

AAAS Annual Meeting

Detroit, 26–31 May 1983

The Westin Hotel • Renaissance Center

Science and Engineering: Toward a National Renaissance

Preconvention Program

Public Lectures

Keynote Lecture: Science and the Urban University (26 May, 8:30 p.m.).

DAVID W. ADAMANY (*President, Wayne State University*).

Brain Peptides: What, Where, and Why? (27 May, 1:30 p.m.).

DOROTHY T. KRIEGER (*Professor of Medicine; Director, Division of Endocrinology, Mount Sinai Medical Center*).

George Sarton Memorial Lecture: Sealing Wax and String—A Philosophy of the Experimenter's Craft and Its Role in the Genesis of High Technology (27 May, 8:30 p.m.).

DEREK DESOLLA PRICE (*Avalon Professor of the History of Science, Yale University*).

Phi Beta Kappa Lecture: Somatic Cell Genetics and Its Human Implications (28 May, 1:30 p.m.).

THEODORE T. PUCK (*Director, Institute for Cancer Research, University of Colorado*).

Brains and Embryos: Cell Recognition in Early Development (28 May, 8:30 p.m.).

GERALD M. EDELMAN (*Vincent Astor Distinguished Professor, Rockefeller University*).

Chemical Studies on the Origins of Life (29 May, 1:30 p.m.).

CYRIL PONNAMPERUMA (*Director, Laboratory of Chemical Evolution, University of Maryland*).

President's Lecture: Adventure into Space (29 May, 8:30 p.m.).

E. MARGARET BURBIDGE (*President, American Association for the Advancement of Science; Director, Center for Astrophysics and Space Science, University of California—San Diego*).

Prospects and Progress in High-Energy Physics (30 May, 1:30 p.m.).

LEON M. LEDERMAN (*Director, Fermi National Accelerator Laboratory*).

National Geographic Society Lecture: The People of Herculaneum of A.D. 79 (30 May, 8:30 p.m.).

SARA C. BISEL (*Collaborator with the Smithsonian Institution*).

1. General Interest

Youth Symposium (26 May, 9:30 a.m.): Special program for high school students.

B. J. Evans, Francis E. Cogsdill, Anna J. Harrison, Paul Hovsepian, Lynn Margulis, J. Douglas Mathieson, Alexander Glass, John W. Keyes, Jr., James Wells, Reatha Clark King, Stanford Ovshinsky, Marvin Holter, Michael Deisenroth, George W. Nace, Frederick C. Neidhardt, Paul Dougherty, Mack Gipson, Jr., John R. Hummel, Kate F. Barald, Christian Bauer, Janice M. Jenkins, Charles B. Smith, Catherine E. Badgley, Stanley Kirschner, Jeanne M. Riddle, J. Stuart Hunter, Richard G. Sullivan, Marilyn H.

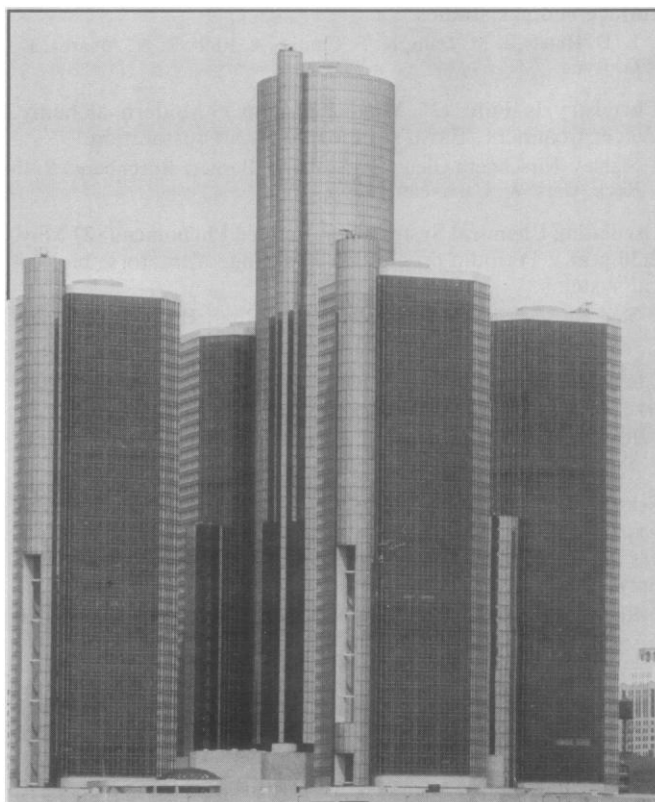


Photo courtesy of the Renaissance Center Partnership.

Koster, Patrick Oriel, Gordon MacAlpine, Edgar F. Westrum, Jr., Layman E. Allen.

Automation, the Economy, and Jobs (27 May, 9:00 a.m.): Technological, economic, and social aspects.

Arch W. Naylor, Robert J. Eaton, Frank P. Stafford, Donald F. Ephlin.

Frontiers in the Social Sciences: What Does Sustainable Development Mean? (27 May, 2:30 p.m.): Relocation, adaptation, resources, and sustainable development.

Priscilla Reining, James A. Wilson, Irwin Altman, Hollis Chenery, John W. Bennett, Robert Kates, James M. Acheson.

Frontiers of the Natural Sciences (28 May, 9:00 a.m., 2:30 p.m.): Astronomy, physics, chemistry, geology, biology, and mathematics.

Rolf M. Sinclair, Ronald D. Ekers, Robert W. Parry, Donald N. Langenberg, Peter J. Coney, Harry W. Greene, Thomas F. Banchoff.

Global 2000 Revised, I (29 May, 9:00 a.m.): Minerals, forests, water, food, population.

Julian L. Simon, Herman Kahn, Harold J. Barnett, Marion Clawson, Roger A. Sedjo, D. Gale Johnson, Steve Hanke, Mark Perlman.

Global 2000 Revised, II (29 May, 2:30 p.m.): Energy, climate, population projections, economics.

Herman Kahn, Julian L. Simon, Karl P. Cohen, S. Fred Singer, William M. Brown, Helmut E. Landsberg, Mark Perlman, Paul A. Colinvaux.

Alternative Energy for Transportation (30 May, 2:30 p.m.): Power trains, electronic control systems, engine design.

Roberta J. Nichols, Joseph M. Colucci, Ian Macpherson, Joe F. Ziomek, Richard Shute.

2. Physical Sciences

Implementations of Monoenergetic Positrons in Fundamental and Applied Science (27 May, 9:00 a.m.): Polarization, defects, surface and gas studies.

L. D. Hulet, J. M. Dale, K. F. Canter, A. Rich, R. A. Alvarez, K. G. Lynn.

Chemistry Is Fun! (27 May, 2:30 p.m.): Modern alchemy, cancer treatment, Earth's atmosphere, art restoration.

Stanley Kirschner, Glenn T. Seaborg, Barnett Rosenberg, Ruth Reck, Gary W. Cariveau.

Oscillating Chemical Systems and Related Phenomena (27 May, 2:30 p.m.): Periodic precipitation, strange attractors, biological systems.

Saul Krasner, Irving R. Epstein, John Ross, Harry L. Swinney, Paul E. Rapp.

Chemically Solvable Problems (29 May, 9:00 a.m.): Radioactive wastes, developing countries, dental caries, vaccines.

Jean'ne M. Shreeve, Helen M. Free, Stanley M. Klainer, Robert L. Skiles, Dennis H. Leverett, Karen K. Brown.

Science for the Naked Eye; Or, The Physics of Everyday Experience, X (29 May, 9:00 a.m., 2:30 p.m.): Art and computers, pitching baseballs, science fiction, space science, astronomy, the Earth.

Rolf M. Sinclair, Copper Gilo, Robert Watts, James S. Walton, George B. Arfken, Charles Sheffield, Charles A. Whitney, James E. Lovelock.

Large-Scale Structure in the Universe (29 May, 2:30 p.m.): Early universe, growth of structure, superclusters, giant voids.

Robert P. Kirshner, Michael S. Turner, Joan Centrella, Stephen A. Gregory.

Fractal Geometry in Nature, Science, and Art (30 May, 9:00 a.m.): Irregular and fragmented shapes, mathematical constructions, physical and biological systems, graphic design.

Peter L. Renz, Lynn A. Steen, Benoit B. Mandelbrot, James W. Cannon, George Sugihara, Bob Ishi.

Status and Prospects in High-Energy Physics (30 May, 2:30 p.m.): Theory, data, machines.

Rolf M. Sinclair, Leon M. Lederman, Robert G. Sachs, Martinus J. G. Veltman, Lee G. Pondrom, Robert R. Wilson.

Searching for Our Analogs in the Universe (31 May, 1:30 p.m.): Extraterrestrial life and intelligence, extrasolar planets.

