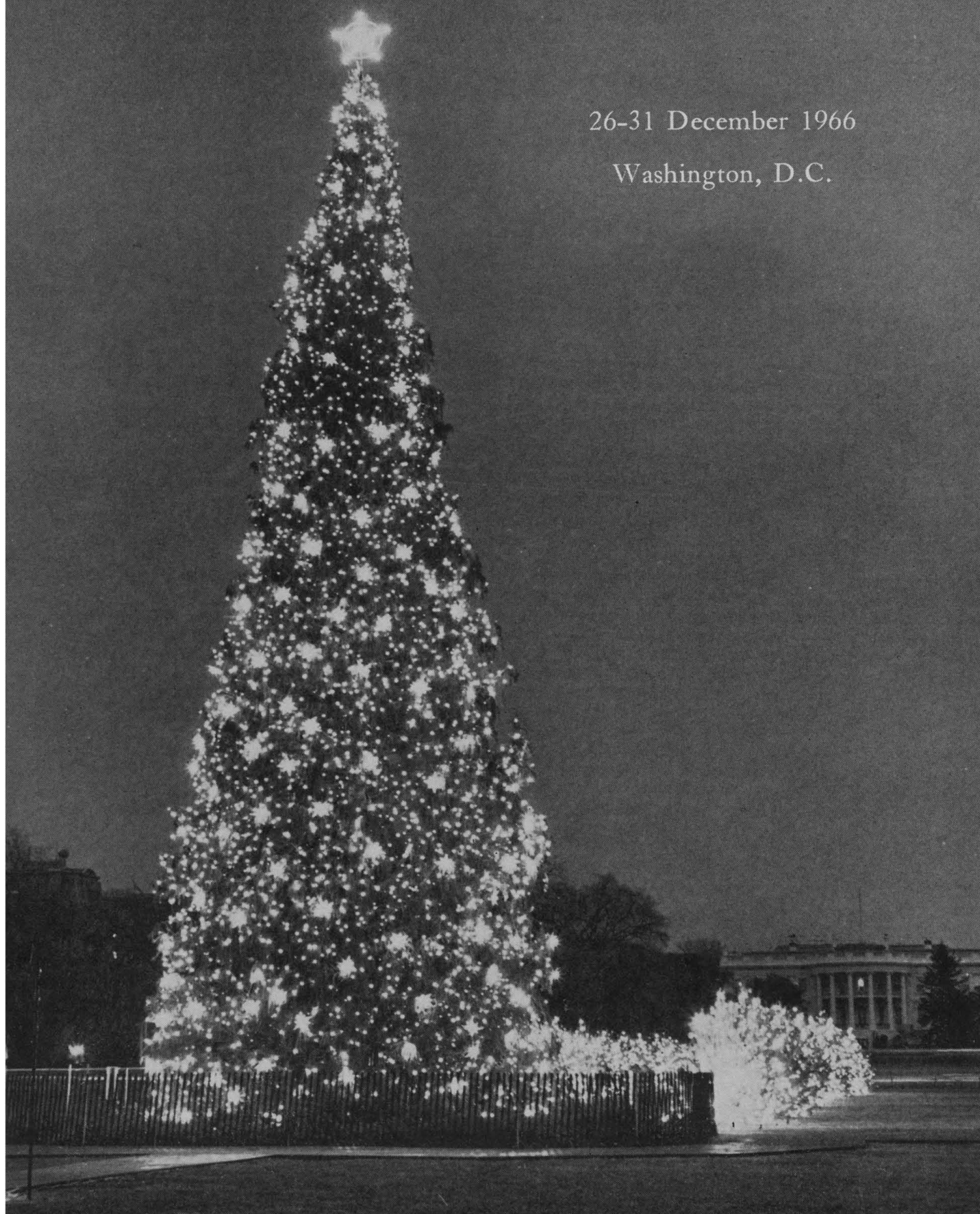


133rd AAAS Annual Meeting

26-31 December 1966

Washington, D.C.



AAAS Special Sessions

One of the characteristic and most important features of the annual meetings of the Association is the series of outstanding general addresses by distinguished scientists, sponsored by the Association or by organizations that meet regularly with it. These special events are open to the general public.

Moving Frontiers of Science. Part I. 26 Dec., evening. "The historical roots of our ecologic crisis," Lynn T. White, Jr. (Center for Medieval and Renaissance Studies, University of California, Los Angeles). "The changing man," Theodosius Dobzhansky (Rockefeller University, New York, New York). Hudson Hoagland (member, AAAS Board of Directors) will preside.

Special Invited Lecture of the Washington Academy of Sciences. 27 Dec., evening. "The ever widening gap," P. M. S. Blackett (president, The Royal Society, London, England). John K. Taylor (president, Washington Academy of Sciences) will preside.

Moving Frontiers of Science. Part II. 28 Dec., afternoon. "Implications of the new horizons in research on weather modification," Thomas F. Malone (vice president, The Travelers Insurance Company, Hartford, Connecticut). "Problems of securing constructive legislation," Daniel S. Greenberg (staff writer, News and Comment, *Science*, AAAS). Paul E. Klopsteg (member, AAAS Board of Directors) will preside.

Seventh George Sarton Memorial Lecture. 28 Dec., afternoon. "Color vision: model and reality," George Wald (professor of biology, Harvard University). Don K. Price (president-elect, AAAS) will preside.

AAAS Presidential Address and Reception. 28 Dec., evening. "Untangling biological reactions," Henry Eyring (retiring president, AAAS). Alfred S. Romer (president, AAAS) will preside. Preceding the address, John W. Gardner (general chairman of the Eighth Washington Meeting) will speak briefly. AAAS awards will be announced. Following the address by Eyring, there will be an informal reception.

Joint Annual Address of the Society of the Sigma Xi and the United Chapters of Phi Beta Kappa. 29 Dec., evening. "Science, a wellspring of our discontent," Walter Orr Roberts (director, National Center for Atmospheric Research, Boulder, Colorado). H. Bentley Glass (member, AAAS Board of Directors) will preside.

Annual Illustrated Lecture of the National Geographic Society. 30 Dec., evening. "International 89," Ralph Gray (chief of School Service, National Geographic Society). Walter Orr Roberts will preside.

AAAS General Sessions

The general sessions are broad interdisciplinary programs that are sponsored by the Association as a whole or by sections, committees, or affiliates of AAAS.

General Theme: How Man Has Changed His Planet. Nearly 2 years ago, the Committee on Meetings chose as the theme for the 1966 meeting "How man has changed his planet." As will be noted throughout the program, a number of sections and participating societies have programs appropriate to this topic.

Population Control. Three-part symposium, program of the AAAS Council Study Committee on Population Explosion and Birth Control.

Part I. Mechanisms. 27 Dec. Introductory remarks by David E. Davis (Pennsylvania State University), who will preside. "Population regulation by genetic feedback," David Pimentel (Cornell University). "Predation and population regulation," C. H. Buckner (Canada Department of Forestry, Winnipeg, Manitoba). "Behavior and population regulation," Charles Krebs (Indiana University). "Feedback mechanisms in human population," Ulia Olin (United Nations Development Programme and the Institute of Theoretical Medicine, New York).

Part II. Impact of Modern Medicine. 27 Dec. Arranged by Lora M. Shields (New Mexico Highlands University, Las Vegas) and Paul van Zandt (Youngstown University), who will also preside. "Medical and health factors influencing the adoption of family planning," Samuel M. Wishik (University of Pittsburgh). "The impact of mortality level upon desired family size," David M. Heer (Harvard). "The mutual impacts of health programs and population dynamics," Martin D. Keller (Ohio State University).

Part III. Regional Programs—Political Implications. 28 Dec. Arranged by George G. Mallinson (Western Michigan University, who will also preside. "India, Pakistan, Middle East, and North Africa," Bernard Berelson (The Population Council, New York, New York). "Thailand and Far Eastern

areas," Amos Hawley (University of North Carolina). "Latin America," Joseph M. Stycos (Cornell).

AAAS Day—Invited Address. 28 Dec. Program of the Committee on Meetings. Henry Eyring will preside. "Science and the popularization of science," Sir Lawrence Bragg (The Royal Institution, London, England; Nobel Laureate in Physics, 1915).

