Uses of Science and Our Expectations

Continuing where we left off last week in our saga of the "periodical and migratory" AAAS Meeting, in 1976, the Bicentennial of the American Revolution, our migrations take us to the Back Bay of Boston, the site of many things we identify with that Revolution and with the development of science in America. But more than being a center for the development of science, Boston has been a center for the development of uses for science, including such things as the telephone (whose centennial will be observed in 1976, also), the use of ether, microwave technology, and many others.

The forthcoming AAAS Annual Meeting has more than 60 symposia on the "Uses of Science," divided into seven groups: those of general interest, those related to health, food, habitation and development, energy, science and technology implications, and science and technology policy. All of these symposia deal with the uses of science, as well as the implications of such uses, from the standpoint of the many disciplines involved.

What follows is a direct list of all of these symposia in the several groups. In the preceding article (12 December issue of *Science*, pages 1079 to 1081) we have discussed the area of the Meeting program dealing with "Frontiers of Science," and in the next article (26 December issue), we will discuss the final area, that of "Perspectives on Science." We are sure that you will agree that this "migration" has brought us to a very fine Meeting, one that you must be sure to attend.

—ARTHUR HERSCHMAN

Annual Meeting
Boston
18-24 February 1976

For further details, see Preliminary Program in *Science*, 14 November 1975, pages 651–661. For information about tours and special events, see *Science*, 28 November 1975, pages 871–873.

A. General Interest

The Future of Health Care (18 Feb.): Options for improving, impact of medical research, promise and constraints of technology.
Irving M. London, David E. Rogers, Donald S. Fredrickson, Walter A. Rosenblith.

Science, Technology, and the Handicapped (19 Feb.): Reading machine for the blind, teach deaf children to speak, electronically aided instruction, technology, architectural and transportation barriers, career barriers, quality science education.
Richard Bolt, John A. Swets, Barry Unger, Martha Redden, Edward Keller, Raymond Kurzweil, Raymond S. Nickerson, Kenneth N. Stevens, Richard A. Foulds, Max Mueller, Donald Schon, James Jeffers, James Gashiel, Maynard Reynolds, Elizabeth Boggs.

Science Policy and Social Development (20 Feb.): Developing nations, public information, political process.
Jerome B. Wiesner, Carlos Chagas, Arne V. Engstrom, Alexander W. Merrison.

Catastrophes: Analyses and Solutions (21 Feb.): Disaster warnings, threats to the biosphere, food-climate catastrophe, genetic resources, nuclear power.
Stephen H. Schneider, Walter Orr Roberts, Kenneth E. Boulding, J. Eugene Haas, David J. Rogers, Gilbert N. Hersh, Kanti Rawal, J. E. April, John Holden.

The Mouth: Where It All Begins (22 Feb.): Growth and development, psychological aspects, dental disease, oral structures paleontology, art and music, talking teeth.
Paul E. Boyle, John W. Hein, Donald H. Enlow, Donald B. Gibbon, Thomas Lehner, Coenraad F. A. Moorees, Mark W. Field, Martin A. Taubman, Alfred W. Crompton, Jens J. Pindborg, Reidar F. Sognnaes, David W. Hamilton, Gerald Shklar, Stanley Schwartz, Sholom Pearlman.

Social, Cultural, and Technological Connections of Acoustics (23 Feb.): Forensic techniques, prosthetics and hearing, musical instruments.
Arthur H. Benade, Michael H. L. Hecker, Hugh S. Knowles.

Food, Nutrition, and Population Policy (24 Feb.): Fertility, society, and food, nutrition and population, affluence and poverty, agriculture, minimum human needs, future projects, population and resources.
Roger Revelle, David G. Mandelbaum, Jean Mayer, F. James Levinson, James Grant, Harrison Brown.

B. Health

Sensory Prostheses for the Hearing Impaired: Current Status and Future Directions (18 Feb.): Acoustic, cochlear implant, and tactile prostheses; electrotactile vocorder, basic research.
James H. Abbs, David W. Sparks, Harry Levitt, F. Blair Simmons, Moise H. Goldstein, Frank Saunders, James D. Miller.

Malnutrition, Behavior, and Social Organization (19 Feb.): Protein-calorie malnutrition, endemic goiter, cretinism, nutritional stress, behavior, culture, malnourished population, psychological development.
Lawrence S. Greene, Nevin S. Scrimshaw, Ernesto Pollitt, John B. Stanbury, Solomon H. Katz, Merril S. Read, Georgeda Buchbinder, Edward Foulks, B. Abbott Segraved, Eugene G. d'Aquili, Gary Mihalik, Margaret Mead, Andrew P. Vayda.

