culture Toward Method (5 Jan., 9:00 a.m., SFH): Elites, symbolic healing, risk-taking, psychotherapy, Aztec medicine, New Guinea, culture-bound problems, medical education.


Traditional Medicine and Science: Antagonism or Cooperation? (5 Jan., 2:30 p.m., SFH): Medicinal plants, cooperative efforts, anthropological analysis, ethnobotany, ethical and political aspects.

Diana Ida Marinez, Bernardo Ortiz de Montellano, Xavier Lozoya Legorreta, Edward Tso, John M. McCullough, Diana Ryesky, Eloy Rodriguez, Octavio Romano, Rayna Green.

The 1980 Census: Scope, Uses, Procedures, and Evaluation (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Social research, business research, ethnicity, estimates of population, new techniques, appraisal, undercount, evaluation, experimental techniques.


California as an Advanced Technological Society: Interpretations from the Social Sciences and Humanities (7 Jan., 9:00 a.m., 2:30 p.m., SFH): Assessment of theories, work and workers, auto and telephone, voluntary simplicity, California mythology, house, ethos, religion.

Todd R. LaPorte, Eugene C. Lee, Ted K. Bradshaw, Larry Hirschhorn, Victor Ferkiss, Melvin M. Webber, Everett M. Rogers, Dorothy Leonard-Barton, Bruce R. Wheaton, Donald C.
15. Technology and Development

Internal and External Constraints on Technological Choice in Developing Countries (4 Jan., 9:00 a.m., 2:30 p.m., SFH): Determinants of choice, endogenous politico-economic systems, ecological implications, environmental research, traditional agricultural systems, technical aspects, policy issues.


Environmental Problems of Development in Latin America (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Food production, native Andean agriculture, urbanization, oil spill controls, mining activities, demography and environment, health issues, institutional problems, Mexican program, Latin American model.


Assessing the U.N. Conference on Science and Technology for Development (7 Jan., 9:00 a.m., 2:30 p.m., SFH): View from U.S., global impact, comparison, view from Africa, international conferences, prospects, U.S. development policy.


16. Information, Technology, and Society

Machine Intelligence and Perception: The Past, Present, and Future (4 Jan., 9:00 a.m., 2:30 p.m., SFH): Systems in science and medicine, modeling for mineral exploration, musical analysis, Kurzweil machines, successful paradigms, pattern analysis, artificial intelligence, augmented intelligence, discovery in mathematics, speech and vision.


Can Software Replace Technical Know-How? (5 Jan., 9:00 a.m., SFH): Promise and dilemmas, intelligence in software, software that others write.

John R. Rice, Beresford Parlett, Fred T. Krogh, Albert Erisman.

Information Communication in the '80s and Beyond (5 Jan., 2:30 p.m., SFH): Extension of thinking, systems and people's needs, dissemination, advancement.


Secure Communications and Asymmetric Cryptosystems (5 Jan., 2:30 p.m., SFH): The new cryptography, hard problems, message authentication, public-key cryptography.

Gustavus J. Simmons, Leonard M. Adleman, Hugh C. Williams, Whitfield Diffie, Ralph C. Merkle.

Integrated Impact Assessment: State-of-the-Art and Future Prospects (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Negotiation and mediation, psychological effects of technological change, policy analysis, human values, fact and value, environmental values and indicators, whole system analysis.


Risk in the Technological Society (7 Jan., 9:00 a.m., 2:30 p.m., SFH): Policy formulation, management, government mess, extending human life, Three Mile Island, Love Canal, chemical industry.


Computers and Telecommunications: Impacts on Society (8 Jan., 9:00 a.m., 1:30 p.m., SFH): Field experience, the hand-capped, personal computing, people amplifiers, talking back, computers and the workforce.


17. History and Philosophy of Science

Science and Pseudoscience (4 Jan., 9:00 a.m., SFH): Pathological science, lost knowledge, ancient wisdom, golden ages, rise of cults, the chimera.


Is Ethics a Science? (4 Jan., 2:30 p.m., SFH): Moral theories, ought it to be.


Political Economy of Science: Modes of Social Assessment (5 Jan., 9:00 a.m., SFH): Primitive indicators, power and structure, public assessment, violence, cancer.

Daryl E. Chubin, Alex C. Michalos, Robert F. Bud, P. Thomas Carroll, Jeffrey L. Sturchio, Arnold W. Thackray, Dorothy W. Nelkin, Judith Swayzey, James Petersen, Gerald Markle, Everett Mendelsohn.


Technology: The Laws of Nature and the Needs of Humanity (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Utility of man, social justice, freedom and individual autonomy, technology and teleetics.
philosophy, impact of science, professionalism, interdisciplinary research.


The Ecological Perspective in the Social Sciences: An Emerging Paradigm (7 Jan., 9:00 a.m., SFH): Sociology, anthropological theory, economics, political science, psychology, geography.

Riley E. Dunlap, William R. Catton, Jr., Donald L. Hardesty, Herman E. Daly, John R. Rodman, Daniel Stokols, Daniel B. Luten.

History as a Source of Alternative Technologies (7 Jan., 2:30 p.m., SFH): Living history, reclaiming hydroelectric capacity.

Carroll W. Pursell, Jr. Jay Anderson, T. Allan Comp.