AAAS Day—Interdisciplinary Symposium, Science in Pollution Control. 28 Dec. An interdisciplinary review of current problems of pollution and pollution control in all phases of our environment. Joint program of AAAS Sections M—Engineering and O—Agriculture (Part I of Engineering for Pollution Control and Part V of Agriculture and the Quality of Our Environment). Arranged by Harris B. Stewart, Jr. (Institute for Oceanography, Environmental Science Services Administration, Washington, D.C.), who will also preside. "Environmental pollution and health," Norton N. Nelson (New York University Medical Center). "Future critical pollution problems in lakes, estuaries, and coastal marine waters," Donald W. Pritchard (Chesapeake Bay Institute, Johns Hopkins University). "Atmospheric pollution," Vernon G. MacKenzie (Public Health Service, Washington, D.C.). "Radioactive pollution," Joseph A. Lieberman (U.S. Atomic Energy Commission). "Industry's role in environmental pollution," Athelstan F. Spilhaus (Institute of Technology, University of Minnesota).

AAAS Day—Interdisciplinary Symposium, Society and Information Resources. 28 Dec. Program of Section T—Information and Communication. Arranged by Robert A. Harte (American Society of Biological Chemists, Bethesda, Maryland). C. E. Sunderlin (assistant to the president, National Academy of Sciences) will preside. "The man at the other end," Howard Simons (assistant managing editor, *Washington Post*). "Dynamics of information exchange: scientists in communication," William D. Garvey (Johns Hopkins University). "The federal viewpoint," John Sherrod (U.S. Atomic Energy Commission). "The international viewpoint," Harrison Brown (National Academy of Sciences).

Migration to Arid Lands. 29 Dec. Two-session program of the Committee on Arid Lands, cosponsored by Sections E—Geology and Geography, F—Zoological Sciences, G—Botanical Sciences, H—Anthropology, K—Social and Economic Sciences, N—Medical Sci-

ences, and O—Agriculture. Arranged by Marion Clawson (director, Land Use and Management Program Resources for the Future, Inc., Washington, D.C.), who will also preside and present introductory remarks.

Part I. 29 Dec. "The physical capacity and limitations of the arid lands for greater settlement," Homer Aschmann (department of Geography and the Dry Lands Research Institute, University of California, Riverside). "Health benefits of living in the Southwest," Neil Goldberg (Lovelace Foundation, Albuquerque, New Mexico). "Socio-economic implications of the rapid development of natural resources in the Southwest," Benjamin Higgins (department of Economics, University of Texas). "Socioeconomic implications of accelerated development of natural resources in the intermountain West," Stephen C. Smith (department of Economics, Colorado State University, Fort Collins).

Part II. 29 Dec. "Political implications of migration to the arid lands," Dean E. Mann (department of Political Science, University of California, Santa Barbara). "Agricultural potentials of the arid lands of the western United States," Wynne Thorne (vice president for Research, Utah State University). "National implications of increased settlement on western arid lands," R. W. Richardson, Jr. (associate director, Rockefeller Foundation, New York).

Symposium. The Utility of the Construct of Race. 30 Dec. Three-session, joint program of the Committee on Science in the Promotion of Human Welfare and the Committee on the Biological and Social Aspects of Race of the Scientists' Institute for Public Information, cosponsored by Sections F—Zoological Sciences, H—Anthropology, I—Psychology, and the Animal Behavior Society.

Part I. Behavior-Genetic Analyses and Their Relevance to the Construct of Race. 30 Dec. Introductory remarks by Margaret Mead (American Museum of Natural History). Ethel Tobach (American Museum of Natural History) will preside. Speakers: Herbert G. Birch (professor, Child Development Institute, Albert Einstein College of Medicine, Yeshiva University). "Genetic inequalities in behavioral potential in the human species," Benson E. Ginsburg (Behavior Genetics Laboratory, University of Chicago) and William S. Laughlin (department of Anthropology, University of Wisconsin). "Behavior-

genetic analysis and the study of man," Jerry Hirsch (department of Psychology, University of Illinois). "The relevance of strain differences in animals to studies of man," Peter H. Klopfer (department of Zoology, Duke University). Discussants: Edmund W. Gordon (chairman, department of Educational Psychology and Guidance, Yeshiva University) and J. P. Scott (department of Psychology, Bowling Green State University).

Part II. Biological Aspects of Race in Man. 30 Dec. Theodosius Dobzhansky (Rockefeller University) will preside. "Historical review of science's approach to race," Loren C. Eiseley (university professor of Anthropology and the History of Science, University of Pennsylvania). "The utility of the biological concept of race," Bentley Glass (academic vice president, State University of New York at Stony Brook) and Paul T. Baker (department of Anthropology, Pennsylvania State University). Discussants: Ernst Mayr (department of Zoology, Harvard) and June Goodfield-Toulmin (department of History and Philosophy of Science, Wellesley College).

Part III. Social and Psychological Aspects. 30 Dec. Hudson Hoagland will preside. "Social relevance of classification by race," Dwight J. Ingle (department of Physiology, University of Chicago) and Morton Fried (department of Anthropology, Columbia University). "Relevance for individuals of classification by race," Gloria and Irwin Katz (department of Psychology, University of Michigan). Summary remarks by Margaret Mead. Discussant: Kenneth B. Clark (department of Psychology, City College of New York).

AAAS Business Sessions

Board of Directors. The Board of Directors of the Association will meet in a private suite in the Sheraton-Park Hotel, 29 December, at 9 a.m.

Council of the Association. The Council of the Association will meet Friday morning, 30 December, at 9 a.m. in the Cotillion Room North, Sheraton-Park Hotel.

Subjects to be considered by the Council (in addition to the agenda prepared) usually are first brought before the Board of Directors through the Executive Officer. During the meeting communications for the Board of Directors should be submitted in writing

and left at the mail desk at the Sheraton-Park Hotel. Such communications should be addressed to Dael Wolffe.

Section Officers' Luncheon and Business Meeting. A luncheon and brief planning session for the 1967 meeting will be held on 28 December in the Assembly Room at the Sheraton-Park Hotel. Dael Wolffe and Raymond L. Taylor are cochairmen.

Registration

Main Registration-Information Center. The AAAS Main Registration-Information Center will be located in the lobby of the Sheraton-Park Hotel. It will open 26 December, 8 a.m. to 10 p.m. and 27–30 December, 8 a.m. to 8 p.m.—except Friday, 30 December, when it will close at 5 p.m.

Badges and the *General Program* may also be obtained at the supplementary registration desks.

Supplementary Registration Desks. For the convenience of those attending the 133rd meeting, there are three supplementary registration desks—at the Shoreham, at the Hilton, and at the entrance to the Exhibits. These will be open as follows: Shoreham Hotel—26 Dec., 8 a.m. to 9:30 p.m.; 27–29 Dec., 8 a.m. to 8 p.m.; and 30 Dec., 8 a.m. to 2 p.m. Hilton—26 Dec., 8:30 a.m. to 8:30 p.m.; 27 Dec., 8 a.m. to 8 p.m. Exhibits Entrance—27–29 Dec., 10 a.m. to 6 p.m.; 30 Dec., 9 a.m. to 5 p.m.

Registration Fee

The AAAS registration fee, which has been kept at a minimum, is \$5. A spouse or child who does not want a separate program may register for \$2 if he or she registers at the same time as the regular registrant. Each regular registrant will receive a receipt, a convention badge, and the *General Program*—the only publication containing the programs of the 20 AAAS sections and of the 90 participating organizations. Any person who purchases an advance copy of the *General Program* but does not register in advance and who then attends the meeting has agreed to complete his registration, and is expected to do so, by paying \$2 at the Main Registration Center or at one of the supplementary registration desks; after this he will receive his convention badge and the accompanying privileges.

Young persons under 16 cannot be registered nor admitted to the Exposition or the Science Theatre.

