AAAS Annual Meeting

New York, 24–29 May 1984

Science, Engineering, Technology, Education: Toward a World Perspective

Preliminary Program

Public Lectures

Keynote Address (24 May, 8:30 p.m., New York Hilton).
JOHN R. OPEL *(Chairman of the Board, International Business Machines Corporation).*

Toward a More Informed Electorate (25 May, 1:30 p.m., Sheraton Centre).
ELLEN V. FUTTER *(President, Barnard College).*

Topic to be announced (25 May, 8:30 p.m., New York Hilton).
WILLIAM D. RUCKELSHAUS *(Administrator, Environmental Protection Agency).*

Phi Beta Kappa Lecture: Science and the New Objectivity (26 May, 1:30 p.m., Sheraton Centre).
STEPHEN TOULMIN *(Committee on Social Thought, University of Chicago).*

The Age of Imperceptibility: A Challenge for Engineers and Scientists (26 May, 8:30 p.m., New York Hilton).
RICHARD J. GOWEN *(President, Institute for Electrical and Electronics Engineers).*

George Sarton Memorial Lecture: The Historian's Calling in the Age of Science (27 May, 1:30 p.m., Sheraton Centre).
ARNOLD THACKRAY *(Center for Advanced Study in the Behavioral Sciences).*

AAAS Presidents' Lectures (27 May, 8:30 p.m., New York Hilton):

Scientific, Engineering, and Technological Knowledge and the Resolution of Societal Issues.
ANNA J. HARRISON *(President, AAAS; Professor Emeritus of Chemistry, Mount Holyoke College).*

Science in a World Transformed.
DAVID A. HAMBURG *(President-Elect, AAAS; President, Carnegie Corporation of New York).*

The Population Factor in Africa's Development Dilemma (28 May, 1:30 p.m., Sheraton Centre).
FRED T. SAI *(Professor of Community Health, University of Ghana Medical School).*

Politics, Scientists, and Truth: Reflections on a Fissionable Relationship (28 May, 8:30 p.m., New York Hilton). MCGEORGE BUNDY *(Professor of History, New York University).*

Hotel Codes: H = New York Hilton
S = Sheraton Centre

Youth Symposium

Annual Youth Symposium (24 May, H).

1. General Interest

The Process of Becoming a Scientist (25 May, H): Value commitments, policy making, historical setting, global network, modern alchemy.

Science in China's Past: Recent Discoveries (25 May, H): Archaeological metallurgy, history, archeoastronomy, ancient medicine, contemporary medical school.

Science at the Cutting Edge: Europe and America (26 May, H): Particle physics, Euratom fusion programme, US fusion research, complexity, immunology, outlook, policy.

The Frontiers of the Natural Sciences (27 May, H): Extragalactic violence, macromolecular chemistry, nuclear astrophysics, orbital variations, biomechanics, mathematics in physiology.

Frontiers of the Social Sciences: The Interface with Biology (28 May, H): Biopolitics, memory trace circuits, mediation, behavioral medicine, culture, biology, psychosocial growth.

Science and Technology for Economic Development (28 May, H): Developing countries, technological change and impact, African perspective, world economic growth.

The Edges of Science (29 May, H): Parapsychology, extraterrestrial intelligence, ancient and future migration, properties and null hypothesis of UFO phenomenon.

2. Physical Sciences

Frontiers of Chemistry: New Excitement, New Challenges (25 May, H): Manipulating molecules, analytical chemistry, organic synthesis, catalysis, semiconductor electrodes, horizons for chemical applications.

Neutrons in Science and Technology (26 May, H): Low-energy neutrons, diffraction, molecular biology, scattering, condensed matter, technical applications, facilities.

Order in Chaos (26 May, H): Parameters, pattern formation, scale invariance, universality, computer simulation, rotating fluids, physiological systems, atomic physics, chaos in the molecular world.

Chemically Solvable Problems (27 May, H): Platinum anticancer drugs, boron-10–labeled antibodies, cancer therapy, imaging agents, diagnostic medicine, artifact tracing, cultural heritage in stone.

How Stars Are Born (27 May, H): Star-forming cloud complexes, prestellar condensations, luminous stars, sunlike stars, IRAS observations, early stellar evolution.

The Very Early Universe (27 May, H): Unified theories, proton decay, inflationary universe, Big Bang.

Chemistry Is Fun! (27 May, H): Communicating through demonstrations, science and abstract art, an exercise in geometry.

Science for the Naked Eye; Or, The Physics of Everyday Experience, XI (28 May, H): Computer games, Brooklyn Bridge, science fiction, cuisine, archaeology from airplanes and satellites, biofeedback, behavioral medicine.

Plasmas: Deep Space, Near Space, and Fusion Reactors (29 May, H): Interstellar medium, intergalactic astrophysics, pulsar plasmas, solar system physics, solar photosphere and chromosphere, fusion plasmas.

Hierarchy Theory and Cross-Fertilization Across Disciplinary Boundaries: Can General Theory Inform Empirical Testing, and Vice-Versa? (29 May, H): Inhomogeneity in cosmology, temporal scaling, statistical mechanics, field theory, phase states, hypercycles, chemical disequilibria, cross-level hypotheses.