Ecology of Famine (20 Feb.): Ecosystems, psychological effect, diseases, immunity, Africa, Bangladesh, prediction, prevention, and aid.
Frederik B. Bang, Dwain W. Parrack, George W. Cox, Jean Mayer, George F. Cahill, Roger Hay, M. Mujibur Rahman, S. Aziz, Leonard Berry, Bruce Currey.

Elemental Pathways from Rocks to Man (21 Feb.): Trace elements, soils, tap waters, mammals, cardiovascular disease.
Helen L. Cannon, Willard L. Lindsay, Wendell A. Norvell, Raymond J. Miller, David E. Koeppe, Robert G. Corbett, Paul M. Newberne, A. Richey Sharrett.

The Biosocial Aspects of Breast-Feeding (21 Feb.): Urban poor, indigenous versus modern techniques, psychosocial development, developing countries, contraceptive value.
Dana Raphael, Solomon H. Katz, Marion B. Cardozo, Joe Wray, Anita Spring, Jean-Francois Saucier, Roy E. Brown, George Masnick, Jean Pierre Habicht.

Mortality, Population, and the National Economy (21 Feb.): Social stress modern economy, less-developed countries, nutritional causes of death and aging, child survival hypothesis.
M. Harvey Brenner, Nathan Keyfitz, Samuel H. Preston, Jean Mayer, Carl E. Taylor.

An Introduction to Occupational Health and Safety (22 Feb.): Workers, unions, government.
Kostia Bergman, David Kotelchuck, Judy DePontbriand, Anthony Mazzochi, John Froines.

Statistics and Environmental Factors in Health (22 Feb.): Pollutant concentrations, air pollution, competing risks, skin cancer and ultraviolet radiation.

Donald L. Thomsen, Jr., Paul Switzer, Persi Diaconis, Peter Bloomfield, Jerzy Neyman, Elizabeth L. Scott, Vaun A. Newill.

Health Status Indexes—Their Role in Tomorrow (23 Feb.): Health indicators, medical care delivery, index of well-being.

Pennifer Erickson, Robert H. Brook, Denis F. Johnston, Jacob J. Feldman, Ronald Wilson, John E. Ware, Jr., C. C. Berry, J. W. Bush, W. R. Blischke, Daniel Tunstall.

Some Recent Advances in Statistical Science (23 Feb.): Tomographic scanner, entropy, chronic diseases.

Emanuel Parzen, Herman Chernoff, Lawrence A. Shepp, Arthur Albert.

Diet and Cancer (24 Feb.): Hazards in food, protective factors, life style, government regulation.

Ruth W. Shearer, Virginia L. Zaratzian, Thomas J. Slaga, Haitung King, Anita Johnson.

The Role of Fiber in Human Nutrition (24 Feb.): Dietary fiber, gastrointestinal tract, lipid metabolism, implications for industry.

Ruth Schwartz, David Kritchevsky, Peter J. Van Soesst, Albert I. Mendeloff, John H. Hopper.

C. Food

Feasibility and Impact of Urban Food Production (18 Feb.): Personal, intensive agriculture, homesteading, pest control, city farmers.

Stuart M. Leiderman, Carter Schelling, Helga Olkowski, William Olkowski, Jerome Goldstein.

Human Life in Arid Lands: Food and Agriculture (19 Feb.): Desertification, greenbelts, nomadic ways of life, semi-arid tropics. Lebanon, Syria, Iran, Sahel, climate fluctuations.

Walter Orr Roberts, D. F. Peterson, Mostafa Tolba, H. N. Le Houérou, Sereydoun Hoveyda, Ralph W. Cummings, Lester R. Brown, Omond M. Solandt, Michael H. Glantz, Eric B. Kraus, Len H. Shebeski.

Climate and Plant Productivity (20 Feb.): Meteorological variability.

E. R. Lemon, H. E. Landsberg, W. S. Broecker, George M. Woodwell, James D. McQuigg, Paul E. Waggoner.

Crop Productivity—Research Imperatives (20 Feb.):

Marvin Lamborg, Sylvan Wittwer, R. W. F. Hardy, Waldemar Klassen, Jan Van Schilfgaarde, Donald H. Wallace, Conrad J. Weiser, Israel Zelitch.

Nitrogen and Phosphorus: Food Production and the Environment (21 Feb.): Agriculture, economic effect, eutrophication, water quality, nutrient control.