The AAAS convention badge indicates that you are participating fully in this 133rd convention of the Association. The badge should be worn throughout the meeting because (i) it reminds others to register; (ii) it is needed for admission to the Annual Exposition of Science and Industry, the Science Theatre, and the reception that follows the AAAS presidential address; and (iii) it aids in locating friends.

Visible Directory of Registrants. The directory will be located in the foyer outside the Ballroom in the Sheraton-Park Hotel.

The registration cards of all registrants are placed alphabetically in the directory soon after registration. The cards of advance registrants will have been completely alphabetized prior to the meeting. All other cards are filed to the second or third letter of the surname. Members of the press, exhibit personnel, and guests are also listed in the directory—on blue cards instead of yellow.

Mail, Telegrams, and Messages

Mail and telegrams addressed in care of the AAAS will be held at the AAAS office in the Madison Room, Sheraton-Park Hotel. Telephone and personal messages will also be filed alphabetically in the AAAS office, and the names for whom they are intended will be posted on a bulletin board near the AAAS office. The Association assumes no responsibility for the delivery of mail or of telegrams.

Society Dinners and Luncheons

Tickets to the dinners or luncheons of any section of any participating society are obtainable both from its representatives, either during preceding sessions or, in some cases, at the AAAS office in the Madison Room, Sheraton-Park. For a list of all meal functions, consult the Daily Summary in the *General Program*.

Public Information Service

The general public must be kept informed, whenever feasible, of the results of the scientific research and development that it supports, directly or indirectly. Organized science and the

individual scientist must have the understanding and support of intelligent citizens in all walks of life if they are to contribute effectively to the advancement of American democracy. It is, of course, equally important that information concerning advances in science be disseminated clearly and accurately and without sensationalism. Progress in this direction in recent years has been in most instances outstanding, thanks largely to members of the National Association of Science Writers, other accredited science reporters, managing editors of American newspapers, and program managers of radio and television stations.

One of the four objectives of the AAAS is to try to increase public understanding and appreciation of the importance and promise of the methods of science in human progress. For this reason, and to protect authors of papers from being misquoted by the Press, the Association maintains a public information service for each of the annual meetings.

In the interest of accuracy and completeness, science writers frequently wish to discuss various research results with investigators during the meeting. If an author is asked to cooperate in this respect or to participate in a press conference, he is encouraged to do so—not only for his own protection, but also for the benefit of science in general. Scores of science writers will be covering this scientific convention from the pressroom in the Franklin Room and other rooms of the Madison Suite, Sheraton-Park Hotel. News stories filed by them will be published and broadcast throughout the world. The assistance of authors in helping to make these stories accurate is earnestly solicited by the Association.

Mrs. Thelma C. Heatwole, who has long assisted the AAAS in the pressroom, is director of the Office of Public Information for the 1966 meeting. She will be assisted by Lisbeth Wiley of the AAAS staff. The Local Committee on Public Information is headed by B. Richard Berg, director of Public Information, Smithsonian Institution.

Professional Placement Service

A professional placement service will be available to AAAS members attending the 1966 meeting. The service will be provided by the U.S. Employment Service for the District of Columbia in cooperation with the Association. The

primary purpose of the service is to provide an efficient means for employers and prospective employees to meet. Resumes of members seeking a position and job vacancy descriptions will be arranged in binders by areas of professional specialization and will be available for review by employers and applicants. Conference space will be reserved for interviews.

Early registration is desirable since it assures maximum service to those members who are interested in using the service. Employers and applicants who wish to file in advance may write to: Miss Wareteen Smith, Professional Placement Center, U.S. Employment Service for the District of Columbia, 1000 16th Street, NW (Room 705), Washington, D.C. 20036.

As requests are received appropriate forms will be sent from that office. The deadline for advance filing is 15 December 1966 and completed forms should be returned to the above address by that date. During the meeting employers and applicants should call at the respective desks in Exhibit Hall 2 between the hours indicated.

Local Committees

General Chairman

John W. Gardner, secretary, Department of Health, Education, and Welfare.

Executive Secretary

Milo D. Leavitt, Jr., deputy assistant secretary for science and population, Department of Health, Education, and Welfare.

Committee on Exhibits

Donald S. Bittering, president, Washington Gas Light Company, *chairman*.

Bernard J. Dorsey, vice president, Virginia Electric and Power Company.

William W. Eaton, William W. Eaton Company, Industrial Consultants, Washington, D.C.

R. E. Gibson, director, Applied Physics Laboratory, Johns Hopkins University.

William L. Lindholm, president, Chesapeake and Potomac Telephone Companies.

Austin E. Penn, chairman of the board, Baltimore Gas and Electric Company.

Raymond E. Reed, president, Harris Research Laboratories, Inc.

M. Lee Rice, president, Atlantic Research Corporation.

Albert C. Riggs, Jr., director of marketing, Hazelton Laboratories, Incorporated.

G. Russell Tatum, president, Vitro Laboratories.

Edward G. Uhl, president, Fairchild Hiller Corporation.

Frank E. Wall, Jr., manager, Community Relations, International Business Machines Corporation.

Laurence I. Wood, vice president, General Electric Company.

Stephen R. Woodzell, president, Potomac Electric Power Company.

John C. Green, Jr., Washington Gas Light Company, *secretary*.

Committee on Physical Arrangements

Keith C. Johnson, supervising director, Department of Science, District of Columbia Public Schools, *chairman*.

Stephen Hopkins, assistant director of science, *vice chairman*.

Thomas Sheehan, assistant director, Audio Visual Instruction, *vice chairman*.

Richard A. Banks, Jr., assistant principal, Gordon Junior High School.

James S. Clark, assistant principal, Deal Junior High School.

Gary E. Geiger, assistant principal, Roosevelt High School.

Harold H. Henegar, principal, Taft Junior High School.

John D. Koontz, assistant superintendent of schools.

Charles S. Lofton, executive assistant to the superintendent.

D'Arch J. Lynch, storage and services officer.

George R. Rhodes, principal, McKinley High School.

Harold G. Showacre, science teacher, Deal Junior High School.

Committee on Public Information

Richard Berg, director, Office of Public Information, Smithsonian Institution, Washington, D.C., *chairman*.

Michael Amrine, public information officer, American Psychological Association.

George Berklacy, press officer, Smithsonian Institution.

Windsor P. Booth, director, News Service, National Geographic Society.

Mrs. Marion Corrdry, associate director of Public Relations for medicine and science, George Washington University.

Ray E. Hiebert, director, Washington Journalism Center.

Howard Lewis, director, Office of Information, National Academy of Sciences.

E. G. Sherburne, Jr., director, Science Service.

Committee on Women's Events

Mrs. Glenn T. Seaborg, *chairman*; Mrs. Herbert Friedman; Mrs. Leland J. Haworth; Mrs. Donald F. Hornig; Mrs. Frederick Seitz; Mrs. C. E. Sunderlin; and Mrs. Gerald Tape.

Honorary Reception Committee

John W. Gardner, secretary, Department of Health, Education, and Welfare, *chairman*.

Hurst R. Anderson, president, American University.

William S. Apple, executive director, American Pharmaceutical Association.

Allen V. Astin, director, National Bureau of Standards.

Carl Billman, secretary, United Chapters of Phi Beta Kappa.

Arthur H. Brayfield, executive officer, American Psychological Association.

Edward J. Brenner, commissioner, U.S. Patent Office.

Robert D. Calkins, president, Brookings Institution.

Gerard J. Campbell, president, Georgetown University.

William G. Carr, executive secretary, National Education Association.

John S. Coleman, executive officer, National Academy of Sciences.

Paul Cooke, president, District of Columbia Teachers College.

Richard S. Cowan, director, Museum of Natural History.

George P. Cressman, director, Weather Bureau.

Martin M. Cummings, director, National Library of Medicine.

Floyd E. Dominy, commissioner, Bureau of Reclamation.

A. Ross Eckler, director, Bureau of the Census.

Wilson H. Elkins, president, University of Maryland.

Lloyd H. Elliott, president, George Washington University.

Leonard M. Elstad, president, Galaudet College.

William P. Fidler, general secretary, American Association of University Professors.

Ch. Frantz, executive secretary, American Anthropological Association.

Ralph E. Gibson, director, Applied Physics Laboratory, Johns Hopkins University.