Louis D. Friedman, Leslie E. Orgel, David C. Black, Laurence Soderblom, Torrence V. Johnson, Paul Horowitz.

3. Earth and Planetary Sciences

The Evolving Role of Man in Space (27 May, 9:00 a.m.): Space flights, orbital activities, future exploration, public attitudes.

Theodore R. Simpson, Marcia Smith, Ivan Bekey, Leonard David, Jon D. Miller.

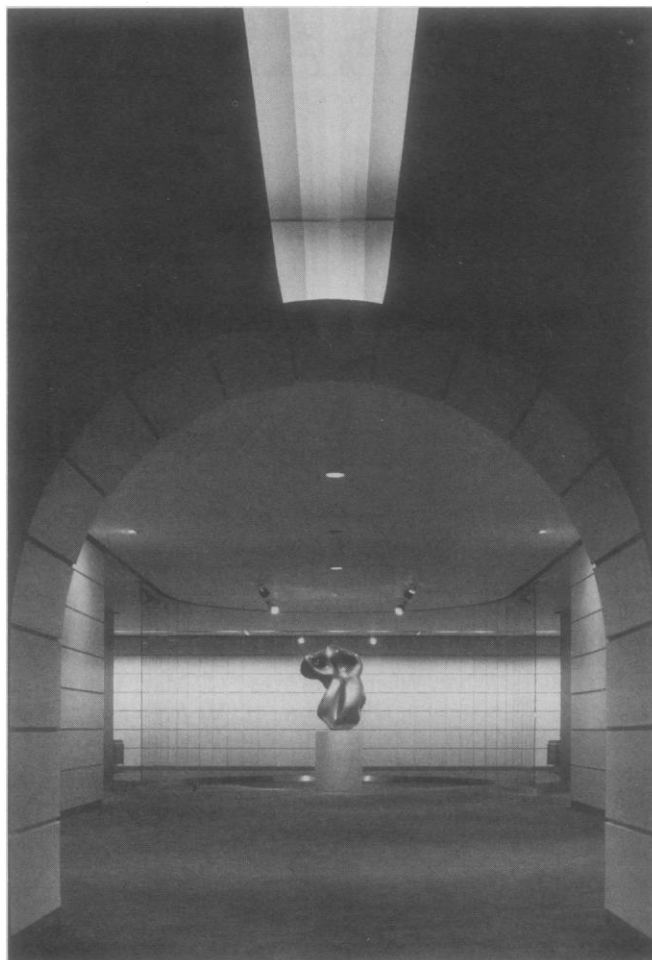


Photo courtesy of the Metropolitan Detroit Convention and Visitors Bureau.

Space Industrialization: The Growing Community (27 May, 2:30 p.m.): Space stations, communication, experimentation, production.

Morrie Schneiderman, Norris Mendoza, William C. Hittinger, Fred Bartman, Brian Pritchard, David W. Richman, Paul E. Ritt.

Planetary Perspectives on the Geosciences (28 May, 9:00 a.m.): Global geology, tectonics, evolution, asteroid Pallas, upper atmosphere, climate, economics.

Clark R. Chapman, Gordon H. Pettengill, Raymond E. Arvidson, Sean C. Solomon, Eugene M. Shoemaker, Ronald G. Prinn, Owen B. Toon, David Morrison.

Perceiving Earth Resources from Space, Part I: Technology Outlook (30 May, 9:00 a.m.): Optical and microwave sensors, information techniques and databases.

David A. Landgrebe, Judith M. S. Prewitt, Herbert E. Rauch, Warren A. Hovis, Fawwaz T. Ulaby, King-Sun Fu, George Nagy, John E. Estes.

Perceiving Earth Resources from Space, Part II: Applications Outlook (30 May, 2:30 p.m.): Thematic mapping, glaciation, imaging radar, facility planning and siting.

John L. Place, Yale M. Schiffman, John R. Jensen, Richard S. Williams, Jr., Frederick J. Doyle, M. Leonard Bryan, James O. Brumfield, William J. Campbell, Cathy Kitcho.

Forecasting the Climate Next Season: How Skillful? How Useful? (31 May, 1:30 p.m.): Methods, products, agricultural uses, verification procedures.

Alan D. Hecht, Robert W. Kates, William A. Sprigg, Rolland K. Hauser, William E. Riebsame, Rudolph W. Preisendorfer, Peter J. Lamb, Donald L. Gilman.

4. Engineering and Technology

How Far Miniaturization? (28 May, 9:00 a.m.): Physical problems and limits; materials, lithographic, and film etching technology.

Dennis W. Hess, Robert W. Keyes, K. V. Ravi, Gary N. Taylor.

The Chemistry of Transportation Materials (28 May, 2:30 p.m.): Plastics, elastomers, lubricants, electrochemical power, light-weight materials.

Philip Weiss, T. J. Mao, Robert A. Pett, Leonard Berkowitz, John S. Dunning, Julius J. Harwood.

Artificial Intelligence: Its Science and Application (29 May, 9:00 a.m., 2:30 p.m.): Man-machine communications, research, electronic manufacturing, medical and urban planning applications.

Daniel Berg, Raj D. Reddy, Jaime G. Carbonell, Samuel H. Fuller, Mark Stefik, Nils Nilsson, Jack D. Myers, Charles Steger.

Computer-Aided Design of Dynamic Systems (30 May, 9:30 a.m., 2:30 p.m.): Animation, simulations, design, optimization; applications to vehicle design and dynamics.

Edward J. Haug, Joseph E. Whitesell, Parviz E. Nikravesh, Robert B. McGhee, Charles A. Csuri, Candace L. Rush, Ronald R. Beck, Kenneth N. Morman.

Emerging Technology for the Disabled (30 May, 2:30 p.m.): Robotics, recreation, synthetic voice, machine vision, interactions with technologists.

Martha Ross Redden, Herbert E. Rauch, Herbert W. Hoffman, Larry Leiffer, Peter W. Axelson, John Bryson Eulenberg, Sally L. Wood, Lawrence A. Scadden.

The Science of the Automobile (31 May, 9:00 a.m.): Traffic flow, vehicle handling, government regulation, future projections.

Ralph A. Alpher, Rolf M. Sinclair, Denos C. Gazis, Joseph B. Bidwell, Lester B. Lave, David E. Cole.

Thermal-Wave Imaging (31 May, 1:30 p.m.): Photothermal and piezoelectric detection, photoacoustic microscopy, spectroscopy and biophysics applications.

Robert L. Thomas, Allan Rosenzweig, Thomas A. Moore, John C. Murphy, Lawrence D. Favro, Gerd Busse.

Research Directions in Computer Engineering for the 1980s (31 May, 1:30 p.m.): Large-scale integration and computer architecture, software developments.

Sidney Fernbach, Yoa-Han Pao, Herbert Schorr, Justin R. Rattner, C. V. Ramamoorthy.

5. Energy Alternatives

A Current Assessment of Key Issues in the Nuclear Power Option (27 May, 9:00 a.m.): Safety and regulations, radiation effects, economics, operations, quality assurance.

R. Jon Stouky, Floyd L. Culler, Jr., Benard C. Rusche, Rosalyn S. Yalow, George I. Coulbourn, Byron Lee, Jr., Sidney A. Bernsen.

Limits to Solar and Biomass Energy Growth (27 May, 2:30 p.m.): Economic and resource requirements, health, safety and environmental impacts, technology assessments.

Gregory J. D'Alessio, Yale M. Schiffman, Loren J. Habegger, Frederick W. Lipfert, Ronald L. Ritschard.

Energy: The Human Dimension (28 May, 2:30 p.m.): Energy constituencies, efficiency, emergencies, local actions.

Paul C. Stern, Elliot Aronson, Allan Schnaiberg, Robert Axelrod, Thomas J. Wilbanks, Laura Nader.

The New Promise of Coal (29 May, 9:00 a.m.): Coal slurries, pollution controls, utility uses, exports.

S. Fred Singer, Dale W. Steffes, Leon Green, Jr., Charles B. Henderson, Kurt E. Yeager, Susan Wingfield.

When the Oil Runs Out, How Long Do We Have? (30 May, 9:00 a.m.): Synfuels, fission, fusion, solar power.

Rolf M. Sinclair, Allen L. Hammond, M. King Hubbert, W. Robert Epperly, S. David Freeman, Bennett Miller, Harold P. Furth.

6. Ecology and Environment

Future Environmental Effects of Nonnuclear Energy Solid Wastes (27 May, 9:00 a.m.): Organic and inorganic wastes, transport, food chain, ground-water contaminants, coal, oil shale.

Frank J. Wobber, Ernest E. Angino, Tsuneo Tamura, Burton E. Vaughan, Robert A. Griffin, Mary Jo Baedecker, George F. Pinder, Edward F. Redente.