Raymond C. Loehr, Robert J. Young, Samuel R. Aldrich, C. Robert Taylor, Ray T. Oglesby, David R. Bouldin, George L. Casler, Harold R. Capener, Lester T. Kurtz.

Malthus Thwarted—So Far (22 Feb.): Tropical farming, temperate and urban area farming.

James G. Horsfall, Herbert M. Atherton, Robert F. Chandler, Jr., J. Lawrence Apple, Charles R. Frink, Robert Josephy, Louis G. Nickell.

Energy and Food Production: Contemporary Technology and Alternatives (23 Feb.): Starvation, energy, organic farms, ecology, costs of protein.

George Salzman, David C. Culver, David Pimentel, Wlliam P. Lockeretz, John Todd, Li-Min Lenke, Constance L. Phillips, Susan W. Taffler, Robert M. Shapiro, Bruce M. Hannon, Frances Lappe, Scott Nearing.

Food Resources: Indigenous, Nutritious, Unappreciated, and Unexploited (24 Feb.): Human milk, high quality protein, fermented foods, indigenous agriculture, information sources.

Marjorie Grant Whiting, C. Earl Smith, Cicely D. Williams, Derrick B. Jelliffe, E. F. Patrice Jelliffe, Paul Fleiss, Dean F. Gamble, Ray Pariser, Garrison Wilkes, Charles N. Bebee, Oku Ampofo, Aubrey W. Williams.

Plant Germplasm Resources—American Independence, Past and Future (24 Feb.): Colonial America, history, gene utilization, policy.

Garrison Wilkes, Joseph A. Ewan, Howard L. Hyland, Jack R. Harlan, R. W. Hougas.

D. Habitation and Development

Early Promises: Geographical Views of American Development (18 Feb.): Urban Forms, rights of passage, rural settlement, delicate space.

Michael P. Conzen, James E. Vance, Jr., Robert D. Mitchell, D. Aidan McQuillan, John P. Radford.

Technology, Public Policy, and Rural America (20 Feb.): Rural small towns, transportation, telecommunications, agriculture, growth, industrial location.

Vary T. Coates, Clayton C. Denman, Ernest Weiss, Robert A. Anthony, William B. Back, John Gilmore, Sharon Oster.

The Role of Rural Technology in Improving the Economic Development of Less-Developed Countries (21 Feb.): Small-scale and intermediate technology, manure methane plant.

Allen D. Jedlicka, Dilmus D. James, George McRobie, Nirmala Narula, Vernon Schield, Elizabeth O'Kelly, L. John Fry.

Indoor Air Quality (21 Feb.): Tobacco combustion products, health effects, nonsmokers' rights.

Karl H. Raab, John E. Yocom, Morton Corn, Benjamin G. Ferris, Jr., Glenn A. Goldberg, Paul Cameron, David G. Wilson.

Art, Science, and Technology in Shaping the Environment of the Future (22 Feb.): Artists' involvement, social and economic change, public environment.

Arnold Berleant, Billy Klüver, Edmund N. Bacon, Gyorgy Kepes, James R. Johnson, Curtis L. Carter, Hilde S. Hein, Rolf-Dieter Herrmann.

Where to Live? Policy Implications of Research on Habitat (23 Feb.): Are cities economic, Japanese economic growth, life styles health indicators, urban poor.

Irene Tinker, Priscilla Reining, S. Fred Singer, John W. Bennett, Nicholas Raymond, John P. Eberhard, Clark C. Abt, George J. Beier.

The Geography of Economic Development (23 Feb.): Agricultural development, vermin, population explosion, East Africa, Green Revolution, India.

Geoffrey Bannister, Lakshman S. Yapa, Philip W. Porter, Emilio Casetti, Leonard Berry.

Telecommunication, Transportation, and urban development (24 Feb.): Substitutions for travel, urban growth, alternatives.

Jack M. Nilles, Richard C. Harkness, Jerry D. Ward, A. Quincy Jones.

E. Energy

The Optimal Use of Nonreplenishable Energy Resources (18 Feb.):

Michael D. Yokell, Oscar Burt, Kai Lee, James McCrae, Lee Schipper, William Schulze.

Energy Policy and the Future of Nuclear Power: Assessing Alternatives and Evaluating the Debate (19-20 Feb.): Price demand, efficiency growth, petroleum, natural gas, coal, nuclear power, energy policy.