History of Radio Astronomy (8 Jan., 9:00 a.m., SFH): Before World War II, optical astronomy, Australian, astrophysics, nature of science.


Systems Science and Science (8 Jan., 1:30 p.m., SFH): Viewpoint of a mathematician, scientist, philosopher, technologist, and social scientist.

George J. Klar, Roger E. Cavallo, Robert Rosen, Mario Bunge, John N. Warfield, Spyros Makridakis.

Issues in Agriculture: Historians' Perspectives (8 Jan., 1:30 p.m., SFH): Lexicographical research, political heritage, secretaries of agriculture, hitching science to the plow.


18. Education

Recent Developments in Research on Stuttering (4 Jan., 9:00 a.m., SFH): Speech production abilities, laryngeal dysfunction, genetic models, directions for research.


Frontiers of Research on Theory and Practice in Education (4 Jan., 9:00 a.m., STF): Explicit theories, information processing models, learning theory, status of theory.


Cognitive Aspects of Human Problem-Solving Processes (4 Jan., 2:30 p.m., STF): Qualitative reasoning, adolescence, models of writing, medical.


Social Science Education: A Problem of Intellectual Abandonment (5 Jan., 9:00 a.m., STF): Content of school programs, teacher preparation, jump to the future.

Lawrence Senesh, John T. Mallan, John Platt, Kenneth E. Boulding.

Liberal Education and the Natural Sciences (5 Jan., 2:30 p.m., STF): Core curriculum, substance of science, science information, engineers and scientists, liberal arts college.


Precollege Science Education—Status, Needs, and Policy Implications (6 Jan., 9:00 a.m., STF): Biology education, physical science education, role of inquiry, technology and society, elementary education.


Policy Implications of a National Needs Assessment in Precollege Science, Mathematics, and Social Science Education (6 Jan., 2:30 p.m., STF): NSF studies, project synthesis, school mathematics, social science education, policy implications.


Selected Issues in Education—New Insights from National Longitudinal Studies (7 Jan., 9:00 a.m., 2:30 p.m., SFH): Post-secondary education, work, family formation, disadvantaged youth, nontraditional attendance.


Science Learning Outside the Classroom (7 Jan., 9:00 a.m., 2:30 p.m., SFH): Informal science education, personal involvement, so little known, attracting and holding an audience, opportunity for choice, zoos, amateur science, television, good news and bad news.

Michael Templeton, Joseph I. Lipson, Robert A. Semper, David Hawkins, Watson M. Laetsch, Robert Knott, Mary Budd Rowe, Frank Oppenheimer, George Rabb, Andrew Fraknoti, Josephine Gladstone, George W. Tressel.

19. Opportunities and Responsibility in Science

Scientists as Whistle-Blowers: Eight Years of Experience Since the BART Engineers (4 Jan., 9:00 a.m., SFH): Professional society support, due process trends, do's and don'ts, corporate perspective.


What Special Rights and Responsibilities Do Scientists and Engineers Have? (4 Jan., 2:30 p.m., SFH): Ethical codes, proposed principles, historical perspective, public interest group, industrial scientist, corporate management, media perspective.


Effective Strategies for Promoting Participation of Women and Minorities in Science (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Mastery of mathematics, women's participation, under-represented groups, career, labor force participation of women, effectiveness of career conferences, NSF efforts, programs for mature women.


The Handicapped in Science (7 Jan., 9:00 a.m., 2:30 p.m., SFH): Multisensory science activities, science activities for the disabled, fostering career interest, disabled dentists, employment of the handicapped.

Employment and Advancement Opportunities for Recent Doctorates in Science and Engineering (8 Jan., 9:00 a.m., SFH): Young doctoral faculty, first employment plans, young investigators, industry, women doctorates.


20. Science, Government, and Research

Science Advice and Federal Policy (4 Jan., 9:00 a.m., 2:30 p.m.; 5 Jan., 9:00 a.m.; SFH): The White House, OSTP, how conflicting interests are balanced, governmental structure, congressional perspective, technology policy agenda. Global 2000, EPA, OTA, scientific evidence, science experts, regulatory policy, the judicial process.


Intergovernmental Science Communication and Cooperation (5 Jan., 2:30 p.m., SFH): Congressional communication, mechanisms in California, scientific information. Baltimore applications project.


Legal Aspects in the Administration of Scholarly Nonprofit Organizations (6 Jan., 9:00 a.m., SFH): Copyright law, tax-exempt status, postal regulations, audit requirements.

James R. Batt, Jane M. Livermore, John D. Lane, Charles Duttweiler, A. Bruce Cropper.

Research in the Age of the Steady-State University (6 Jan., 9:00 a.m., 2:30 p.m., SFH): Five-year outlook, higher education, congressional perspective, government requirements, research laboratory, interdisciplinary research, small college and university, cooperation or conflict.


Federal Funding Philosophies, Policies, and Procedures: Impact on Research in the Food and Agricultural Sciences (7 Jan., 2:30 p.m., SFH): Federal support, decision-making, evaluation.


How Much Does the Defense Department Advance Science? (8 Jan., 9:00 a.m., SFH): DoD-sponsored research, in-house research, DoD's support, DoD and science, science sponsorship.