3. Earth and Planetary Sciences

Offshore Hard Mineral Resources: New Potential for the United States (25 May, H): Continental Shelf, hydrothermal deposits, ferromanganese and sulfide deposits, economics, ocean policy, environmental issues, soft law.

Plate Tectonics and Biogeography (25 May, H): 19th century geological theory, Alfred Wallace, Continental Drift, bird migration, fossil record, future of biogeography.

Moving Industry Into Space (25–26 May, S): Space policy, corporate initiatives, independent space projects.

Geology and Your Vacation (27 May, H): Caribbean, spelunking, solution topography, mineral spas, rivers, mountains.

El Niño and the Southern Oscillation (27 May, H): Atmospheric and oceanographic aspects, national and international research programs.

Agricultural Production in Anomalous Weather Conditions (28 May, H): Agribusiness response, crop insurance, crop production disasters, state-level reaction, planning, effects.

Is the Earth's Biota an Important Contributor to the Increase in CO_2 in the Atmosphere? (28 May, H): Physiological and ecological controls, biomass, tropical and temperate land-use change, the global carbon cycle.

Long-Run Climatic Change and Impact Research (29 May, H): CO_2 economic control, water availability in Western US, policy perspective, empirical verification, insect and plant diseases.

The Sources of Radiatively Important Trace Species (29 May, H): Man-made and natural gases, anthropogenic perturbations, global atmospheric nitrous oxide, tropospheric ozone, carbon black, sulfate, soot, winter Arctic aerosol.

4. Engineering, Technology, and Energy

Photobiological Hydrogen Production (25 May, S): Water splitting, bioenergetics, marine cyanobacteria, mutant photosynthetic bacteria, light and dark production.

Smoke, Fire, and Safety (25 May, S): Smoke control systems, history, design, computer simulation of fire.

State Energy Policies: Current Status, Future Directions (25 May, S): Evolving conservation programs, political realities, performance measurement, unmet needs, vision, appropriate state and federal roles.

Energy Transport Alternatives (26 May, S): Rail, coal slurry, electricity, pipeline, political factors in energy transport.

From Clay to Ceramics: An Exercise in Physics, Technology, and Art (26 May, S): Physics, uses, and the origin of life with clay, ceramics in prehistory, new visions in art.

World Energy: How Much Is Enough and Where Will We Get It? (27 May, S): Development-oriented strategies, developing countries, end-use strategy, industrialized countries, CESP, Tanzania.

Science and Music: Musician-Inventors (27 May, H): History, technological adaptation, new music and instruments, string, percussion, electronic keyboard, computer programming languages.

The Politics and Technology of Large-Scale Projects: Lessons from Recent Experience in the United States and Abroad (29 May, S): Infrastructure projects, community organization and roles, Westway and Niagara Power expansion, mediated development strategies, New York teleport, Delaware Bay deepdraft port, large-scale hydroelectric projects, Brazilian politics.

5. Computing and Information

Pattern Recognition Using Intelligent Robots (25 May, S): Pattern recognition problems, robot vision, talking and industrial intelligent robots.

Journeys into Higher Dimensions: Graphics in Mathematics, Statistics, and Perception (25 May, S): Fourth dimension, data analysis, volumetric 3-D displays, computer graphics.

The Implications of Advances in Worldwide Telecommunications (26 May, S): World business, role of satellites, lightwaves, international regulation, global policies.

Nearly Optimal Solutions in Linear Programming: Mathematical Issues and Implications for Applied Research (26 May, S): Algorithmic issues, computation, theoretical aspects of multiple and near-optima, water resource planning, economics of agricultural management.

Advances in Computer and Information Systems (26 May, S): Tracking, research issues, legislation, court decisions, manufacturing, industrial strategies to support education.

Cryptography and Number-Theoretic Algorithms (26 May, S): Public key cryptosystems, decline and fall of Knapsack, factoring and security of RSA.

Information Technology for Emergency Management (27 May, S): Potentials, team approach, chemical response, microsystem applications.

Supercomputer: Its Mathematics and Technology (27 May, S): Special-purpose supercomputers, architectural synergism in HEP, parallel computers, computational complexities.

Improving International Crisis Management: The Role of Technology (27 May, S): Past lessons, information technology, US and Soviet communication.

Plans and Developments in Scientific Supercomputing (28 May, S): National plans and developments, critical aspects of supercomputing environment.

Information Theory (28 May, S): Theoretical underpinnings, error-correcting codes, sphere packing, detection and estimation theory, new directions, influence of theory.

Exchange of Science, Engineering, and Technology Information in the World Community (29 May, S): Future patterns; networks; information services, transfer, and exchange.

The Social Impact of High Technologies: Microcomputer Technology in New Social Environments (29 May, H): Electronic communities, telecommuting, personal computers, expansion of information inequities.

6. Biological Sciences

Problems in Contemporary Evolutionary Theory (25 May, H): Molecular drive, historical biology, biotic diversification, integration and needs of theory.