State of the Environment, 1983 (27 May, 2:30 p.m.): Global environment, acid rain, health, future trends.

Donald L. Thomsen, Jr., Gilbert F. White, Gustave Speth, S. Fred Singer, Arthur C. Upton, William K. Reilly.

Degradation and Rehabilitation of Fragile Environments: Karst Areas and Desert Margins, I (28 May, 9:00 a.m.): Protection, subsurface cavity detection, karst in China, Canada, Yucatan, Florida.

William Back, Yuan Daoxian, Richard M. Foose, Reinhard K. Frohlich, Derek C. Ford, Zhang Zhigan, Joseph H. Butler, Anthony F. Randazzo, Daniel P. Spangler, William C. Sinclair, Ronald D. Stieglitz.

The Great Lakes Ecosystem: Resources, Management, and Anthropogenic Impacts (28 May, 9:00 a.m., 2:30 p.m.): Satellite imagery, water balance, fisheries, acid precipitation, forest productivity, crops, ecosystem response.

Philip A. Meyers, Robert T. Stottlemeyer, Brian J. Eadie, Fred J. Tanis, Frank H. Quinn, James F. Kitchell, Herbert E. Allen, Jonathan W. Bulkley, William W. McFee, Orie L. Loucks, John D. Aber, James P. Bennett.

Degradation and Rehabilitation of Fragile Environments: Karst Areas and Desert Margins, II (28 May, 2:30 p.m.): Physical and social processes, technologies.

Michalann Harthill, Priscilla Reining, Zhu Zhenda, Zhao Songqiao, Manuel Anaya, Cyrus M. McKell.

Acid Deposition: A Transboundary Problem for the United States and Canada (29 May, 9:00 a.m., 2:30 p.m.): Chemistry, emission control, socioeconomic impacts, fisheries, forests, gaps in understanding, government policies.

Wilmot N. Hess, F. Kenneth Hare, Nancy Maloley, Howard Wolpe, Lester Machta, Jack G. Calvert, Duane Chapman, Edward S. Rubin, The Hon. John Roberts, Harold Harvey, George H. Tomlinson II, C. Vasudevan, Cliff I. Davidson, Andrew Forester.

Whatever Happened to Desertification? (30 May, 9:00 a.m., 2:30 p.m.): UN program, desert productivity, rangeland, water resources, technologies, outlook.

James W. O'Leary, Gaafar Karrar, John A. Ludwig, Ben Norton, Jan van Schilfgaarde, Gerald W. Thomas, Cyrus M. McKell, Jack D. Johnson.

Managing Ground-water Resources: An Assessment of Future Options (31 May, 9:00 a.m.): National policy, state and local governments, land-use options, research and development.

Steven C. Ballard, Thomas E. James, Jr., Michael D. Devine, David E. Burmaster, William R. Walker, Kathleen Ferris, L. Douglas Yoder, Larry W. Canter.

Environmental Catastrophes: Detection, Dissemination, and Societal Response to Warnings (31 May, 9:00 a.m.): Flood mitigation, hurricane warnings, earthquake predictions, warning problems, severe storms, preparedness response.

Frederick Sanders, Stanley A. Changnon, Jr., Neil L. Frank, Lucile M. Jones, Edwin Kessler III, H. Michael Mogil, Frederick P. Ostby.

Water Quality Regulation at the Edge of Science (31 May, 1:30 p.m.): Effluents, toxic substances, safety, regulation.

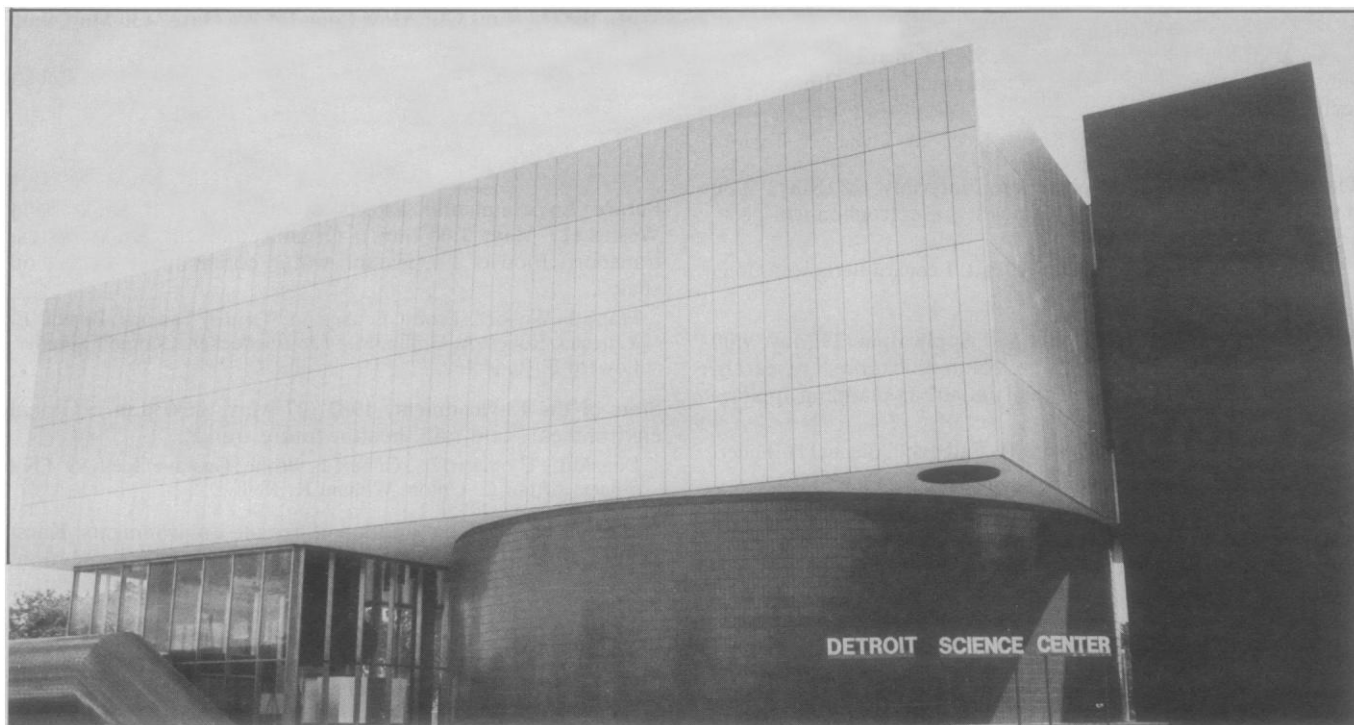


Photo courtesy of the Detroit Science Center.

Paul Tombouljian, Richard Powers, Gerald W. Saalfeld, W. Brock Neely, Norbert Jaworski, Richard Kimerle, Larry Silverman.

7. Biological Sciences

Control of Mammalian Sex Ratio at Birth (27 May, 9:00 a.m.): Impact on food and fiber production, agricultural animals, social consequences, embryo manipulation, gamete sorting.

Barton L. Gledhill, Duane L. Garner, Charles A. Kiddy, George E. Seidel, Jr., Daniel Pinkel, Robert H. Foote, Roberta Steinbacher.

Living Earth (27 May, 2:30 p.m.): Venus, Earth, and Mars; the atmosphere, ecology, deforestation, science of the Earth.

Lynn Margulis, James E. Lovelock, Tobias Owen, James C. G. Walker, Daniel Botkin, Thomas Lovejoy, Mitchell B. Rambler.

The Greening of the Continents: Steps Toward the Establishment of Terrestrial Communities (28 May, 9:00 a.m.): Ordovician-Devonian period, vascular plants, fossil evidence, arthropoda, geochemical effects.

Roger D. K. Thomas, Jane Gray, Harlan P. Banks, A. J. Boucot, J. A. Raven, W. G. Chaloner, Karl J. Niklas, Bruce H. Tiffney, W. D. I. Rolfe, Martha A. Sherwood-Pike, Robert M. Garrels.

The Precambrian-Cambrian Boundary and the Origins of Complex Life (28 May, 2:30 p.m.): Historical perspective, stromatolites, metazoan diversity, cell evolution, physiology, and biomechanics.

J. John Sepkoski, Jr., Stanley M. Awramik, Andrew H. Knoll, Igor N. Krylov, Mark A. S. McMenamin, Lynn Margulis, Michael LaBarbera.

Metals and Aquatic Organisms (28 May, 2:30 p.m.): Marine vertebrates and molluscs, trace metals and metal tolerance.

Harriette L. Phelps, Samuel N. Luoma, David A. Wright, Judith S. Weis, Ronald Eisler, Peter V. Hodson.

Physiological Adaptations of Fish to Environmental Stress (30 May, 9:00 a.m.): Immune response, neuroendocrine mechanisms, thymus, general adaptation syndrome.