Benjamin S. Cooper, Richard A. Scribner, Jack F. O'Leary, Duane Chapman, Morris A. Adelman, Vincent McKelvey, Arlon R. Tussing, Harry Perry, David J. Rose, Ernst R. Habicht, Harvey Brooks, Victor Glinsky, Lelan Sillin, Jr., Daniel Ford, Irvin Buff, George E. Brown, Jr., Claire Nader, Robert Gillette, John McCarthy, Elizabeth Peelle, Paul Tsongas, Jon M. Veigel.

Solar Energy: An Interdisciplinary Societal Opportunity (21 Feb.): Congressional perspectives, ERDA, electric utilities, economic perspective, NSF, legal aspects, solar technology.

Ronal W. Larson, Mike McCormack, John Teem, Piet Bos, Nicholas Georgescu-Roegen, Larry Rosenberg, William Thomas, Joan Berkowitz, Michael Noland.

The Alaska Pipeline (22 Feb.): Technical aspects, social and economic effects, corporate view, historical perspective.

Robert W. Hiatt, Keith B. Mather, George W. Rogers, Ralph Miglaccio, Ernst W. Mueller, David T. Kresge, John Sackett, Claus M. Naske.

Exploration for Hydrocarbons (23 Feb.): Geophysical, geological, offshore technology and effects, onshore effects.

Franklyn K. Levin, J. R. Jackson, Jr., A. M. Olander, Robert Sheriff, M. Gordon Frey, Norman Bellinger, Edward W. Mertens.

Oil from the Oceans: Premises and Prospects (23 Feb.): Planning and regulation, geological, geochemistry, oil pollution, industry interactions.

Susan B. Peterson, James M. Friedman, David A. Ross, John W. Farrington, Leah J. Smith.

Environmental Impact of Coal Mining and Conversion, Northern Great Plains (24 Feb.): Resource base, human health effects, coal conversion, social impacts, water availability.

Arnold J. Silverman, John Van Derwalker, Carl M. Shy, Clarence C. Gordon, Raymond L. Gold, Robert Anderson, Richard G. Stroup.

Case Studies in Regional Energy Planning (24 Feb.): Conservation versus exploitation, community involvement, Southwest, Minnesota, New England, interregional cooperation.

William A. Blanpied, Richard H. Bolt, Charles P. Eddy, Jeffrey Kirsch, Eileen Grevey, Philip W. Getts, Peter B. Clark, Donald E. Cunningham.

F. Science and Technology Implications

Putting Science to Work Through University-Industry Interaction (18 Feb.): College-industry partnerships, needs and resources, future innovators.

John C. Johnson, Warren J. Baker, Thomas W. Butler, Y. T. Li.

Vernaculars of Peace: Exploring Levels of Communication of Foreign Policy (19 Feb.): Social science, peace activist and official's perspective.

Grant G. Hilliker, James N. Rosenau, Alan Geyer, Charles W. Bray III.

Paths into the Future: The United States as a Force for War and Peace After Vietnam (19 Feb.): Food for peace, foreign policy, toward an end to war.

Davis B. Bobrow, Cheryl J. Christensen, Craig Liske, Robert Pickus, Warren R. Phillips.

Science and Social Risk (20 Feb.): Earthquake damage and prediction, nuclear material safeguards, stratosperic ozone, toxic metals, hurricanes.

Bruce A. Bolt, Robert V. Whitman, J. Eugene Haas, Dennis Mileti, Julia Mewes, Carl A. Bennett, F. Sherwood Rowland, Bobbie C. Wixson, Neil L. Frank.

Impact of Operations Research on Industrial Management (20 Feb.): Science of managing, industrial practice, social and technological policy.

Burton V. Dean, George K. Chacko, Andrew Vazsonyi, David B. Hertz.

Research for the People (21 Feb.): Giant corporations, nuclear reactor safety, preventing ill health, food additives, molecular genetics.

Jonathan King, Greg Williams, Henry Kendall, Anita Johnson, Michael Jacobsen, Harry Meade.

Man-Computer Relations: What Will They Be? (22 Feb.): Automatic speech, computer programming, offices, home terminals, brain-computer hookups.

John D. Gould, William A. Woods, Patricia Goldberg, Jerry I. Elkind, John McCarthy, Adam Reed.

The Perishing Publishing Prospect for Scientific Authors (22 Feb.): Scientific journals, citation outlook, technological innovation scientific communication, electronic alternatives.

Harold F. Osborne, Melvin S. Day, Robert A. Day, Robert A. Harte, Ben H. Weil, Seldon W. Terrant, Harold E. Bamford.