Hardin R. Glascock, Jr., executive secretary, Society of American Foresters.

James L. Goddard, commissioner, Food and Drug Administration.

Melville Bell Grosvenor, president, National Geographic Society.

Newman A. Hall, executive director, Commission on Engineering Education.

Carl F. Hansen, superintendent, District of Columbia Public Schools.

George B. Hartzog, Jr., director, National Park Service.

Caryl P. Haskins, president, Carnegie Institution of Washington.

Leland J. Haworth, director, National Science Foundation.

Walter B. Hibbard, director, Bureau of Mines.

John B. Holden, director, USDA Graduate School.

Linn Hoover, executive director, American Geological Institute.

Donald F. Hornig, special assistant to the President for science and technology.

Harold Howe, commissioner, Office of Education.

George W. Irving, Jr., administrator, Agricultural Research Service, U.S. Department of Agriculture.

Lawrence Jacobs, executive director, American Society of Photogrammetry.

Douglas B. Kendrick, commanding general, Walter Reed Army Medical Center.

Evron M. Kirkpatrick, executive director, American Political Science Association.

Charles P. McCurdy, executive secretary, Association of American Universities.

William J. McDonald, rector, Catholic University of America.

J. M. McDowell, superintendent, U.S. Naval Observatory.

Thomas W. McKnew, chairman of the board, National Geographic Society.

J. F. A. McManus, executive director, Federation of American Societies for Experimental Biology.

Robert McNamara, secretary, Department of Defense.

Robert Multhauf, director, Museum of History and Technology and U.S. National Museum.

L. Quincy Mumford, librarian of Congress, Library of Congress.

James M. Nabrit, Jr., president, Howard University.

J. Warren Nystrom, executive secretary, Association of American Geographers.

John R. Olive, executive director, American Institute of Biological Sciences.

Allan W. Ostar, executive secretary, Association of State Colleges and Universities.

Clarence F. Paultzke, commissioner, Fish and Wildlife Service.

William T. Pecora, director, U.S. Geological Survey.

Theodore H. Reed, director, National Zoological Park.

Donald C. Riley, executive director, American Statistical Association.

S. Dillon Ripley, secretary, Smithsonian Institution.

Paul H. Robbins, executive director, National Society of Professional Engineers.

Glenn T. Seaborg, chairman, U.S. Atomic Energy Commission.

Frederick Seitz, president, National Academy of Sciences.

James A. Shannon, director, National Institutes of Health.

Henry T. Skinner, director, National Arboretum.

Waldo E. Smith, executive secretary, American Geophysical Union.

B. R. Stanerson, executive secretary, American Chemical Society.

William H. Stewart, surgeon general, U.S. Public Health Service.

John K. Taylor, president, Washington Academy of Sciences.

Russell I. Thackrey, executive director, National Association of State Universities and Land Grant Colleges.

James C. Tison, Jr., director, U.S. Coast and Geodetic Survey.

Walter N. Tobriner, president, Board of Commissioners, District of Columbia.

Pauline Tompkins, general director, American Association of University Women.

Betty M. Vetter, executive secretary, Scientific Manpower Commission.

James E. Webb, administrator, National Aeronautics and Space Administration.

Donald A. Williams, administrator, Soil Conservation Service, U.S. Department of Agriculture.

Frank E. Wilson, executive director, Association of Military Surgeons of the United States.

Logan Wilson, president, American Council on Education.

Harold K. Work, secretary, National Academy of Engineering.

Hotel Headquarters

The Sheraton-Park is the official headquarters hotel of the AAAS. It is where the Council of the Association will meet and where other business sessions will be held. The pressroom

—for receipt of author's abstracts and the only source of press releases—is in the Franklin Room just off the lobby. The AAAS office, Main Registration-Information Center, Visible Directory of Registrants, Science Theatre, and the Annual Exposition of Science and Industry also are in the Sheraton-Park Hotel.

The headquarters of the 20 sections and of the participating societies follow. The societies are grouped in the same sequence as the letters of the sections with which they are affiliated.

Sheraton-Park

AAAS; AAAS office; AAAS press-rooms.

AAAS Main Registration-Information Center; Visible Directory of Registrants; AAAS Annual Exposition of Science and Industry; AAAS Science Theatre; Professional Placement Center, U.S. Employment Service.

AAAS Business Sessions (Board of Directors, Council); AAAS Section Officers' Luncheon; General Events; and Special Sessions.

AAAS Committee on Arid Lands; AAAS Committee on Meetings (Speakers in Moving Frontiers of Science and in the AAAS interdisciplinary symposia); AAAS Council Study Committee on Population Explosion and Birth Control.

AAAS Sections A-Mathematics, C-Chemistry, F-Zoological Sciences, G-Botanical Sciences, N-Medical Sciences, and T-Information and Communication.

(A) American Mathematical Society, Association for Computing Machinery, National Council of Teachers of Mathematics.

(C) American Association of Clinical Chemists, Chemical Society of Washington.

(E) National Geographic Society, Paleontological Society.

(F) American Fisheries Society, American Society of Zoologists, Animal Behavior Society, Herpetologists' League, Society of Systematic Zoology.

(FG) American Society of Naturalists, Association of Southeastern Biologists, Beta Beta Beta Biological Society, Ecological Society of America, Mountain Lake Biological Station "alumni," Society for the Study of Evolution.

(G) Botanical Society of America.

(T) National Association of Science Writers, Society of Technical Writers and Publishers.

(X) Scientific Research Society of America, Society of the Sigma XI, United Chapters of Phi Beta Kappa, Washington Academy of Sciences, Wildlife Society.

Shoreham

AAAS Academy Conference, AAAS Commission on Science Education, AAAS Committee on Science in the Promotion of Human Welfare, Special Ladies Luncheon.

AAAS Sections B-Physics, A-Astronomy, H-Anthropology, I-Psychology, O-Agriculture, Q-Education, and U-Statistics.

(B) American Astronautical Society, American Meteorological Society, Harvard Project Physics, and Sigma Pi Sigma.

(E) National Speleological Society.

(G) American Society of Plant Physiologists.

(H) American Anthropological Association.

(I) American Speech and Hearing Association.

(N) Alpha Epsilon Delta, American Association of Bioanalysts, American Physiological Society, American Psychiatric Association.

(O) American Society of Agronomy, American Society of Soil Service, Entomological Society of America, Poultry Science Association, Society of American Foresters, Soil Conservation Society of America.

(Q) American Educational Research Association, American Nature Study Society, Central Association of Science and Mathematics Teachers, Commission on Education in Agriculture and National Resources, Commission on Undergraduate Education in the Biological Sciences, Cooperative Committee, Educational Policies Commission, National Association of Biology Teachers, National Association for Research in Science Teaching, National Science Teachers Association, Pennsylvania Science Teachers Association.

(U) American Statistical Association; Biometric Society, ENAR; Institute of Mathematical Statistics.

(X) Scientists' Institute for Public Information, Sigma Delta Epsilon.

Washington Hilton

AAAS Sections E-Geology and Geography, K-Social and Economic Sciences, L-History and Philosophy of Science, M-Engineering, Nd-Dentistry, Np-Pharmaceutical Sciences, and P-Industrial Science.

(A) Society for Industrial and Applied Mathematics.

(E) Association of American Geographers, Middle Atlantic Division and Southeastern Division; Geological Society of America.

(K) American Economic Association, American Political Science Association, American Society of Criminology, American Sociological Association, Metric Association, National Institute of Social and Behavioral Science, Population Association of America, Society for the Scientific Study of Religion.

(L) History of Science Society, Science Courses for Baccalaureate Program, Society for General Systems Research, Society for the History of Technology.

(N) American Academy of Psychoanalysis.

(Nd) American College of Dentists; American Dental Association; American Society of Oral Surgeons; International Association for Dental Research, North American Division.

(NP) American Association of Colleges of Pharmacy, American College of Apothecaries, American Pharmaceutical Association, American Society of Hospital Pharmacists, National Association of Boards of Pharmacy.

(P) Operations Research Society of America, The Institute of Management Sciences.