Phyllis H. Cahn, Gary A. Wedemeyer, Joanne S. Stolen, Douglas P. Anderson, August Epple.

Animals and Their Alternatives in Research and Testing (30 May, 2:30 p.m.): Pharmaceutical industry, regulations.

Myron Weiner, David A. Knapp, Alan M. Goldberg, Edward C. Melby, Jr., John W. Ward, Frankie L. Trull.

Blood Substitutes in Biology and Medicine (31 May, 9:00 a.m.): Safety issues, hemoglobin solutions, PFC emulsions, cardiovascular studies, clinical studies.

Lowell E. McCoy, Thomas H. Goodin, Robert B. Bolin, Gerald S. Moss, Robert P. Geyer, Leland C. Clark, Jr., Steven A. Gould, Michael R. Downing.

Multidisciplinary Approaches to Plant Opal Phytolith Research (31 May, 9:00 a.m., 1:30 p.m.): Silica and ash, coastal plants, grasses, soils; paleogeography, botany, and ecology.

Irwin Rovner, James W. Geis, F. C. Lanning, Page C. Twiss, Peter B. Kaufman, Dwight A. Brown, A. G. Sangster, P. Dayanandan, Michael J. Andrejko, L. P. Wilding, Ralph L. Robinson, Dolores R. Piperno, Deborah M. Pearsall.

8. Cell Biology and Genetics

Dissecting the Interferon Boom: Lessons for Biomedical Research (27 May, 9:00 a.m.): Biotechnology, cancer treatment, private investment, federal support.

Sandra Panem, Jan T. Vilček, Maureen W. Myers, Arthur S. Levine, Zsolt P. Harsanyi, J. Allan Waitz.

Low Molecular Weight Peptides and Control of Gene Expression in Normal and Cancer Cells (28 May, 9:00 a.m.): During development, in cellular systems, thymic factors, inhibitors, cancer suppressive activity.

Marian Hillar, Ann Sodja, Gian L. Gianfranceschi, John C. Houck, Niels M. Barford, Chen Ming.

Gene Regulation in Development (28 May, 2:30 p.m.): *Drosophila* fertility, *Amy*, *White*, and *Notch* loci, *Bithorax* complex.

Robert Arking, Ann Sodja, Theodore R. F. Wright, Winifred W. Doane, Paul Bingham, Michael W. Young, Francois Karch.

The Origins of Biological Information (29 May, 9:00 a.m., 2:30 p.m.): Definitions, bioenergetics, genetic control, genetic code, amino acid self-sequencing, protein synthesis.

Sidney W. Fox, Howard H. Pattee, Koichiro Matsuno, Harold J. Morowitz, Barry Commoner, James C. Lacey, Jr., Cyril Ponnampuruma, Lawrence S. Dillon.

The Phagocytic Cell (30 May, 9:00 a.m., 2:30 p.m.): Chemotaxis, neutrophil, mononuclear phagocytes, oral disease.

Robert J. Genco, Mark E. Wilson, Ralph Snyderman, Peter M. Henson, John K. Spitznagel, Samuel D. Wright, John I. Gallin, Thomas E. Van Dyke.

Polynucleotide Chemistry and the Regulation of Life (31 May, 9:00 a.m.): DNA synthesis, structure, manipulation; mRNA.

Alan R. Price, Robert Letsinger, Marvin H. Caruthers, William R. Folk, Fritz M. Rottman.

Monoclonal Antibodies: New Biological Probes (31 May, 1:30 p.m.): Clinical potential, renal transplantation, leukemia-lymphoma diagnosis.

Noel R. Rose, Robert H. Rubin, Charles Shields, John W. Parker.

9. Regulatory Biology

Neuronal Functions of Peptides (27 May, 9:00 a.m.): Cultured neurons, transmitters and cotransmitters, Substance P, biochemical mediators.

Jeffrey L. Ram, Nae J. Dun, Yigal H. Ehrlich, Jeffrey L. Barker, Erminio Costa.

Oral Administration of Peptide and Protein Drugs (29 May, 2:30 p.m.): Absorption through small intestine, colon, mouth, nose; transport across mucosal barriers.

Murray Saffran, Siamak A. Adibi, David A. Matthews, Antonio E. Pontiroli, Hans Vilhardt, Hanoch Bar-On, Larry J. Caldwell, John N. Udall.

Hormones and Bone Biology: Current Concepts in the Pathogenesis and Prevention of Osteoporosis (30 May, 9:00 a.m.): Bone formation and resorption, calcium regulation, alterations with age, osteoporosis.

Lawrence G. Raisz, Sara B. Arnaud, A. Michael Parfitt, Robert Lindsay, B. Lawrence Riggs.

Basic and Clinical Aspects of the Gonadotropin-Releasing Hormone and Its Analogs (30 May, 2:30 p.m.): Molecular biology, secretion in primates, receptors, analog design, humans.

William F. Crowley, Jr., P. Michael Conn, John C. Marshall, Ernst Knobil.

Progress in Corticosteroid Research (31 May, 9:00 a.m.): Human receptors, gene regulation, clinical presentations, metabolism, anti-inflammatory steroids.

Henry J. Lee, H. Leon Bradlow, John A. Cidlowski, John D. Baxter, Lenore S. Levine, Carl Monder.

Changing Perspectives on Menopause (31 May, 1:30 p.m.): Historical and evolutionary perspectives, estrogen replacement, climacteric centers.

Ann M. Voda, Marcha Flint, Evangeline C. Gronseth, William R. Keye, Morris Notelovitz.

10. Mathematical and Physical Biology

Biological Batteries: The Role of Ion Gradients in Cellular Energy Storage (27 May, 9:00 a.m.): ATP synthesis, chloroplasts, bacteria, fungi, molecular considerations.

David L. Njus, C. P. Lee, Berton C. Pressman, Andre T. Jagendorf, Franklin M. Harold, Carolyn W. Slayman, Jack E. Kyte.

The Revolution in the Analysis of Scientific Data: Concomitant of the Computer Revolution (28 May, 9:00 a.m., 2:30 p.m.): Current computer packages, data collection, analysis and reliability, artificial intelligence approach, data base management.

K. O. Bowman, R. Gnanadesikan, R. L. Chaddha, Barbara A. Bailar, W. J. Dixon, Marvin Zelen, W. L. Nicholson, N. D. Singpurwalla, Peter J. Huber, W. A. Gale, James L. Dolby, R. A. Becker.

Issues Arising from the Expansion of Genetic Screening and Genetic Engineering Technology (29 May, 9:00 a.m.): Optical

sequential testing, automation of screening, computer systems.

Robert S. Ledley, Ezra Glaser, Ruth E. Dayhoff, Jerome K. Percus, Mary Louise Lubs, Charles F. Sing.

How Good Are Our Health and Environmental Data? (30 May, 9:00 a.m.): Quality control, epidemiology, chemical exposure, environmental decision-making.

Marilyn C. Bracken, David P. Rall, Vernon N. Houk, Stephen L. Brown, John W. Hernandez, Jr.

Radiation Risk: Assessment and Applications (30 May, 9:00 a.m., 2:30 p.m.): Radiation biology, BEIR-III, risk-benefits in radiotherapy and nuclear medicine, radiation protection standards.

Charles B. Meinhold, A. Everette James, Jr., Edward P. Radford, Edward W. Webster, John W. Gofman, Victor P. Bond, John C. Bailar III, William E. Powers, Warren K. Sinclair.

Some Mathematical Questions in Biology: Muscle Physiology (31 May, 9:00 a.m., 1:30 p.m.): Muscle contraction—molecular mechanism, models, mechanical experiments, sarcomere dynamics, electric field problems.

Robert M. Miura, Hugh E. Huxley, Evan Eisenberg, Michael B. Propp, Charles Peskin, H. Michael Lacker, John W. Krueger, Robert S. Eisenberg.

11. Medical Sciences

Prenatal Diagnosis and the Fate of the Handicapped Fetus and Newborn: Medical, Ethical, and Legal Perspectives (27 May, 9:00 a.m.):

Anne B. Swanson, Mark N. Ozer, Mitchell S. Golbus, John C. Fletcher, John A. Robertson.

The Spectrum of Birth Settings (27 May, 2:30 p.m.): Birth centers, hospitals, medical and policy issues.

Enriqueta C. Bond, Leah M. Lowenstein, Ruth W. Lubic, Mortimer G. Rosen, Gontran P. Lamberty.

Trace Elements in Man: Recent Advances (28 May, 9:00 a.m.): Requirements, role of zinc, immunological functions, and deficiencies.

Ananda S. Prasad, Robert A. Good, George J. Brewer, Walter A. Mertz.