Punctuated Equilibria versus Gradualism: Political Implications (25 May, H): Adaptationist and functionalist excesses, evolution, history, political theory, biological rates of change, application in social sciences.

Fossils, Genes, and Time: Paleontological versus Macromolecular Approaches to the Study of Higher Primate Phylogeny (26 May, H): Major anthropoid group indications, biochemical techniques, New World monkey lineage divergence, theory competition, alternative methodology, mathematical methods for reduction of molecular data.

Transposable Elements: From Prokaryotes to Plants (26 May, H): In Honor of Barbara McClintock. Controlling elements in maize, gene regulation and cellular differentiation in yeast, DNA transposition, *Drosophila* eggshell.

New Directions in Evolutionary Epistemology (27 May, H): Cultural evolutionary epistemology, genotype/phenotype model, technology, cosmic evolution, nutritional origins, the mind/body problem.

Genetics of Marine Invertebrates (27 May, H): Enzyme polymorphism, marine copepod, genetic structure of populations, enzyme and genetic heterozygosity, bioenergetics.

Hormonal Control of Cardiovascular Functions: Evolutionary Aspects (28 May, H): Circulating catecholamines, reninangiotensin system, neurohypophyseal hormones, parathyroid hormone, prostaglandins in poikilotherms.

Aging of Cholinergic Pathways in the Nervous System (28 May, H): Cholinergic function, neuromuscular junction, acetylcholine metabolism, neurotransmitters and receptors, Alzheimer's disease, dietary modification, acetylcholine release.

7. Biological Sciences: Ecology

Dams: Considerations for Future Water Management (25 May, H): Safety, incidents, hydrologic forecasting, unified operation in divided basin, alternatives to traditional water development.

The Significance of Prokaryotic and Eukaryotic Microbes in Planktonic Food Webs (26 May, H): Microheterotrophs, chemotrophic bacteria, picoplankton, photosynthetic prokaryotes and eukaryotes, unicellular cyanobacteria, heterotrophic microflagellates, unseen eukaryotes.

The New York Bight and its Estuarine Ecosystems: State of Health (26 May, H): PCB transport, *Glugea stephani*, pathogenic protozoa in oceanic sediments, chromosome mutation, effects of contaminants.

Organic Matter and Nutrient Cycling in Semiarid Ecosystems (27 May, H): "Plowout", management strategies and effects on Great Plain soils, transformation dynamics, synthesis framework.

Tropical Rain Forests and World Atmosphere (27 May, H): Moist forest depletion, recent dry period effect on Malesian Rain Forest, Amazon rainfall, deforestation, carbon cycle.

Lake Ecology, Lake Management: The New Perspective (27 May, H): Cleaning Irondequoit Bay, practical applications in diverse lakes, Lake Ontario observations, general concept for lakes and reservoirs, importance of biological structure.

Ruminant Animal Production on Semiarid Lands of China (27 May, H): Livestock productivity, grazing management in Africa and South America, changing land tenure, nutritional constraints, current research and support needed.

The Importance of the Sea-Surface Microlayer (28 May, H): Metals, organic materials, sea-air interface, microbial activity, phytoneuston, zooneuston.

Variability and Management of Large Marine Ecosystems (LMEs) (28–29 May, H): Resource populations, Baltic, California current, Continental Shelf, mesoscale perturbations, environmental, Bering Sea, time-series, North Sea, measurements and sampling, legal constraints, optimum yield, cost benefit, Antarctic, goal setting.

8. Environmental Issues

Environmental Effects on Reproductive Outcome (25 May, H): Fetal alcohol syndrome, Navajo births, Shiprock, uranium mining, atomic bombs, radiation.

Health Effects of Industrial Waste Sites (25 May, H): Data requirements, valid evaluations, risk correlates, impact assessment, hazardous wastes, victim compensation, research needs, toxic substances, agency protocol.

Nuclear Power Station Safety: New Evaluations Since Three Mile Island (26 May, H): Safety design, accident experience and assumptions, national and international R&D programs, health effects, siting and emergency procedures.

Indoor Air Quality: Methods of Evaluation and Control (26 May, H): Public health, active and passive monitoring, organic compounds, solutions for buildings, preventative and predictive methods, energy use.

Uncertainty in the Law and Science of Health Risk Assessment (28 May, H): Toxicant-related injuries, preponderance test, victim compensation, apportionment, lung cancer, asbestos, risk perception, judicial review.

Pollution Tolerance: Who, What, Where, When, and How (29 May, H): Organic xenobiotic metabolism, marine animals,

PCB resistance, phytoplankton populations, mercury, metal, zinc tolerance.

9. Medical Sciences and Health Care

Decision Making for Catastrophically Ill Newborns: Social and Political Issues in the Use of Technology (25 May, H): Neonatal intensive care units, President's Commission on ethics, biomedical and behavioral research, federal response, parental power, life and death decisions, rights and wrongs in care.

The Role of Diet in the Development of Cancer (25 May, H): Dietary fat, breast cancer risk, vitamin A, retinoids, fiber, large bowel cancer, prevention and therapy, recommendations, public awareness.