AAAS Science Theatre

The AAAS Science Theatre, a permanent feature of the Association's annual meeting, presents each year a selection of the latest domestic and foreign scientific films. Programs are repeated at different times to increase the opportunities for those attending the sessions to see particular films. Malcolm S. Ferguson, National Institutes of Health, Bethesda, Maryland, and Alec M. Hughes, British Association for the Advancement of Science, London, assisted Marlyn Lippard, AAAS staff member, in the planning of the film program for this year.

The AAAS Science Theatre may be reached by passing through the Exposition. **Admission is restricted to those persons who wear the AAAS convention badge. Young people under 16 are not registered and thus not admitted to the Science Theatre.**

The following is a schedule of the film program. The titles of the films

are in italics; the names of the producers follow.

Tuesday 27 December 10 a.m. to 2 p.m.

Return to Bikini. University of Washington for the AEC.

A Pair of Paradoxes. Bell Telephone Laboratories.

Secondary Flow. National Committee for Fluid Mechanics and Education Services Incorporated, under a grant from the National Science Foundation.

Birth of the Red Kangaroo. CSIRO Film Unit, Melbourne, Australia.

Piaget's Developmental Theory Conservation. Davidson Films.

Space Medicine. National Aeronautics and Space Administration.

Partnership for Progress. National Institute of Allergy and Infectious Diseases.

The Monkeys of Mysore. University of California Extension Media Center, Berkeley.

Let Us Teach Guessing. Committee on Educational Media, Mathematical Association of America.

Tuesday 27 December 2 p.m. to 6 p.m.

Radio Sky. Associated Electrical Industries, Ltd., London, England.

Life Cycle of the Monarch. Ken Middleham Productions.

Point of View. Vision Associates.

Pelican Island. Nature-Guide Films.

Mechanism of Life. Sakura Motion Picture Company, Ltd., Tokyo, Japan.

Sea Lab II. U.S. Navy.

The Search for Extra-terrestrial Life. National Aeronautics and Space Administration.

Power from Fusion, Part II; The Problem of Containment. United Kingdom Atomic Energy Authority.

Laser—The Light of the Future. Prism Productions, Inc.

Wednesday 28 December 10 a.m. to 2 p.m.

National Magnet Laboratory. Balantine Films.

Embryonic Development of the Light brown Apple Moth. CSIRO Film Unit.

Mitosis in Endosperm of Haemaphysalis katherinae. Ealing Corporation.

Biology of Spiders—Capute of Prey. Segestria florentina and Atypus affinis. University of Oxford.

Oceanographic Research Using the Cousteau Diving Saucer. U.S. Navy Electronics Laboratory.

Karl Menninger Looks at Psychiatric History. Hoffman-La Roche, Inc.

Water in Biology. Lever Brothers Company.

Plant Science Film Studies: Liberation of Zoospores in the Alga Oedogonium, Gamete Transfer in the Bryophytes—The Splash Cup in A Moss, Early Development of the Shoot in Quercus, and Spore Dispersal in the Fungus Coprinus. Iowa State University.

Perception of Orientation. National Film Board of Canada.

To Sleep, Perchance to Dream. Harold Mayer for National Educational Television, under a grant from the National Institute of Mental Health.

Controlling Variables: Fermentation. Davidson Films for AAAS Science—A Process Approach.

In the World of Sharks. Blue Meridian Company, Inc.

Funhouse. Davidson Films for Science Curriculum Improvement Study.

Wednesday 28 December 2 p.m. to 6 p.m.

R_x for Space. North American Aviation, Inc., Space and Information Systems Division.

Physics and Chemistry of Water. Lever Brothers Company.

Experimenting with Air. Davidson Films for Science Curriculum Improvement Study.

The Mallee Fowl. CSIRO Film Unit.

Plowshare. U.S. Atomic Energy Commission, San Francisco.

Returns from Space. NASA Manned Spacecraft Center.

Frontiers of the Mind. David Wolper, specially edited version by Encyclopaedia Britannica Educational Corporation.

The Circarc Gear. Associated Electrical Industries, Ltd., London, England.

Force, Mass, and Motion. Bell Telephone Laboratories.

Area Under a Curve. Davidson Films for the Committee on Educational Media, Mathematical Association of America.

The Volcanic Eruption on Tristan da Cunha. Royal Society, London, England.

Form Drag, Lift, and Propulsion. University of Iowa, Audiovisual Center.

State of a System. Davidson Films.

Thursday 29 December 10 a.m. to 2 p.m.

Same as program on Tuesday, 27 December, 10 a.m. to 2 p.m.

Thursday 29 December 2 p.m. to 6 p.m.

Same as program on Tuesday, 27 December, 2 p.m. to 6 p.m.

Friday 30 December 9 a.m. to 1 p.m.

Same as program on Wednesday, 28 December, 10 a.m. to 2 p.m.

Friday 30 December 1 p.m. to 3:30 p.m.

Partnership for Progress. National Institute of Allergy and Infectious Diseases.

Life Cycle of the Monarch. Ken Middleham Productions.

The Poetry of Polymers. Wayne State University.

Laser—The Light of the Future. Prism Productions, Inc.

Pelican Island. Nature-Guide Films.

Water in Biology. Lever Brothers Company.

Infantile Autism, No. 1. Stichting. Film en Wetenschap, Utrecht, Netherlands.

Exposition of Science and Industry

The AAAS Annual Exposition of Science and Industry will be held in the Sheraton-Park. **Only registrants can be admitted to the Exposition—and children under 16 are neither registered nor admitted.** Hours: 27–29 Dec., 10 a.m. to 6 p.m.; 30 Dec., 9 a.m. to 5 p.m.

The following is a listing of exhibitors at this year's meeting.

Books and Publications. AAAS Publications; Academic Press, Inc.; Addison-Wesley Publishing Company, Inc.; Aldine Publishing Company; American Education Publications, Inc.; American University Press Services, Inc.; Americana Corporation; Appleton-Century-Crofts; Biological Sciences Curriculum Study; BioSciences Information Service of Biological Abstracts; Blaisdell Publishing Company; Cambridge University Press; Columbia University Press; The Combined Book Exhibit, Inc.; F. A. Davis Company; Doubleday & Company, Inc.; Earth Science Curriculum Project; Encyclopaedia Britannica, Inc.; Golden Press, Inc.; Great Books of the Western World; Harper & Row Publishers; Harvard University Press; D. C. Heath & Company; Holt, Rinehart and Winston, Inc.; Houghton Mifflin Company; Lea and Febiger; J. B. Lippincott Company; Macmillan Company; McGraw-Hill Book Company; Charles E. Merrill Books, Inc.; C. V. Mosby Company; National Geographic Society; National

Publishing Division, McCall Printing Company; New American Library; Oxford University Press; Pergamon Press, Inc.; Plenum Publishing Corporation; Prentice-Hall, Inc.; Reinhold Publishing Company; W. B. Saunders Company; Silver Burdett Company; Smithsonian Press; Special Libraries Association; Springer-Verlag N.Y., Inc.; Stechert-Hafner, Inc.; University of Chicago Press; D. Van Nostrand, Inc.; Wadsworth Publishing Company, Inc.; John Wiley & Sons, Inc.; and Yale University Press.

Special Events for Women

Women's Coffee Lounge and Information Center. This will be located in the Concourse of States, Sheraton-Park Hotel, just off the lobby. There will be information on women's events, an opportunity to sign up for the special White House tours, and tickets for the Ladies' Luncheon. The Center will provide information about sight-seeing, special events in Washington during this week, maps, transportation information, and shopping information. Complimentary coffee will be served from 9:30 a.m. to 11:30 a.m. on Tuesday, 27 Dec., and Thursday, 29 Dec.

Special Visit to the Museum of History and Technology, newest building of the Smithsonian Institution, 28 Dec. It is planned that buses will be available from the Sheraton-Park to the Museum, at Constitution Avenue between 12th and 14th Streets. A special program arranged by the curators will include a view of the Museum's behind-the-scenes activities.

Special Tours of the White House. 28 and 29 Dec. The tours are limited to 50 each day. Persons interested should sign up at the Coffee Lounge the previous day, or even earlier. Transportation information will be available at sign-up. The convention badge must be worn on this tour.