Clues to the Etiology of Human Cancer from Studies in China (29 May, 9:00 a.m., 2:30 p.m.): Colon, hepatocellular, liver, esophageal, leukemia-lymphoma, mortality patterns, research opportunities.

Henry S. Kaplan, Robert W. Miller, Wu Min, Lauren V. Ackerman, Yan Ruiqi, W. Thomas London, Chen Shujun, Robert C. Gallo, Frederick P. Li.

Nutrition in Health and Disease States (30 May, 9:00 a.m.): Breast *versus* bottle feeding; nutrition in carcinogenesis, brain metabolism, and host defense mechanisms.

Joseph J. Vitale, Jose Ignacio Santos, Selwyn A. Broitman, Steven H. Zeisel.

Sodium, Potassium, and Essential Hypertension (30 May, 2:30 p.m.): Population studies, membrane transport, kidneys and nervous system, clinical significance, current treatment.

George R. Meneely, Harold D. Battarbee, Lot B. Page, Mitzy Canessa, Louis Tobian, Jr., Walter M. Kirkendall.

Efficacy of Psychotherapy (31 May, 9:00 a.m.): Psychopharmacology, methodology, current status.

Leon Salzman, Jan A. Fawcett, Morris B. Parloff, Allen J. Frances.

Alzheimer's Disease and Dementia: Neurobiology and Public Policy (31 May, 1:30 p.m.): Status of knowledge, epidemiology, approaches to treatment.

Roger M. Morrell, Barry Gurland, Samuel D. Brinkman, Nancy E. Lombardo.



Photo courtesy of the Metropolitan Detroit Convention and Visitors Bureau.

12. Health Care and Public Health

Occupational Toxicology and Safety in the Research Laboratory (27 May, 9:00 a.m.): Ethical, legal, and safety issues; successful experiences.

Daniel A. Bronstein, Howard Brody, Edward B. Goldman, Jeanne M. Stellman, Jack D. Young.

Optimum Utilization of Knowledge in Service of Health (27 May, 9:00 a.m., 2:30 p.m.): Brain-body interactions, role of family, computers, public health, economic models, training.

Lawrence Senesh, John Cobb, Leonard Duhl, Joel Elkes, Paul Bohannon, Lawrence Weed, Samuel Epstein, Lloyd Slater, Edmund Pellegrino, Marc Roberts, Leah Dickstein, James B. Tabler.

Changing Patterns of Disease (27 May, 2:30 p.m.): Infectious diseases, mental health, cancer, cardiovascular diseases.

Beatrice A. Rouse, Gordon Allen, Robert Murray, Jr., Walter R. Dowdle, Manning Feinleib, Morton Kramer, Barbara S. Hulka.

Bacterial Interactions (28 May, 9:00 a.m.): Peptide hormones, bacteria, tooth surfaces, large intestine, gene transfer.

Don B. Clewell, Derek Le Roith, Walter J. Loesche, Rolf Freter, Eugene W. Nester.

Stress in Children and Families (28 May, 2:30 p.m.): Stress and intelligence, stress management, Type A behavior.

Bernard Brown, Irving Lazar, James S. Jackson, Karen A. Matthews, Lilian Rosenbaum, Beatrix A. Hamburg.

Analysis and Use of Survival Data in the Biomedical Sciences (30 May, 2:30 p.m.): Kidney-transplant survival, linear model, competing risks, animal studies.

Alan J. Gross, Norman L. Johnson, Regina C. Elandt-Johnson, Aquila R. Lipscomb, Melvin L. Moeschberger, Gary G. Koch, Bruce W. Turnbull.

Adolescent Despair, Suicide, and Violent Death (31 May, 9:00 a.m.): Epidemiology and etiology, affective disorders; psychosocial, cognitive, and biological aspects.

Sherman C. Feinstein, Daniel Offer, Richard C. Marohn, David W. Cline, Derek Miller.

13. Agriculture and Food

New Frontiers in Agricultural Sciences and Their Societal Implications (27 May, 9:00 a.m., 2:30 p.m.): Recombinant DNA, photosynthesis, nutrition, nitrogen fixation; sociological and political views, environmental impacts, ethical dilemmas, policy.

Jean Lipman-Blumen, Bobby Eddleman, H. A. Henderson, J. R. Wild, Israel Zelitch, Janet King, Robert Randolph, John F. Fulkerson, David O. Hansen, Lawrence Busch, Steven C. Smith, Glenn L. Johnson, Vernon W. Ruttan, Donald F. Hadwiger, Emery N. Castle.

Restructuring Policy for Agriculture: Some Alternatives (28 May, 2:30 p.m.): Impact on farm families and rural communities; access to capital, enhancing productivity, environmental impacts; farm income.

Sandra S. Batie, J. Paxton Marshall, William D. Heffernan, Paul W. Barkley, I. Garth Youngberg, Lawrence W. Libby, Lyle P. Schertz, John K. Hoseman, Ronald K. Knutson.

Conservation of Animal Germ Plasm (29 May, 9:00 a.m.): Cryopreservation of spermatozoa and embryos, genetic implications.

Edmund F. Graham, Bertrand Cassou, Peter Mazur, Stanley P. Leibo, George E. Seidel, Jr.

Sources of Food from Rarely Used Plants (29 May, 2:30 p.m.): Undiscovered food sources, new crops, Quinoa, Morama bean, limitations.

David Pimentel, Noel Vietmeyer, David F. Cusack, Joseph Bousquet, David M. Bates.

Rising Atmospheric Carbon Dioxide and Plant Productivity (31 May, 9:00 a.m.): Carbon metabolism, whole plant growth, plant communities, microbiological effects.

Sylvan H. Wittwer, David M. Gates, N. E. Tolbert, Donald N. Baker, Boyd R. Strain, Marvin R. Lamborg.

14. Economics and Industry

Monitoring for Risk Management (27 May, 9:00 a.m.): Safety, statistical monitoring, estimates of risk, human factors, nuclear power safety.

Turkan Gardenier, John S. Gardenier, William A. Fairley, Daniel Jones, E. L. Zebroski, Lance A. Wallace.

Risk of Emerging Energy Technology (27 May, 2:30 p.m.): Risk analysis, coal liquefaction, photovoltaic energy, fluidized bed combustion, refuse-derived fuels.

Herbert Inhaber, Nathaniel F. Barr, Paul D. Moskowitz, Philip J. Walsh, Fritz A. Seiler, James J. O'Toole.

Social, Political, and Economic Responses to Advances in Manufacturing Technology (27 May, 2:30 p.m.): Changing technology, political, social, and labor responses.

Joel D. Goldhar, Janice E. Greene, Stephen A. Merrill, Barbara A. Burns, Melvin Kranzberg, Peter Unterwieser.

Normative Analysis (28 May, 9:00 a.m., 2:30 p.m.): Going from bad to worse, planning decisions, efficiency and energy use, uncertainty in mineral exploration, economic models.

Russell G. Thompson, Robert M. Thrall, Kenneth E. Boulding, Daniel A. Dreyfus, Sam H. Schurr, David Martin, John B. Boatwright, George B. Dantzig, A. Charnes, W. W. Cooper, Albert Sobey, A. Smyshlaev.

Plant Closures: Corporate Disinvestment and Economic Succession (29 May, 2:30 p.m.): Trends, British experience, human response, manpower and employment implications.

Gene F. Summers, Barry Bluestone, Colin R. Bell, Jeanne P. Gordus, Kenneth Root, Edward Blakely.

An Overview and Synthesis of Recent Federal Industrial Inno-

vation Initiatives (30 May, 9:00 a.m.): Federal catalyst, tax incentives, patent policy, small business, military R&D.

Theodore W. Schlie, Eileen L. Collins, D. Bruce Merrifield, Norman L. Balmer, Ann Eskesen, James E. Spates.

New Approaches to Technology Strategy: Using Patent Data (30 May, 2:30 p.m.): Patents as indicators of development, U.S.-foreign links, and innovativeness.

Mary Ellen Mogee, Carole E. Kitt, Keith L. R. Pavitt, Richard S. Campbell, Mark P. Carpenter, Walter L. Winterbottom, Joseph W. Malmendier, Sumiye Okubo.

Deregulation of Electric Utilities (31 May, 9:00 a.m.): Bases for deregulation and practical aspects, consumer and capital costs.

Jack Allentuck, Marjorie H. Schnader, A. Jennifer Robison, Benjamin Hobbs, Richard E. Schuler, Conrad F. DeSieno, Alvin Kaufman.

15. Sociology and Anthropology

Research Support and Intellectual Advance in the Social Sciences (27 May, 2:30 p.m.): Changing private and governmental support, impacts and effects.

Roberta Balstad Miller, Kenneth Prewitt, Henry W. Riecken, Marshall Robinson, Harvey Brooks, F. Thomas Juster.