New Developments in Human Nutrition (26 May, H): Biochemical adaptation, vitamin, nutrient, and trace element metabolisms, obesity, trauma.

AIDS: Can Research be Mobilized in Response to a Health Crisis? (26 May, H): Cost-benefit, rebudgeting NIH research, domestic and international tracking, Health Emergencies Bill, short-term needs, public information.

The Chemistry of Folk Medicine (26 May, H): Plant antitumor agents, structure-activity, mechanisms, schistosomiasis, medicinal plants, Huasteco (Teenek) natives, oriental crude drugs, bioactive compounds and constituents.

Calcium and Bone Health (26 May, H): Inactivity, exercise, oral health, infants, teenage pregnancy, hormones, diet, calcium requirement, drug-calcium interactions.

Health Prospects for American Women (27 May, H): Cancer rates, cardiovascular disease, sex roles, mental health, risk factors, morbidity, mortality, Alameda County surveys, careers.

Fiscal Crisis and Health Policy (27 May, H): Teaching hospitals, competitive environment, geriatrics, public policies.

Molecular Targeting of Drugs (28 May, H): Polyene antibiotics, liposomal drug delivery system, toxins, antigens, ligand receptors, generic drugs, receptor immobilized drugs, monoclonal antibodies, chemotherapeutic agents, viral diseases, neoplasia, nucleic acid chemistry.

Use of Nonvirulent Bacteria to Inhibit Bacterial Infections (28 May, H): Urinary tract flora, large intestine, dental caries, juvenile periodontitis, pathophysiology of IPS, caries in rats, legal and ethical dimensions.

The Non-Collagenous Proteins and Other Macromolecules of Mineralized Tissues (29 May, H): Lipids, proteoglycans, growth plate cartilage, calicification, phosophoproteins, chicken bones, rat dentin, phosphophoryn-collagen interactions, osteocalcin, dental enamel.

10. Biomedical Technology

Mathematical Problems in Medical Imaging (25 May, H): CAT-Scanning, nuclear magnetic resonance, EM algorithm for PET, multiple dimensioning, pulse sequences.

Opportunities for International Scientific Cooperation in Bioresources and Biotechnology (26 May, H): Bioresource needs and constraints, UN-related biotechnology programs, North-South relationships, Interciencia Bioresources Program, African regional programs, Venezuela.

Recent Advances in Medical Genetics (26 May, H): Prenatal diagnosis and management, recombinant DNA technology, inborn errors, metabolism, neoplasia.

Capability Building in Biotechnology and Genetic Engineering by Developing Countries (26 May, H): R&D in developing countries, scale-up and bioscience-based industry, national policy.

Biotechnology: Its Impact on Genetic Sciences (27 May, H): Social construction, molecular biology, financial community, academe, Congressional perspectives.

Biotechnology: International Trade Considerations (27 May, H): Foreign targeting, national security, export regulations, international competitiveness, national science policy.

Biotechnologies to Unlock Resources of Arid Land Plants (28 May, H): Tissue culture propagation, salinity and drought resistance, mycorrhizal innoculation, plant performance, raw material sources, halophytes, crop opportunities.

Some Mathematical Questions in Biology: DNA Sequence Analysis (28 May, H): Mutation pressure, fixation probability, rate of evolution, pattern recognition, probability distributions, statistical problems, discrete mathematics.

Release of Genetically Engineered Organisms: Law, Science, and Politics (28 May, H): Congressional issues and perspectives, limit of scientists' role, legal and ethical issues.

Heterogeneous Populations and the Limits of Multivariate Statistics (29 May, H): Unobserved heterogeneity, birth intervals, childhood survival, chronic diseases, demographic uncertainty principle, the unisex issue.

Marine Biotechnology (29 May, H): Potential, molecular signals, genetic engineering, neurotransmitters, pigments, adhesion polymers, seaweed, fish, cloning, virulence determinants, pathogens.

11. Agriculture and Food

Dilemmas in US Agricultural Research Policy in the 1980s (25 May, H): Preserving, allocating, natural resources, social and behavioral science contributions, new institutional forms, institutional constraints.

Biological Control of Pests: Ecological and Economic Potential (25 May, H): Protocols, biocontrol agents, parasite-host associations, native pests, unorthodox practice, forestry, integrated pest management.

Agricultural Research Policy: Selected Issues (25 May, H): Decision making, prioritization, academic disciplines, scientific credibility, efficiency goals, public goals, natural resource conservation and management, equity.

Agriculture-Food Issues in an Ecology of Knowledge Perspective (25 May, H): Food production, regenerative agriculture, applied ecology, holism, expert systems.

Worldwide Food Production Potential (26 May, H): World soils, fertilizers, climate trends, water conservation, genetic engineering, plant breeding, animal productivity, integrated pest management, food storage, socioeconomics, capability enhancement, food-short areas, information and institutional needs, research, extension, schooling.

Our Knowledge Base for the 1985 Agricultural and Food Policy (26 May, H): Natural resource status, trade development, productivity, technology base, historical implications, agricultural science, education, policy.

Emerging Biotechnologies in Agriculture: Policies and Programs to Meet Future Needs (27 May, H): Research capability, public sector, education capability, manpower needs, university/industry relations, basic and contemporary research.