Ladies' Luncheon. 29 Dec. Mary I. Bunting (president of Radcliffe College) will speak on "Higher education and the female consumer." Tickets may be purchased at the Coffee Lounge or at the AAAS Ticket Desk.

Industrial. American Gas Association; General Motors Corporation, Research Laboratories; 3 M Company; and Vitro Corporation of America.

Instruments and Supplies. Alton Electronics Company; American Optical Company, Instrument Division; BRS Electronics; Baird-Atomic, Inc.; Beckman Instruments, Inc.; Berkeley Instruments Corporation; Bio-Dynamics, Inc.; Carolina Biological Supply Company; Chemtree Corporation; Elgeet Optical Company, Inc.; General Biological Supply House, Inc.; Gilson Medical Electronics; Graf-Apsco Company; Harvard Apparatus Company, Inc.; Lane Science Equipment Company; LaPine Scientific Company; E. Leitz, Inc.; Lipshaw Manufacturing Company; Macalaster Scientific Corporation; Massey Dickinson Company, Inc.; Mechanical Enterprises, Inc.; Mettler Instrument Corporation; Microbiological Associates, Inc.; Miles Reproducer Company; Mistaire Laboratories; Parco Scientific Company; Pharmacia Fine Chemicals; Phipps & Bird, Inc.; Smith Kline & French Laboratories; Ivan Sorvall, Inc.; Southern Precision Instrument Company; Steel Fixture Manufacturing Company; TRG, Incorporated; Ward's Natural Science Establishment Inc.; and Welch Scientific Company.

Special. Air Force Office of Scientific Research; Arctic Institute of North America; Atomic Energy Commission, Division of Biology and Medicine; Cleveland Health Museum; Coca-Cola Company; Commission on Undergraduate Education in the Biological Sciences; Council for Tobacco Research—USA; Division of Accident Prevention, Research Grants Branch, PHS; Division of Air Pollution, PHS; Division of Environmental Engineering and Food Protection, PHS; Division of Research Grants, PHS; Geological Society of America; National Bureau of Standards; National Institute of Dental Research; National Park Service; National Referral Center for Science and Technology; National Science Foundation; Naval Medical Research Unit No. 4; Office of Naval Research; and Office of Research Development, PHS.

Mathematics (A)

Monday 26 December

Experimental Films Produced as Instructional Aids in Calculus with Commentary. Films produced by Calculus Film Project, Committee on Educa-

tional Media, Mathematical Association of America. Arranged by Holbrook M. MacNeille (Case Institute of Technology).

Program I: Holbrook M. MacNeille, commentator. *A Function is a Mapping*—Fadell; *What is Area*—Rickart; *Area Under a Curve*—Rickart; *The Definite Integral*—Rickart; *Volume of a Solid of Revolution*—Leger; *Volume by Shells*—Leger.

Program II: *Limit*—Fisher; *The Definite Integral as Limit*—Fisher; *Infinite Acres*—Henriksen; *Fundamental Theorem of the Calculus*—Schreiber; *Newton's Method*—Wilf; *I Maximize*—Davis.

Tuesday 27 December

Vice-Presidential Address. Wallace Givens (Argonne National Laboratory and Northwestern University; secretary of Section A) will preside. Combinatorial mathematics, Albert W. Tucker (Princeton University; vice president for Section A).

American Mathematical Society (A1)

Wednesday 28 December

Some Questions in Mathematical Biology. Symposium, joint program of American Mathematical Society and Section A-Mathematics. Murray Gerstenhaber (University of Pennsylvania) will preside. Problems of island immigration and extinction, Robert H. MacArthur (Princeton). Limits on number of species in a community, Richard Levins (University of Puerto Rico and University of Chicago). Evolution of complex genetic systems, Richard Lewontin (University of Chicago). Studies of biological clocks, Theodosios Pavlidis (Princeton).

Association for Computing Machinery (A2)

Wednesday 28 December

The Time-Shared Computer: Achievements and Prospects. A Pragmatic Tool for Scientific Problem Solving. Program of Association for Computing Machinery, cosponsored by Section A-Mathematics. Arranged by Dominic Leiti (Heliodyne Corporation, Arlington, Virginia). Jack Dennis (Massachusetts Institute of Technology) will preside. Computing from interactive consoles, Richard Lemons (vice president, Informatics, Inc., Silver Spring,

Maryland). Computer system organization for time-sharing, David Evans (University of Utah). Software structure for a time-sharing system, Andrew Kinslow (International Business Machines, Mohansic Laboratories, Yorktown Heights, New York). Information processing networks—their role and problems, Merrill Flood (University of Michigan).

National Council of Teachers of Mathematics (A3)

Tuesday 27 December

Concurrent Session A. Elementary School Mathematics. Jane M. Hill (Pi Lambda Theta, Washington, D.C.) will preside. Guess!, Helen Garstens (University of Maryland).

Concurrent Session B. Secondary School Mathematics. Carol V. McCamman (Calvin Coolidge High School, Washington, D.C.) will preside. Cooperation in high school mathematics and science, Herman Branson (Howard University).

Concurrent Session A. Elementary School Mathematics. Daniel B. Lloyd (District of Columbia Teachers College) will preside. Geometry for the elementary school, Stanley B. Jackson (University of Maryland).

Concurrent Session B. Secondary School Mathematics. Alice Gaines (Shaw Junior High School, Washington, D.C.) will preside. New math, new tests—Will the twain meet?, Veryl Schult (U.S. Office of Education).

General Session. Juanita S. Tolson (District of Columbia Teachers College) will preside. Greetings by Kenneth E. Brown (U.S. Office of Education, Washington, D.C.). Mathematical models from Plato to Pluto, Phillip S. Jones (University of Michigan).

Society for Industrial and Applied Mathematics (A4)

Tuesday 27 December

Combinatorial Problems in the Life Sciences, Part I. Symposium, program of Society for Industrial and Applied Mathematics, cosponsored by the Biometric Society, ENAR, and Section A-Mathematics. Arranged by James H. Griesmer (IBM Watson Research Center, Yorktown Heights, New York). George Weiss (National Institutes of Health) will preside. Coiling and denaturation of DNA molecules, Elliott W. Montroll and Narendra S. Goel

(University of Rochester). Efficient ways to reach a small target by diffusion, Gerold H. Adam and Max Delbruck (California Institute of Technology). Mathematical optimization, chemical equilibrium, and physiology, Norman Shapiro (RAND Corporation).

Combinatorial Problems in the Life Sciences, Part II. James H. Griesmer will preside. Some problems of numerical taxonomy, Robert R. Sokal (University of Kansas). Sequential decisions in clinical trials, Betty J. Flehinger (IBM Corporation, Thomas J. Watson Research Center, Yorktown Heights, New York).

Physics (B)

Thursday 29 December

Physical Measurement and Data Systems. Invited papers to be given in Green Auditorium, National Bureau of Standards, Gaithersburg, Maryland. Special buses will leave from the front of the Shoreham Hotel at 8:30 a.m. Program arranged by Allen V. Astin (National Bureau of Standards), who will also preside. The concept of a national measurement system, Robert D. Huntoon (National Bureau of Standards). The international basis for uniform measurement, Leslie E. Howlett (National Research Council). The National Standard Reference Data System, Edward L. Brady (National Bureau of Standards). International cooperation in numerical data programs, Harrison Brown (California Institute of Technology).

Physicists' Luncheon and Vice-Presidential Address. Joint session of Section B and Sigma Pi Sigma. Stanley S. Ballard (secretary of Section B) will preside. Allen V. Astin (vice president for Section B) will speak on planning a major physical science research facility.

Tour of the National Bureau of Standards. There will be a choice as to departments visited. Buses will leave Gaithersburg at 4 p.m., to return conferencees to the Shoreham.