New Windows on the Development of Language in People Who Cannot Speak (28 May, 9:00 a.m.): People with neurosensory deficits, voice synthesizers, microprocessors, protocols of spoken communication, visual systems.

Virginia W. Stern, John B. Eulenberg, James Brooks, Laura F. Meyers, Teresa J. Rosegrant, Gregory Turner, Ann Heler, Peter Reich.

Migratory Pastoralism: Physical and Social Systems in the Context of Development (28 May, 2:30 p.m.): Nomadic pastoralism, arid environments, livestock; sociocultural, economic, and political aspects.

John W. Bennett, Lois Beck, Frederic H. Wagner, Jere L. Gilles, Pierre L. Bonte, Robert E. McDowell, Peter D. Little, James Riddell, David C. Cole, Theodore E. Downing, John G. Galaty, Daniel A. Bradburd, Stephen Sandford.

Science, Art, and Archeology, II (29 May, 2:30 p.m.): Oriental lacquerware, ancient Chinese bronzes, Baffin Island, Sassanian silver, Roman coins.

Saul Krasner, Jacqueline Olin, Giles F. Carter, Adon A. Gordus, Gary W. Carriveau, Ursula M. Franklin.

The Future of American Mortality: Social, Biological, and Policy Aspects (30 May, 9:00 a.m.): Recent trends, life expectation and life-span, fiscal implications.

Thomas J. Espenshade, Charles B. Nam, Eileen M. Crimmins, Leonard Hayflick, Barbara Boyle Torrey, Lois M. Verbrugge.

Human Ecology and the Ecosystem in a Predevelopment Pastoral Society (30 May, 2:30 p.m.): South Turkana, livestock ecology, resource exploration, nutrition and health.

Michael A. Little, James E. Ellis, Neville Dyson-Hudson, J. Terrence McCabe, V. Rada Dyson-Hudson, D. Layne Coppock, David M. Swift, Kathleen Galvin.

Population Redistribution in the United States (30 May, 2:30 p.m.): Trends and implications, industrial change, metropolitan-nonmetropolitan changes.

James D. Williams, Peter A. Morrison, Wilbur Zelinsky, Larry Long, John D. Kasarda, John M. Wardwell.

The Function and Management of Aggression and Cooperation in Biocultural Evolution (31 May, 9:00 a.m.): Group commitment, ideology as brain damage, ritual and modulation, morality.

Solomon H. Katz, Kenneth E. Boulding, Donald T. Campbell, Lionell Tiger, Eugene G. D'Aquili, Richard D. Alexander, Amitai Etzioni.

Tools for Dealing with Drinking and Driving Problems (31 May, 1:30 p.m.): Deterrents, countermeasures, public policy.

James M. Schaefer, Alexander C. Wagenaar, H. Laurence Ross, James F. Mosher, Dan E. Beauchamp, Ray Peck.

16. Information and Communication

Science and Music: Recording, New Instruments (27 May, 2:30 p.m.): Automatic music, digital editing, violin octet, computer music.

F. R. Lipsett, Charles D. Pfeiffer, Thomas G. Stockham, Jr., Carolyn Wilson Field, John Chowning.

Toxicology and the Citizen (28 May, 9:00 a.m.): Toxicology education—school, government, industry, scientist, and media roles.

Michael Kamrin, J. J. Gallagher, Bailus Walker, Jr., S. L. S. Dombrowski, Robert Neumann, John Doull.

Television and Science: Is TV the Medium for the Message? (28 May, 2:30 p.m.): Portrayal of science, science programming, role in energy conservation and smoking deterrence.

Jon D. Miller, Richard A. Winett, George Trussell, George Gerbner, Richard I. Evans, John C. Wright, Carol L. Rogers.

Multidimensional World Impact of Advancing Information Technologies (29 May, 9:00 a.m., 2:30 p.m.): World challenge, global communication, economic and policy implications, microcomputers, future planning.

Elizabeth B. Adams, Lowell H. Hattery, Herschelle Challinor, Joseph N. Pelton, Arthur A. Bushkin, Robert G. Gillespie, Adam Osborne, Oswald H. Ganley, T. Randal Ide, C. F. Burke, Jr., Arthur Levine.

17. Science Education

Systems Theory Perspectives on Science and Engineering Education (27 May, 9:00 a.m.): Excellence in education, algorithmic systems, quantitative analysis, management of technology, systems design.

Abraham H. Haddad, Robert E. Yager, Stephen Kahne, Arthur Harkins, Robert E. Larson, Kazuhiko Kawamura, Andrew P. Sage, George J. Klir.

The Crises in Science and Mathematics Education: Perspectives from the National, State, and Local Levels (28 May, 9:00 a.m.): Federalism and its impacts—Mississippi, Michigan, Pennsylvania, Indiana.

George C. Shoffstall, F. James Rutherford, Ertle Thompson, Laurel A. Grotzinger, John J. McDermott, Walter Cory, Dudley F. Peeler, Jr., Anna J. Harrison.

Case Histories in Industry-Assisted Secondary School Science Education (28 May, 2:30 p.m.): "Try-out" research, teachers' seminars, computers.

Donald L. Crain, Lewis M. Rambo, Curtis Karl, Jerry W. Regan, Ronald L. Beck, Letitia Lestina.

Case Histories in Industry-Assisted Undergraduate Science Education (29 May, 9:00 a.m.): Industry-academy cooperation, sharing resources, chemistry and CAD labs.

Richard F. Hill, David G. Black, Jr., Charles E. Reed, Brian B. Schwartz, Mark Flamendorf, Michael P. Doyle, William L. King, Donald D. Glower, Robert F. Redmond.

Science, Technology, and Society: Core of Technology Literacy (29 May, 9:00 a.m., 2:30 p.m.): Experiments in teaching, British experience, new approaches, media and museums.

Rustum Roy, W. F. Williams, F. James Rutherford, George Tresel, Fred Jerome, John Lewis, Steven L. Goldman, Christopher Wright, John G. Truxal, Joan Solomon.

Case Histories in Industry-Assisted Graduate Science Education (29 May, 2:30 p.m.): University-industry interactions—team arrangements, use of TV, robotics.

Robert H. Pry, John P. D. Wilkinson, J. J. Dietrich, Robert B. Kelley, James E. Morley, Jr., Daniel Sullivan, Jack Munushian.

Renaissance in Science Education (30 May, 9:00 a.m., 2:30 p.m.): National objectives, precollege education; black, Hispanic, and women's views; corporate and federal roles.

J. V. Martinez, Betty M. Vetter, F. James Rutherford, Eugene H. Cota-Robles, Cecily Cannan Selby, Diana I. Martinez, Cora B. Marrett, Mary H. Beavis, Gilbert Sanchez, Shirley M. Malcom.

Minority Success in Mathematics: Can Schools Make a Difference? (31 May, 9:00 a.m.): Language factor, black and Chinese students and mathematics.

Westina L. Matthews, Gilbert J. Cuevas, Alma E. Lantz, Gail E. Thomas, Sau-Lim Tsang, Philip Treisman, Cora B. Marrett.

Computers and Mathematics Learning (31 May, 1:30 p.m.): Cognitive theories, applications of artificial intelligence, diagnostic modeling, epistemological issues.

Ronald H. Wenger, Robert B. Davis, Kurt VanLehn, Derek H. Sleeman, Susan J. Russell, Alan H. Schoenfeld.

18. History, Philosophy, and Ethics

Science and Art: Aesthetic Dimensions of Scientific Thought (27 May, 9:00 a.m.): Galileo's universe, Einstein's research passion, heuristics and form, aesthetics in contemporary physics.

Marx W. Wartofsky, Samuel Y. Edgerton, John Stachel, Hilde Hein, Peter L. Galison.

Expert Claims and Social Decisions: Issues for Professional Ethics and Accountability (27 May, 2:30 p.m.): Biology, psychology, computer modeling, standards for expert claims.

Rachelle D. Hollander, Theodor D. Sterling, Mary P. Lavine, Michael McCloskey, John M. Mulvey, John Conyers, Jr., Samuel S. Epstein, Willard Gaylin.

How Much Science Is Secret? (28 May, 9:00 a.m.): National security, NAS report, scientific concerns, international issues.

Rosemary Chalk, Harold T. Shapiro, David A. Wilson, Stephen Unger, William Perry.

Fraud and Dishonesty in Science (29 May, 9:00 a.m.): Perspectives of sociologist, philosopher, journalist, historian, and scientist.

Naomi Aronson, Nicholas Wade, Norton Zinder, Daryl E. Chubin, Warren Schmaus, Richard S. Westfall.

Social Determinants of the Definition of Occupational Diseases (29 May, 9:00 a.m.): Black and brown lung diseases, asbestos, lead hazards, labor relations.