Biotechnology and the Socioeconomic Transformation of Agriculture (27 May, H): Plant variety protection, property institutions, public research, plant breeding, political biology, international public research sector, Third World, legal constraints and possibilities.

Agricultural Policy and the Small Farm Sector (28 May, H): US structural change, Portugal, crop/livestock interactions and production, tree crops, integrated pest management, nitrogen management, renewable resources, sustainable agriculture.

Agricultural Research: Approaches to the Integration of Socioeconomic Studies in Experimental Agricultural Research (29 May, H): Anthropology, social science contributions, Latin America, research design, integrated research.

Shortages of Agricultural Scientists: Scenario for the Future (29 May, H): Federal responsibilities, capacity, U.S. colleges and universities, Twenty-first century, industry perspective, projected needs.

12. Economics and Industry

Knockdown-Dragout on the Global Future (25 May, S): Future, forests, wildlife species, energy, physical factors, human welfare, methods.

Global Foresight Capability and Institutional Responses: Beyond Global Modeling (25 May, S): Trend identification, modeling, federal government and private business perspective, spontaneous order.

Comparative Methodologies of Assessing Industrial Technology and International Competitiveness (26 May, S): Office of Technology Assessment, US International Trade Commission, seven industrial sectors, generic approach, US Department of Commerce.

Creating the Science Base for Manufacturing Technology of the Twenty-first Century (26 May, S): New materials, artificial intelligence, expert systems, sensors and robotics, metrology, geometric modeling, computer-aided design and manufacturing.

High-Technology Management and Management of High Technology (27 May, S): Flexibility, simplicity, telecommunications, teleconferencing, innovation, organizational policy, distributed information, CAD/CAM systems.

The Bargaining Problem Revisited (27 May, S): Economics, rational decision models, contemporary solutions, binding, final-offer arbitration.

Modeling the Welfare State (28 May, S): MATH,TRIM, microsimulation models, US Congress, simulation analysis, unemployment insurance program, German federal taxes and welfare programs, Office of Income Security Policy.

Solutions for Entry-Level Scientists (SELS): Developing Employment Options in the 1980s (28 May, S): Constructive employment, oversupply, academe, national laboratories, strategies, options, grant support, federal policies, scientific manpower.

Can Game Theory Model Real-World Conflicts? (28 May, S): Deterrence, uncertainty, models, Canadian Constitutional Amending Formula, arms control, case study.

Moving Ideas and People: The Influence of Mobility of Scientists and Engineers on Industrial Innovation (28 May, S): Interorganization, manpower flows, job mobility, information exchange, Silicon Valley.

The Potential of Market Incentives in Managing the Commons (29 May, S): Simulation, transferable discharge permits, water pollution, political feasibility, property rights, tort rights, pollution control, economic incentives, EPA air quality programs, legislating.

Potential Legal Liability for Laboratory Safety Problems (29 May, H): Personal injury and products liability law, long-term exposure, toxic substances, case examples.

13. Sociology and Political Science

WORKSHOP: Usefulness of the Marxist Outlook in Science (24 May, S): Logic, internationalist understanding, human development, biotechnology, monopoly, Third World, organizing power, social sciences, Marxist Action Caucus.

Election Polling: Early and Last Minute (25 May, H): Newspaper reporting, public impact, political reporting and polls.

Technological Prospects and Population Trends (25 May, H): Contraceptive technology, fertility control, educational change, extending life expectancy, agricultural productivity.

The Oldest Old: Multidisciplinary Implications (26 May, H): Demographics, modeling, health status change, health and social issues, female longevity, visible costs, health care resources.

Technology and the City: Past, Present, and Future Federal Policies (26 May, H): NSF and HUD perspectives, strategies, capital facilities, urban infrastructure.

Gentrification: Alternative Explanations and Polar Policies (27 May, H): Politics, welfare impact, economic benefit streams, feminist perspective, Harlem.

General Systems Theory and the Analysis of Political Systems (28 May, S): World and computer-assisted models, war generating propensities, deterrence, political science, political party systems, testable hypotheses, Talcott Parsons, living systems theory, cross-fertilization.

The Ethnography of the Laboratory: What Scientists Really Do (28 May, H): Calibration, pilgrim's progress, physics.

The Urban Poor in Less Developed Countries: Policy Imperatives (29 May, H): Development, common traits in U.S. and abroad, sustenance, small industry, water supply, sanitation, housing, aid shelter programs.

Reassessing Personnel Supply and Demand in Scientific and Technical Occupations (29 May, H): Changing employment requirements, personnel requirements, labor market analysis, technology policy analyst.

14. Behavioral Sciences

Motor Development in Children (25 May, H): Action, pattern formation, stability, change, coordination, task constraints, leg movements, theoretical aspects.

Mental Health in Social Context (25 May, H): Socioeconomic status, working wives, crowding, isolation, social support, social class, schizophrenia, alternative models, life stress, psychopathology.