American Astronautical Society (B1)

Thursday 29 December

Physics of the Moon, Part I. The Lunar Surface. Symposium. W. H. Pickering (Jet Propulsion Laboratory, Pasadena, California) will preside. Introductory

tion, Lewis Larmore (Douglas Advanced Research Laboratories). *Orbiter* observations of the lunar surface, L. C. Rowan (U.S. Geological Survey, Flagstaff, Arizona). *Surveyor* observations of the lunar surface, Eugene Shoemaker (U.S. Geological Survey, Flagstaff, Arizona). Summary of interpretations of lunar surface features, J. Green (Douglas Advanced Research Laboratory). Crater statistics and erosion, R. J. Collins (University of Minnesota) and B. G. Smith (Bellcomm, Washington, D.C.). Review of infrared observations, J. M. Saari and R. W. Shorthill (Boeing Scientific Research Laboratories). Optical properties and infrared emissivities, J. J. Hopfield (Princeton). Radar properties of the moon, Tor Hagfors (Massachusetts Institute of Technology).

Physics of the Moon, Part I. The Lunar Surface (continued). H. E. Newell (NASA) will preside. This program will be a panel discussion by the speakers of Part I. Donald Menzel (Harvard) will serve as chairman.

Physics of the Moon, Part II. The Lunar Interior. The thermal history of the moon, R. A. Phinney (Princeton) and D. L. Anderson (California Institute of Technology). The geometric and dynamical figures of the moon, William M. Kaula (University of California, Los Angeles). Seismology on the moon, R. Kovach (Stanford). Gravity experiments on the lunar surface, Joseph Weber (University of Maryland). The origin and dynamical evolution of the moon—a review, S. Fred Singer (University of Miami). A panel discussion will follow. G. J. F. MacDonald (University of California, Los Angeles) will serve as panel chairman.

American Meteorological Society (B2)

Wednesday 28 December

The World Weather Watch. Symposium, arranged by John E. Masterson (National Center for Atmospheric Research, Greenbelt, Maryland). Louis J. Battan (University of Arizona) will preside. Plans and programs, Robert M. White (Environmental Science Services Administration). The global atmospheric research program, Walter Orr Roberts (National Center for Atmospheric Research, Boulder, Colorado). The role of numerical modeling, Joseph Smagorinsky (ESSA). Space technology developments, Morris Tepper (NASA).

Harvard Project Physics (B3)

Monday 26 December

Harvard Project Physics. A First Report on a New National Course. Program of Harvard Project Physics, co-sponsored by Sections B-Physics, L-History and Philosophy of Science, and Q-Education; and by the Academy Conference and Sigma Pi Sigma. Gerald Holton (Harvard) will preside and present the first paper, Structure of Project Physics. Who needs more physics?, Fletcher G. Watson (Harvard). Project Physics in the classroom, F. James Rutherford (Harvard). Laboratory components, John Harris (Harvard). Film loops and other visual aids, Owen Gingerich (Harvard). Other components; programmed instruction, teacher training, etc., Morton L. Schagrin (Denison University).

Harvard Project Physics is the product of a group of scientists and high school teachers from all parts of the country who, since 1964, have been developing a complete set of instructional materials needed for a new kind of physics course designed mainly for secondary schools. The course, now being tested in preliminary form in over 50 schools, is intended to appeal to a wide variety of students, from the science-oriented to the science-shy—and above all to the large and growing fraction of students who are now taking no physics course at all in their senior high school years.

Sigma Pi Sigma, National Physics Honor Society (B4)

The society is a cosponsor of the program of Section B.

Chemistry (C)

Monday 26 December

Biochemistry: Form and Function, Part I. Symposium, arranged by Elwood O. Titus (National Institutes of Health). Bernard B. Brodie (National Heart Institute) will preside. Introductory remarks: pharmacology and its concern with biological form, Bernard B. Brodie. Interaction among tissues of the developing eye, Alfred J. Coulombre (National Institutes of Health). Macromolecular synthesis and early development, Paul R. Gross (Massachusetts Institute of Technology). Structure and function of muscle cells, Richard J.

Podolsky (National Institutes of Health).

Biochemistry: Form and Function, Part II. The control of adrenal medullary and pineal function in mammals by phylogenetically new structures, Richard Wurtman (National Institutes of Health and Massachusetts Institute of Technology). On the functional significance of tissue-specific isozyme patterns, Elliot Vessel (National Institutes of Health). Memory storage: a function in search of a structure, Samuel Barondes, (Albert Einstein College of Medicine, Bronx, New York).

Tuesday 27 December

World Food Supply. Symposium, joint program of Sections C and O—Agriculture. Arranged by Frederic R. Senti (U.S. Department of Agriculture, Washington, D.C.), who will also preside. Role outlook for conventional agriculture, Lester Brown (U.S. Department of Agriculture, Washington, D.C.). New food protein sources, Aaron Altschul (U.S. Department of Agriculture). Potential for microbial proteins, John McNab (ESSO Research and Engineering Company, Linden, New Jersey). Food habits and introduction of new foods, Arthur H. Niehoss (George Washington University).

U.S. Policy on Food and the World's Future. Panel, joint program of Sections C and O—Agriculture. Arranged by Frederic R. Senti, who will also preside. Panel members: Dorothy Jacobson (assistant secretary of Agriculture), G. W. J. Pieters (Royal Netherlands Embassy), Louis B. Howard (National Association of State Universities and Land Grant Colleges), and Herbert J. Waters (assistant administrator, AID).

Thursday 29 December

Symposium. Scientific Aspects of Pest Control. Joint program of Sections C and F—Zoological Sciences. Arranged by George W. Irving, Jr. (U.S. Department of Agriculture), who will preside. The problem: why control pests?, George W. Irving, Jr. Industry's role in developing selective chemicals for pest control, Parke C. Brinkley (National Agricultural Chemicals Association). Pest control by biological means, L. D. Newsom (Louisiana State University). Pest control by physical means, W. M. Carleton (U.S. Department of Agriculture).

Pest Control, Public Policy, and National Welfare—a Look at the Future. Panel, joint program of Sections C and F—Zoological Sciences. Arranged

by George W. Irving, Jr. Panel members: William H. Stewart (Public Health Service), Thomas F. Bates (Department of the Interior), and George L. Mehren (Department of Agriculture).

American Association of Clinical Chemists (C1)

For details of the Association's program, see Section C.

Session I. Symposium. Inborn Errors of Metabolism. Martin Rubin (Georgetown University Medical Center) will preside. The genetic and molecular basis of human hereditary diseases, J. Edwin Seegmiller (National Institutes of Health). Inborn errors of the thyroid, John Stanbury and Leslie J. Degroot (Massachusetts Institute of Technology). Enzymatic abnormalities in diseases of sphingolipid metabolism, Roscoe O. Brady (National Institutes of Health). Abnormalities of hemoglobin structure, Makio Murayama (National Institutes of Health).

Session II. Clinical Chemistry Papers. Robert S. Melville (National Institutes of Health) will preside. The use of paper chromatography for detection of inborn errors of metabolism in a general hospital population, Carolyn Leonard, Marieann Shovlin, and Donald Laskowski (Cleveland Metropolitan General Hospital). The role of alpha chymotrypsin as plasminogen activator, Anwar A. Hakim and Martha S. Chapelle (Armour Pharmaceutical Company, Kankakee, Illinois). The fractionation of erythropoietin by selective membrane permeability, Jasper P. Lewis, Dorothy A. Alford, Claude-Starr Wright, Edward Gardner, Jr., John H. Rathjen, Jr., and Russell R. Moores (Veterans Administration Hospital and the Medical College of Georgia, Augusta, Georgia). Premature infants: analysis of serum during the first seven weeks, Jack L. Thomas and Thomas E. Reichelderfer (District of Columbia General Hospital, Washington, D.C.). The xylose absorption test, Miriam Reiner (District of Columbia General Hospital). An enzymatic fluorescent method for ammonia analysis in serum, Martin Rubin and Lancaster Knott (Georgetown University School of Medicine and Dentistry). A new micromethod for the tocopherol determination, J. Fabianek, J. Defilippi, H. Etess, and T. Rickards (New York Medical College, New York, New York). Gas chroma-

tographic determination of carbon monoxide in blood, F. Lee Rodkey, H. A. Collison, and J. D. O'Neal (Naval Medical Research Institute, Bethesda, Maryland). Determination of hemoglobin (via iron analysis) in blood samples stored on paper, Eugene W. Rice (Allegheny General Hospital, Pittsburgh, Pennsylvania). Toxicology and its place in the clinical chemistry laboratory, Philip L. Cooper (Wright-Patterson Air Force Base, Dayton, Ohio). Determination of urinary sodium with the sodium electrode: interpretation of abnormal electrode response, Alfred M. Pommer (Georgetown University Hospital).