David Wegman, Barbara Rosenkrantz, Charles Levenstein, William Mass, Janet M. Bronstein, Jacqueline K. Corn, David M. Ozonoff.

Science versus Nonscience (29 May, 2:30 p.m.): Pseudoscience, pedagogical problems, scientific thinking.

Joseph C. Pitt, Noretta Koertge, Michael Ruse, Philip Kitcher, Paul Thagard.

Understanding the Process of Transformation of Knowledge (30 May, 9:00 a.m.): Ecology of knowledge, pluriculturalism, computers, technological society, Third-World challenge.

Aristide H. Esser, William Gray, Jerzy A. Wojciechowski, William H. Vanderburg, Magoroh Maruyama, Brian R. Gaines, Paul Trachtman.

Philosophy of Science: Current Research and Implications for Science Education (31 May, 9:00 a.m.): Teaching scientific method, rationalism and relativism, moral education.

Harvey Siegel, D. C. Phillips, Stephen P. Norris, Michael Martin, David Moshman.

Schools of Ecology in Historical Perspective (31 May, 1:30 p.m.): Population ecology, experimental limnology, plant adaptation.

Robert P. McIntosh, Frank N. Egerton, Eugene Cittadino, Arthur D. Hasler, Sharon E. Kingsland, Eugene P. Odum.

19. Science and Technology Policy

The Role of Scientific Evidence in Policy-making (27 May, 9:00 a.m.): Advisory committees, regulatory issues, congressional decision-making.

Jurgen Schmandt, James E. Katz, Nicholas A. Ashford, Harvey Brooks.

Contributions of Scientific and Engineering Societies to Development (27 May, 2:30 p.m.): India, Germany, Latin America, U.S., and Canadian experiences.

Fred C. Leone, Kenneth E. Boulding, A. K. Sharma, Dorothy M. Gilford, Harald C. Boström, J. William McGowan, Marcel Roche.

Opportunities for Inter-American Scientific Cooperation on Biological Resources and Biotechnology (28 May, 9:00 a.m.): Overview, AID and NAS, Interciencia network.

James W. Rowe, Roger Revelle, Alberto Ospina, Glenn T. Seaborg, Ralph W. Richardson, Jr., William D. Sawyer, Nyle C. Brady.

Federal R&D, FY 1984: Budgets, Policies, Outlooks (28 May, 9:00 a.m., 2:30 p.m.): OMB, Congressional, OSTP, NSF, university views; implications in physical and biological sciences.

Albert H. Teich, Willis H. Shapley, Jill P. Weinberg, Ray Thornton, Hugh Loweth, Richard Malow, Courtney Riordan, Allan R. Hoffman, Harold P. Hanson, Gail M. Pesyna, Robert L. Park.

Schedule of Contributed Papers

The contributed papers will be presented in **poster session format only**; there will be no slide sessions. Abstracts for the individual papers will be found in the *Abstracts of Papers* volume, which is available on site to all registrants. The poster sessions will be held in the Ontario Exhibit Hall at The Westin Hotel; they are scheduled as follows:

Poster Session I (28 May, 11:30 a.m.–1:00 p.m.).
American Junior Academy of Science:
Research Papers by High School Students.

Poster Session II (28 May, 1:30 p.m.–3:30 p.m.).
Behavioral Sciences.

Poster Session III (29 May, 11:30 a.m.–1:00 p.m.).
Biological Sciences.

Poster Session IV (29 May, 1:30 p.m.–3:00 p.m.).
Medical Sciences; Agriculture.

Poster Session V (30 May, 11:30 a.m.–1:00 p.m.).
Physical Sciences; Physical Biology.

Poster Session VI (30 May, 1:30 p.m.–3:00 p.m.).
Social Sciences; Education.



Utilizing America's Scientific and Technological Resources: A New Challenge for State and Local Government in Partnership with Industry and Education (29 May, 9:00 a.m., 2:30 p.m.): Venture capital, education, labor, industry; experiences in Michigan, North Carolina, Minnesota.

Phyllis L. Kahn, Rhett D. Speer, Don Phillips, David Brophy, Gretchen Klein, Quentin Lindsay, Roger Staehle, Brewster C. Denny, Jonathan King.

The Law of the Sea: A Step Toward Institutionalization of Global Interdependence (30 May, 9:00 a.m.): Geography, peace, technology transfer.

Emanuel Maier, Arvid Pardo, Lewis M. Alexander, Judith T. Kildow, Elisabeth M. Borgese, Roger Revelle.

Implications of the UN Law of the Sea Treaty (30 May, 2:30 p.m.): Marine science research, U.S. alternatives.

John A. Knauss, Jonathan I. Charney, David A. Ross, William C. Brewer, Jr.

Science and the Federal Rules of Evidence (31 May, 9:00 a.m.): Lawyers and scientists, misconceptions and misunderstandings.

Darryl Gorman, Emilio Q. Daddario, Howard T. Markey, William A. Thomas, Charles D. Herz.

The Future of U.S. Research Universities (31 May, 1:30 p.m.): Perspectives from universities, state and federal government, and industry.

Howard Gobstein, Mary R. Hamilton, Robert M. Rosenzweig, Donald N. Langenberg, Robert A. Frosch, Gordon K. Davies.

20. Arms Control and Security

Verification Technology: Potentials and Limits (27 May, 9:00 a.m.): Limits to application; negotiations.

Sidney Drell, Herbert Scoville, Manfred Eimer, Robert Buchheim, Roger Fisher, Bobby Inman.

The Technology of Peace-Making (27 May, 2:30 p.m.): Underlying assumptions, conflict resolution strategies, nonmilitary approach; Middle East.

Elise Boulding, Richard A. Scribner, Moorhead Kennedy, Herbert C. Kelman, Swadesh M. Rana, Michael E. Sterner.

The Environmental Effects of Thermonuclear War (28 May, 9:00 a.m.): Short-term effects, airborne radioactive material, ozone layer, ecological effects.

Julius London, Gilbert F. White, Frank von Hippel, Lester Machta, George M. Woodwell, Arthur C. Upton, Julius S. Chang, Thomas F. Malone.

Education and Nuclear War (28 May, 2:30 p.m.): Courses on arms race, nuclear war, and international relations.

Dietrich Schroerer, Kosta Tsipis, Dinna Zinnes, Alvin M. Saperstein, Roberta Snow.

The Impact of Command, Control, Communications, and Intelligence (C³I) on Strategic Nuclear Options (29 May, 9:00 a.m.): Programs, policy, assessment, and technological opportunities.

William J. Perry, Charles A. Zraket, John B. Steinbruner, Gerald P. Dinneen, Donald C. Latham.

Defense Spending: Impact on Economy and Technology Base (29 May, 2:30 p.m.): Views from DOD and industry, technological spin-off.

Philip A. Odeen, Jack R. Borsting, William D. Nordhaus, Merton J. Peck, William J. Perry.

Freezes, Treaties, Stops, and STARTS: Current Issues in Arms Control (30 May, 9:00 a.m.): US-USSR negotiations.

Brewster C. Denny, Richard A. Scribner, Edward Rowny, Rodney W. Nichols, George Rathjens.

Chemical and Biological Weapons: Detection, Control, and Disarmament (31 May, 1:30 p.m.): Historical perspective, verification, international efforts, military and congressional attitudes.

Les Aspin, Raymond Zilinskas, Robert Mikulak, Lynnwood Lennon, Jim Leach, Matthew S. Meselson.

Workshops

Monoenergetic Positrons in Fundamental and Applied Science (26 May, 9:00 a.m., 2:30 p.m.): Present state, future work.

L. D. Hulet, J. M. Dale, A. Rich, K. F. Kanter, S. Pendyala, P. W. Zitzewitz, R. H. Howell, K. G. Lynn, A. P. Mills, Jr., S. Berko.

Imaging a Future Without Arms (26 May, 9:00 a.m., 1:30 p.m.): Visualizing a social order without weapons.

Elise Boulding, Lillian Genser.

Community Resources in Science Technology for Teachers (26 May, 1:30 p.m.): Preparation for citizenship, world of work, minority students, the future, teachers.

Paul J. Sullivan, Joseph M. Dasbach, Walter Bogan, Vincent J. Cusimano, Oliver Coleman, Richard K. Rosensteel, Leroy R. Lee.

Solutions for Entry-Level Scientists (29 May, 6:30 p.m.): Developing employment opportunities.

Gene A. Nelson, Betty Maxfield, Paul Maxwell, H. Westley Clark.

Meeting Information

All Annual Meeting activities will be located in The Westin Hotel at the Renaissance Center: public lectures and symposia; exhibits and poster sessions (contributed papers); business meetings and social functions; registration, information, and ticket desks; resource centers for disabled and for minority registrants; headquarters office; newsroom; and Science Film Festival.