Brain Structure, Learning, and Memory (26 May, H): Cell biological analysis, associative and nonassociative learning, essential memory trace circuit, learned response, molecular economy, regenerating nerve cell, stochastic models, local and global factors, somatosensory cortex learning, artificial neurons.

Cognition, Computing, and Interaction: Human-Computer Systems (27 May, H): Information-processing framework, naming, indexing, finding information, basic lisp concepts, computer skill acquisition, interface design, mapping schemas, computer environments, plan acquisition.

New Thoughts About Teenagers' Contraceptive Behavior: Policy Implications (27 May, H): Age, behavior, Sweden, United States, ideal contraceptive, future, family planning programs.

Cognition, Computing, and Interaction: Models of Cooperation (27 May, H): Recordkeeping, clinical reality, cognitive change, misleading behavior, organizational issues, open systems, meta-level control architecture.

Is There a Substitute for Hearing? (28 May, H): Future, tactile devices, electrocutaneous sensory aids, cochlear implants, speech communication, Tadoma method.

Cognitive Development and Disciplinary Knowledge (28 May, H): Intuitive, pre-, and misconceptions; motion; physics; teacher assumptions; college biology; naïve knowledge; alternative frameworks; early number abilities; quantitative language; acquisition; number systems; naïve models.

The Polygraph Test: Detecting Deception in 1984 (29 May, H): Three polygraph tests, use, validity, criminal investigations, preemployment screening, the guilty knowledge test.

Psychological Testing and American Society: Historical Case Studies (29 May, H): Henry Herbert Goddard, intelligence testing, public schools, Lewis Terman, Alfred Binet, democratic ideal, Robert Yerkes.

15. Anthropology and Archaeology

Science and Religion: Renewed Dialogue in a Post-Modern, Post-Critical Culture (26 May, H): Creation/evolution, historical and social contexts, anthropic principle, constructive interaction.

The Cultural Selection of Risk (26 May, H): Institutional factors, workers, interest groups, activists, environmentalism, revitalization movements, agenda.

Credible Approaches to Nonexperimental Science (27 May, H): History, empiricism, inductive reasoning, philosophical examination, cross-cultural studies, child development, linguistics, communication, ethnography, Mead-Freeman controversy, astronomy, observation and deduction, paleoclimates, paleopathology, ethnoarcheology.

Evaluating the Impact of Foreign Aid: Policy and Program Implications (28 May, H): AID's program, institutional learning, international water projects, African food policy, user's view, case studies from Africa.

Science, Culture, and Ancient Technology in the Study of Archaeometallurgy (28 May, H): Ancient copper production, archaeological metal, potentials, pitfalls, ancient textual evidence, metalworking, ore sources, cultural implications.

Anthropology and the Emerging World Order: The Position of Small-Scale Autonomous Cultures in Latin America (29 May, H): Tribal cultures, Brazil, Yanomami, ethnic autonomy, military and political struggle, cultural and territorial autonomy, Nicaragua, Panama, political feasibility, tribal autonomy, Amazonia, environmental conservation.

Science, Art, and Archaeology, III (29 May, H): Neutron activation, limestone, halos, small proportional counters, radiocarbon dating, ancient glass, radioactive waste disposal.

Hard Decisions and Soft Data: Ethnography for Policy Makers (29 May, H): National housing experiment, private sector decisions, urban projects, two Latin American cities, BIA policy officials.

16. Science and Technology Education

WORKSHOP: Essentials for Clear Communications (24 May, S): Visual aids, sensory-impaired audience, effective interviews, hostile audiences.

Precollege Education in the Mathematical Sciences: New Goals and Content (25 May, H): Realities, opportunities, computer science, technology, modern applications, statistics and probability, exploring data, statistical activities.

Discrete Mathematics as a Rival to Calculus in the Core of Undergraduate Mathematics (25 May, H): Argument for change, importance of calculus, new courses, immediate needs, computer science, probability and statistics.

Increasing Participation in Science and Mathematics During the Precollege Years: Identifying the Barriers (26 May, H): Images of science, 1981–82 National Assessment, young women career decisions, technical professions, role perception, teacher/school attributes.

Turf Protection versus Excellence in Science and Mathematics Education (26 May, H): Crisis, cost and achievement effective, quality control, business, strategies, diagnosing, repairing, mechanisms, solutions, science research.

The Classroom Teacher's View of Recommendations to Improve Precollege Science Teaching (27 May, H): Significance, maximizing the potential, teacher perspective, educating Americans, 21st Century, administrators, achieving excellence.

Achievement in Science: The Second International Science Study (27 May, H): Results, science curricula, United States, implications, science education.

Science and Math Education for the Twenty-first Century (28 May, H): Looking back, "A Nation at Risk", national survival, reforms, midcareer projects, Project MESA, enrichment, students' intuition, alliance, the "Sky-Alive" Program.

Education for the Management of Large and Complex Systems (28 May, H): Technology venturing, new institutional arrangements, civilian programs, educational dilemma, economic consequences, political actions, macro-projects, Third World, complexity, the competitive imperative.

Student Learning and Problem Solving in the Sciences (29 May, H): Genetics, conceptual knowledge, heuristics, algorithms, physics, chemistry, moles, cognitive style, microcomputer applications, information science.