America: The First Information Society (23 Feb.): Information sector, information as a commodity, location decisions, productivity, international trade, market aspects, mass production.

Paul Polishuk, Edwin B. Parker, Marc U. Porat, Anthony G. Oettinger, Yale Braunstein, Herbert Dordick, Frank Bernstein, Vincent Giuliano, Lawrence Darby, Robert Fano.

The Engineering of Public Safety: Protect or Perish (24 Feb.): Fire safety, research, government, materials producers, fire services, consumer product safety, public policy, engineering, industrial and consumer problems.

F. Karl Willenbrock, John W. Lyons, David A. Lucht, Charles E. Peck, George Paul, R. David Pittle, Jacob Rabinow, Richard H. Goodemote, David A. Swankin.

G. Science and Technology Policy

Science and the Limitations of Decision Technology (18 Feb.): Information, fast breeder reactor, intertemporal bias, stratosphere.

Ernst R. Habicht, Jr., Helen Hill Updike, Kenneth J. Arrow, Roger G. Noll, Thomas B. Cochran, R. Talbot Page, John Firor.

The Uses of Social Science for Social Policy (19 Feb.): Financing of academic social research, disciplinary tunnel vision, tactical and strategic problems, institutional change or control.

Joseph H. Helfgot, Michael Useem, Kirsten A. Gronbjerg, David P. Street, Josephy Schwartz.

Can Science Be Measured? Problems in the Use of Science Indicators (19 Feb.): Historiography of science, Soviet use, science policy.

Arnold W. Thackray, Harriet Zuckerman, Yasha Rabkin, Harvey Brooks, Stefan Dupre.

The Effect of Government Antitrust Action and Regulation on Technological Innovation: The Issues (20 Feb.):

Richard N. Foster, Frederic M. Scherer, Morris Tanenbaum, Eugene V. Rostow, Jesse W. Markham.

Science Technology, and Society: A Field of Study (20 Feb.): Academic activities.

Ezra D. Heitowit, Eugene B. Skolnikoff, Ian G. Barbour, Don E. Kash, Joseph S. Szyliowicz.

Policy Implementation (21 Feb.): The President, policy analysis in government, regulations and implementation, bureaucracy, policy research.

William Gorham, Erwin C. Hargrove, Richard E. Neustadt, Laurence E. Lynn, Jr., Jeffrey L. Pressman, Mark Moore.

Philosophy of Technology: Methodological Guidelines (21 Feb.): Popperian-critical, engineer-philosopher's, systems, and analytical approach.

Paul T. Durbin, Joseph Agassi, Stanley Carpenter, Robert McGinn, Joseph Margolis.

Research-Based Science Policy (22 Feb.): Researcher-advisor-decision-maker, research innovation, legal logic, advisory and advocacy.

William H. Gruber, James M. Utterback, Richard I. Miller, Albert H. Teich, J. Herbert Hollomon, T. Dixon Long, Harvey M. Sapolsky.

Roles for Scientists and Engineers in Congressional Energy Policy-Making (22 Feb.): Legislation, pricing and regulation, technology assessment, solar energy, nuclear proliferation.

Richard A. Scribner, William R. Moomaw, John P. Andelin, E. Kevin Cornell, Jon M. Veigel, Charles P. Wolf, David W. Hafemeister, Anthony L. Rigas, Harold Rosenbaum, John H. Young, Ernest W. Johnson.

Evaluating Federal R&D Policy (23 Feb.): Effectiveness, science indicators, GAO's efforts, OTA's program, congressional oversight.

John M. Logsdon, Michael Michaelis, Robert Brainard, Morton Myers, Ellis Mottur, Ray Thornton, W. Henry Lambright, Robert Koontz.

Social Utility Measurements for Technological Endeavors (23 Feb.): Energy balance, information seeking, measures for education, bounding the problem, overhauling the profession.

Joseph G. Wohl, John F. O'Leary, Thomas B. Sheridan, James D. Palmer, John N. Warfield, F. Karl Willenbrock.

Science and the State Legislative Processs (24 Feb.): Privacy, computer technology, public policy, oil refinery site, air pollution standards.

Frederick C. Nelson, Thomas J. Anderson, Chester Atkins, Seville Chapman, John H. Sununu, Irving S. Bengelsdorf, Richard H. Bolt, Edward L. Helminski, Edward T. Kelly, Thomas H. D. Mahoney, Ronald J. Philips, Irwin Feller.