Hotel Reservations

The AAAS has reserved guest rooms at guaranteed reduced rates at The Westin Hotel, the Book Cadillac Hotel, and the Hotel Pontchartrain (for locations, see map on page 55 in this issue). **The reduced rates are guaranteed only when reservations are made through the AAAS Housing Bureau prior to 2 May 1983.** Please read and fill out carefully the hotel reservation form on page 61; room assignments will be delayed if any information is omitted from the form. The AAAS Housing Bureau cannot accept reservations by telephone.

Do not be a "No-Show"! If you have made a reservation and find that you cannot honor your commitment, call or write to the hotel and cancel.

Ground Transportation

Airport-to-Hotels: Buses, operated by *Shortway*, run between the Detroit Metro Airport and the three meeting hotels at regular intervals: on weekdays, hourly in early morning and late evening, and every 30 minutes during daytime; less frequently on weekends and holidays. The one-way fare is \$5. *Shortway* ticket and information counters are located in the North and South Terminals of the airport, near the baggage claim areas, and at the Westin, Pontchartrain, and Book Cadillac hotels. The taxi fare from the airport to the hotels is about \$25.

Between Hotels: The Downtown Detroit Trolley service stops at all three meeting hotels. Operated by the Detroit Department of Transportation, these vintage trolley cars run at regular intervals; the fare is 45¢ per person.

Parking

The Renaissance Center has reserved for AAAS meeting registrants 400 parking spaces at a special convention discount rate of \$4 per day. These spaces are available on "Lot B," on Beaubien Street on the east side of the Center (see map for location). To qualify for the discount rate, registrants must show their badges to the parking lot cashier on exit from the lot. On request, the cashier will issue 24-hour passes for in-and-out privileges.

Valet parking is available at the Westin (\$8.50), the Book Cadillac (\$6), and the Pontchartrain (\$6). These rates are for 24-hour parking with in-and-out privileges, for registered guests only; they are subject to change.

For parking at other facilities in downtown Detroit, inquire at the Visitors' Center on Hart Plaza (see map).

Meeting Registration

The registration categories and fees are listed on the registration form on page 60. **Register in advance; you will save money and avoid standing in line at the on-site registration desk. And you can charge the registration fee to your VISA or MasterCard.**

Advance registrants, please note: In mid-April, we will mail to you an expanded preconvention program, your badge and registration receipt, and a voucher for your registration packet. Present the voucher at the Advance Registrants' desk in The Westin Hotel (Ontario Foyer) to receive the program book, condensed program (foldout), and abstracts volume.

The registration area is open during the following hours:

Thursday, 26 May 12 noon–6:00 p.m.
Friday through Monday,
27–30 May 8:00 a.m.–6:00 p.m.
Tuesday, 31 May 8:00 a.m.–12 noon

Registration Refunds

The AAAS will refund advance registration fees for all cancellations received by letter or telegram prior to 20 May 1983. **No refunds will be made on cancellation notices received after that date.** Refunds will be mailed from the AAAS offices in Washington after the Annual Meeting.

Tax Deduction for Educational Expenses

U.S. Treasury regulation §1.162-5 permits an income tax deduction for educational expenses (registration fees and cost of travel, meals, and lodging) incurred to (i) maintain or improve skills required in one's employment or other trade or business or (ii) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status, or rate of compensation. This is true even for education which leads to a degree.

Resources for Disabled Registrants

The AAAS, in cooperation with the Detroit Advisory Committee, is making every effort to make the Annual Meeting fully accessible to disabled individuals. In addition to hotel rooms which can accommodate wheelchairs, and accessible meeting areas, the following services will be provided through a Resource Center located in The Westin Hotel: transportation to and from the airport, train station, and bus terminals; interpreters for the hearing-impaired at all public lectures, and for other sessions on request; special tour and sight-seeing information; audiotaped program highlights for the visually impaired; assistance in movement within and between hotels; and emergency repair for wheelchairs.

Persons needing special accommodations and services are strongly urged to so indicate on the registration and housing forms. **Your early response will help us to plan and serve you better.** For additional information, contact Virginia Stern, AAAS Project on the Handicapped in Science, 1776 Massachusetts Ave., N.W., Washington, D.C. 20036; phone, 202/467-4497.

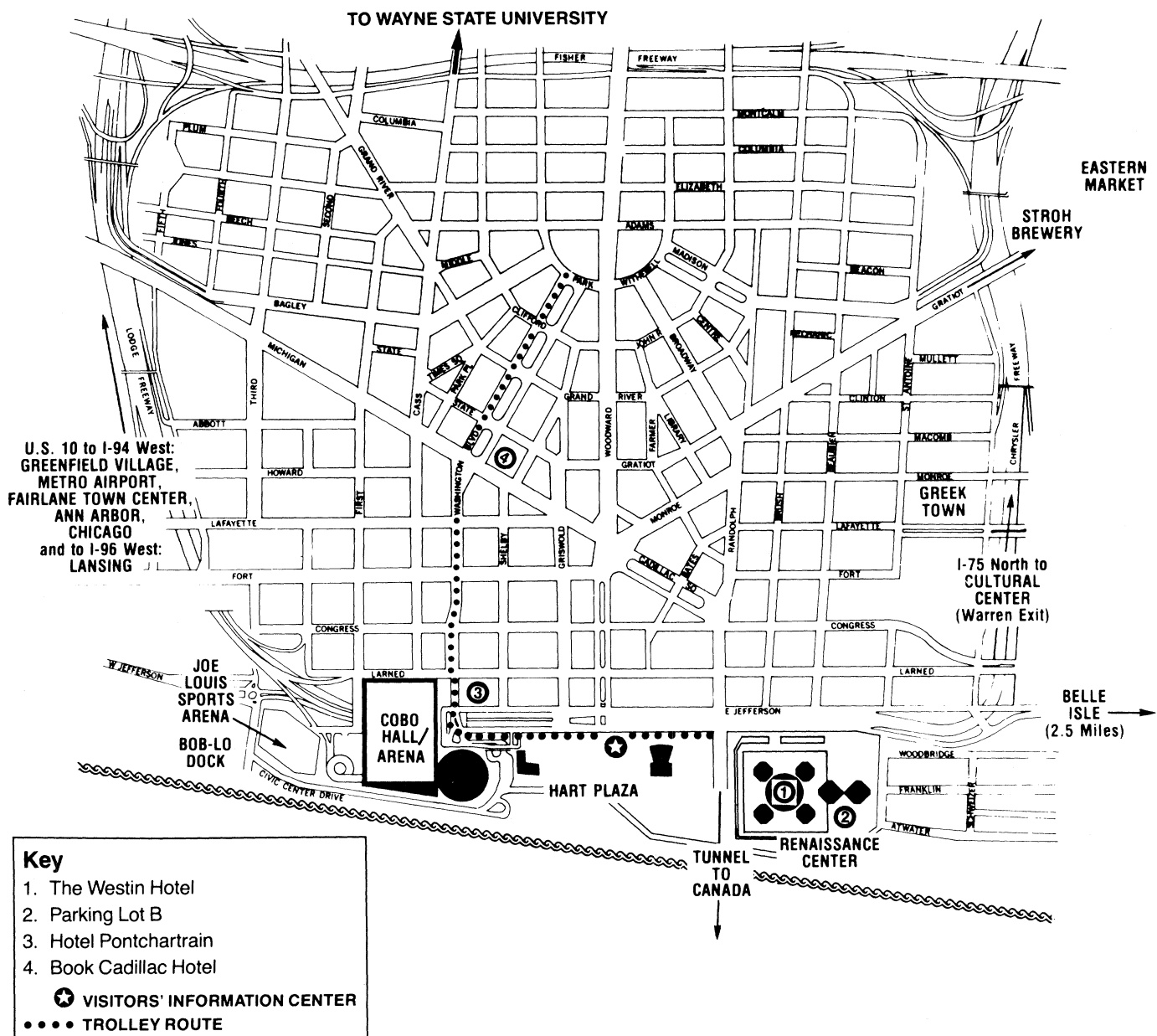
Child Care

The Guest Services Department at The Westin Hotel and Housekeeping Departments at both the Book Cadillac and the Pontchartrain will arrange for baby-sitters for infants and small children or companion care for older children. Advance notice of at least 24 hours is requested.



Photo courtesy of the Renaissance Center Partnership.

Map of Downtown Detroit



Don't miss the AAAS Exhibit

**Ontario Exhibit Hall
Level 3
The Westin Hotel**

Hours:

28 May	10 am–5 pm & 6:30–8 pm
29 May	10 am–5 pm & 6:30–8 pm
30 May	10 am–5 pm

Cash bar open during evening hours.

Come to the exhibit and pick up your free AAAS tote bags and academic year calendars. Visit displays from publishers, associations and societies, government agencies, instrument makers, and corporations.