Young Scientists, Education, and Responsibility: A Dialogue (29 May, H): Questioning costs, barriers, student involvement, science, technology, society, trends, engineering, stress, social responsibility.

Politics of Science Education (29 May, H): Science or technological literacy, economy, congressional legislative action.

17. Public Understanding and Ethics

WORKSHOP: Scientists and Human Rights: Present and Future Directions (24 May, S): Soviet Union, Eastern bloc, scientific societies, Latin America, Asia, Africa, case study, psychiatric abuse, international arena, mechanisms, American states, communications, UNESCO, urgent action, correspondent network.

Ethics in Human Research: Past, Present, and Future (25 May, H): Balancing interests, 1984 research, cheating, reflections, law, ISRA experience, pursuit of principles, self-regulation, social control.

Risk, Responsibility, and the Mass Media (25 May, H): Perception, communicating information, coverage, scaring or informing the public.

Openness and Secrecy in Scientific Communication (25 May, H): Origins, agreements, exchanges, biological materials, biotechnology, implications, financing and control, research.

The Press of Science and Technology: What Message from the Media? (25 May, H): Corporate funding, university research, nuclear power.

Whistleblowing Examined: Recent Research on Dissent in Corporate and Government Employment (26 May, H): Out-of-channels, overheads, incidents, role of law, protection, dis-

pute resolution, bureaucratic ethos, dissent, encouraging mechanisms, federal agencies, strategic analysis, federal employees.

The Role of the Forensic Sciences in the Documentation of Human Rights Abuses (27 May, H): Methodology, anthropology, skeletal evidence, odontology, autopsies, missions, ancestry, genetic observations.

Engineering Ethics: In Classroom, Job, and Profession (27 May, H): Uniform code, regulated industries, curricula.

Increasing Public Understanding of Science and Technology (28 May, H): 3-2-1 contact, 8-12 year olds, audiences, television programming, newspaper reporting, magazines, information in Europe, new information, teachers, interacting, communities, development and measurement, museum audiences and programs.

Congress, Science, and Scientists (29 May, S): Representative's perspective, changing role, issues, policy making, functions, achievements, limitations, science and engineering fellows.

Evolution, Morality, and the Meaning of Life (29 May, H): Sociobiologist's, biologist's, philosopher's view; religion.

18. Science and Technology Policy

WORKSHOP: STS: A Tutorial Session on Optimum Technologies (24 May, S): Public health, regenerative agriculture, export, less developed world, biotechnologies, guiding choices, scientific research.

The Impact of Women on International Development (25 May, H): Gender inequality, Philippine women scientists, media use, development process, Third World women in US, issues.

Science and Technology for International Development: Multilateral Institutions (26 May, S): United Nations system, US policies, multilateral aid, S and T cooperation, the World Bank, European perspective.

Biological Research and Military Policy (26 May, S): Recent developments, biological weapons, implications, CBW Policy I and II, improvements, Biological Weapons and Warfare Conventions, international law.

Science and UNESCO: The Impact of United States Withdrawal (27 May, H): UNESCO and world climate, manpower training, field programs and development, priority-setting, nongovernmental organizations.

The Role of Federal Laboratories: Toward a New National Policy? (27 May, S): Policy analysis, White House Science Council, DOE multiprogram laboratory study, laboratory director perspective, issues, legislative action.

Funding and Knowledge Growth (27 May, H): Temporal patterns, reproductive physiology, nonhuman primates, friend virus research, science mapping, research planning.

Coming Soon

Tours and Special Events: The 16 March issue of *Science* will list 20 tours and other special events, arranged by the New York Advisory Committee for Annual Meeting registrants.

Preconvention Program: The 30 March issue of *Science* will feature expanded symposium listings (including names of speakers), exhibit and poster session schedules, the Science Film Festival, and more.

Scientific Research in Africa (27 May, S): Technology, national development, future horizons, African research institutes, universities, Nigerian experience, scientific societies, case study, international and intra-African cooperation, soapberry plant endod.

Peer Review and Public Policy (28 May, H): Proposals, consensus development process, science by fiat, NAS Risk Assessment Report, rhetoric, regulatory domain, the national toxicology program.

What Limitations on Professorial Relations with Industry (28 May, S): Criteria, participation, recent trends, actions.

Strategic Planning for University-Industry Interaction on Research (28 May, S): Business concepts, entrepreneurship, insights, utilization, phantom central research facility, interactions, General Electric.

Science and Crisis in Central America (28 May, S): Guatemala, development, technology, El Salvador, revolution, integrated pest management, Nicaragua, social and political transformation, agricultural technology, Costa Rica.

Knowledge Transfer Through Patenting: Issues in University Participation in the Marketplace (29 May, H): Inventions, academic research, indicators, output, commercialization, patent policy, role in society, PL 96-517.

Outlook for R&D in the FY 1985 Budget (29 May, S): Overview, OMB, Capitol Hill and industrial perspectives, impacts, academic community.

The Climate for Private Sector Innovation: Have Government Policies Helped? (29 May, H): Investment, limited partnerships, R&D; university/industry interactions, joint R&D and antitrust laws.

19. Arms Control and National Security

New Perspectives on the Prevention of Nuclear War (25 May, S): Professionals, special responsibilities, complexity, coupling, catastrophe, psychology contributions, political theory, national security policy, arms control.

Problems and Techniques of Cross-Cultural Negotiations from Research and Practitioner Perspectives (25 May, S): Practical considerations, culture conflict, security negotiations, US, USSR, Contadora approach, Central American crisis, tensions, conflicting ambitions, Middle East peace, nonaligned, obstructors to negotiation.

Nuclear Arms Control: Assessing the Current Proposals and Negotiations (26 May, S): Intermediate force issues, defense of Europe, security issues.

Implications of the Ability to Deliver Munitions with Accuracy (27 May, S): Conventional arms, high accuracy, limited nuclear war, dangerous trend.

Verification Issues in Arms Control, Two Cases: Cruise Missiles and Fissionable Material (27 May, S) Technology, strategy, politics, ban feasibility, weapon material, production.

Space and International Security (28 May, S): United States, USSR, use of space, military activities, congressional viewpoint, current treaties, future possibilities, arms control.

Science, Technology, and the Arms Race (29 May, S): Weapons laboratory, space-based weapons, defensive missile shield, role of technology, strategic policy, public policy, chemical weapons.

Long-Term Environmental and Biological Consequences of Nuclear War: Does It Matter? (29 May, H): Smoke, dust, radioactivity, explosions, climatic effects, emission scenarios, agricultural and biological impacts, military implications, reactions, noncombatant nations, nuclear winter scenario.

Meeting Information

This year's Annual Meeting activities will take place in two hotels that are located within one city block of each other.

New York Hilton (H), Avenue of the Americas (6th Avenue) at 53rd Street: Public lectures (evening) and symposia; business meetings and social functions; registration, information, and ticket desks; resource rooms for disabled and for minority registrants; Science Film Festival; newsroom, speakers' room, and employment information.

Sheraton Centre (S), 7th Avenue at 52nd Street: Public lectures (midday), symposia, and workshops; exhibits and poster sessions (contributed papers); business meetings and social functions.

Hotel Reservations

The AAAS has reserved hotel rooms at special reduced rates at the New York Hilton and the Sheraton Centre hotels. **These reduced rates are guaranteed only when reservations are made through the AAAS Housing Department before 1 May 1984.** Please read and fill out carefully the hotel reservation form on page 1064 in this issue. Room assignments will be delayed if any information is omitted from the form. The Housing Department cannot accept reservations by telephone.

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

Advance Registration

Registration categories and applicable fees are listed on the advance registration form on page 1065 in this issue.

Register in advance; you will save money and avoid standing in line at the on-site registration desk. You can charge the registration fee to your VISA or MasterCard.

On-site registration fees will be higher: AAAS members, $46 (with spouse, $63); non-members, $58 (with spouse, $75); student or emeritus, $27 (with spouse, $44).

Advance registrants, please note: In mid-April, we will mail to you an expanded preconvention program, your badge and registration receipt together with a voucher for your registration packet. Present the voucher at the Advance Registrants' desk in the New York Hilton (Promenade, second floor) to receive the program book, condensed program (foldout), and abstracts volume. The registration area will be open during the following hours:

Thursday, 24 May	12 noon–6:00 p.m.
Friday through Monday, 25–28 May	8:00 a.m.–6:00 p.m.
Tuesday, 29 May	8:00 a.m.–12 noon

Registration Refunds

The AAAS will refund advance registration fees for all cancellations received by letter or telegram before 18 May 1984. **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 Deductions for Educational Expenses

U.S. Treasury regulation §1.162-5 allows an income tax deduction for educational expenses (registration fees, 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 that leads to a degree.

Resources for Disabled Registrants

The AAAS, in cooperation with the New York 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 the Resource Room located in the New York Hilton Hotel: transportation to and from airports, train stations, 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 Avenue, NW, Washington, D.C. 20036 (telephone, 202/467-4497).*

Child Care

Gilbert Child Care (212/744-6770) will provide babysitting or companion care services at the rates listed below plus sitter's transportation cost (before 8:00 p.m., $2; after 8:00 p.m., $4):

Infant to 2 months	$6.00/hr. (4 hrs. min.)
2 months to 9 months	$5.10/hr. (4 hrs. min.)
9 months and up	$4.25/hr. (4 hrs. min.)

The agency accepts calls Mondays through Fridays between 9:00 a.m. and 5:00 p.m. and requests 24 hours advance notice. Since the Annual Meeting extends over the Memorial Day weekend, it is recommended that parents complete child-care arrangements well before the weekend.

Parking

The New York Convention and Visitors Bureau recommends that visitors do not bring their cars into the city. Parking space in midtown Manhattan is scarce and, when available, very expensive. We encourage those who live within driving distance of New York City to travel by train or bus and use public transportation while in the city.

Air Travel to New York

The AAAS has arranged with Delta Air Lines and United Airlines to make special discount air fares available to those attending the Annual Meeting. For details, see page 1063 in this issue.