Chemical Society of Washington (C2)

The Society is a joint sponsor of the entire program of Section C.

Astronomy (D)

Tuesday 27 December

Ultraviolet-X-ray, and Gamma-ray Astronomical Observations from above the Atmosphere. Program of Section D, cosponsored by Section B-Physics. Arranged by David Fischel, (Goddard Space Flight Center, Greenbelt, Maryland), who will also preside.

Part I. Ultraviolet stellar spectra obtained from Gemini spacecraft, Karl G. Henize (Northwestern University). Far ultraviolet spectroscopy in the Orion region, Albert Boggess III and Yoji Kondo (Goddard Space Flight Center). A new observation of the solar hydrogen Lyman Alpha profile, Elmo Bruner and R. Parker (University of Colorado). X-ray photographs of the solar Corona, James H. Underwood and William S. Muney (Goddard Space Flight Center). Observations of the solar soft x-ray spectrum, Werner M. Neupert and William S. Muney (Goddard Space Flight Center). Solar line spectrum down to 11 Å, K. A. Pounds and K. Evans (University of Leicester). Gamma-ray astronomy with a digitized spark chamber, Donald A. Kniffen, Thomas L. Cline, Charles H. Ehrmann, Carl E. Fichtel, and Rowert W. Ross (Goddard Space Flight Center). Cosmic x-rays, Herbert Friedman (Naval Research Laboratory). A search for x-ray sources, Domenico Brini, Umberto Ciriegi, Franco Fuligni, Elene Moretti, and Gerardo Vespignani (Bologna University, Italy).

Part II. The optical identification of the x-ray source Sco XR-1, Ricardo Giacconi and Herbert Gursky (American Science and Engineering Inc., Cambridge, Mass.). Lawrence Radiation Laboratory x-ray astronomy measurements, Frederick D. Seward (University of California, Berkeley). Thin window proportional counter observations of Tau XR-1 and Sco XR-1, Richard W. Hill (University of California, Berkeley). Be window proportional counter data from recent flights, Gerald J. Chodil (University of California, Berkeley). Cosmic x-ray spectrometers with dispersive elements, Herbert W. Schnopper, George W. Clark, and Walter H. G. Lewin (Massachusetts Institute of Technology). Balloon x-ray observations of the Crab Nebula and Cygnus XR-1, Walter H. G. Lewin, George W. Clark and William B. Smith (Massachusetts Institute of Technology). Balloon observations of the sun from 1980 to 3000 Å, Jacques E. Blamont (Centre National de la Recherche Scientifique, Verrières-le-Buisson, France).

Geology and Geography (E)

Tuesday 27 December

Contributed Papers on Sedimentology, I. Arranged by Richard H. Mahard (Denison University). Joe Webb Peoples (Wesleyan University) will preside. Multivariate analysis of a sedimentary rock for evaluating effects of sedimentation processes, Eric C. Dahlberg and John C. Griffiths (Pennsylvania State University). Mineral transport in the Gulf Stream system, David W. Folger and Bruce C. Heezen (Lamont Geological Observatory). Trend surface analysis of sand tracer distributions on a carbonate beach, Bimini, B.W.I., John D. Boon III and W. Harrison (ESSA, Norfolk, Virginia). Sedimentation at Beach Haven—Little Egg Inlets, New Jersey, L. J. Charlesworth, Jr. (New Jersey Geological Survey) and L. I. Briggs (University of Michigan). Provenance determinations and recycling of sediments, Harvey Blatt (University of Houston). Patterns of sediment transport in the Rappahannock estuary, Maynard M. Nichols (Virginia Institute of Marine Science) and George Poot (U.S. Coast and Geodetic Survey, Seattle, Washington).

Contributed Papers on Sedi-

mentology, II. Harry Ladd (U.S. Geological Survey) will preside. Clay mineral relationships in Southeastern United States river, marginal marine, and continental slope sediments, David R. Peavear (University of Montana). Intertidal flat sediments at Boundary Bay, southwestern British Columbia, J. W. Murray and Peter Kellerhals (University of British Columbia). Lithification of modern carbonates, Yellow Bank, Bahamas, William H. Taft and Frank Arrington (University of South Florida, Tampa), Allen Haimovits (Arizona State University, Tempe), Catheryn MacDonald (University of Arizona), and Charles Woolheater (Florida State University). Aspects of ooids, spherulites, and spheroids, Charles F. Dahle (Bowling Green State University). Spatial distribution of foraminifera in a square foot of Rehoboth Bay, Delaware, Martin A. Buzas (Smithsonian Institution). Paleocology of some Leonardian patch reefs, west Texas, Roger J. Bain (Brigham Young University).

Thursday 29 December

Geology of the Atlantic Coastal Plain and Continental Shelf. Symposium, joint session of Section E and the Geological Society of America. Arranged by Frank G. Whitmore, Jr. (Geological Survey, Washington, D.C.) and Robert H. Meade (U.S. Geological Survey, Woods Hole, Massachusetts). Frank C. Whitmore, Jr. will preside.

Part I. The Tertiary and Quaternary history of the Atlantic Continental Margin, Kenneth O. Emery (Woods Hole Oceanographic Institution). Sedimentary sequences in the North Atlantic Coastal Plain, James P. Owens (U.S. Geological Survey, Washington, D.C.). Status of Cretaceous biostratigraphy of the Northern Atlantic Coastal Plain, Norman F. Sohl (U.S. Geological Survey, Washington, D.C.). Biostratigraphy of the exposed Paleocene Brightseat Formation in Maryland, Joseph E. Hazel (U.S. Geological Survey, Washington, D.C.), Erle G. Kauffman (U.S. National Museum), James F. Mello (U.S. Geological Survey, Washington, D.C.), and Robert G. Beauchamp (U.S. National Museum). Evidence of basin mobility in the Miocene of the Central Atlantic Coastal Plain, Thomas G. Gibson (U.S. Geological Survey, Washington, D.C.).

Part II. Stratigraphy, mineralogy, and geochemistry of sediments cored off the coast of Florida, John C. Hathaway and John S. Schlee (U.S. Geological Survey, Woods Hole, Massa-

chusetts). Scarp and ridge lineaments as evidence for faulting in the straits of Florida, Richard J. Malloy (ESSA) and Robert J. Hurley (University of Miami Institute of Marine Science). The Miami limestone, J. Edward Hoffmeister (University of Miami Institute of Marine Science). Geological observations from the research submarine *Alvin* in the tongue of the ocean, John S. Schlee.

Dinner and Address of Retiring Vice President. Joint program of Section E, the Geological Society of America, and other geological and geographical societies represented at the Meeting. Arranged by William R. Thurston (U.S. Geological Survey, Washington, D.C.). Joe Webb Peoples will preside. Harry Ladd (retiring vice president for Section E) will talk on the building of Midway.

Friday 30 December

Part III. Joshua I. Tracey, Jr. (U.S. Geological Survey, Washington, D.C.) will preside. Carbonate sedimentation on the southern United States Atlantic Shelf, Orrin H. Pilkey and Blake W. Blackwelder (Duke). Suspended matter in Atlantic coastal waters between Cape Cod, Massachusetts, and the Florida Keys, Frank T. Manheim and Robert H. Meade (U.S. Geological Survey, Woods Hole, Massachusetts), Gerard C. Bond (Woods Hole Oceanographic Institution), and James V. A. Trumbull (U.S. Geological Survey, Woods Hole, Massachusetts). The structure of the Continental Shelf south of New England with speculation on the Pleistocene history, Sydney T. Knott and Elazar Uchupi (Woods Hole Oceanographic Institution). Formation and modification of Pleistocene shorelines in coastal Georgia, John H. Hoyt (University of Georgia) and John R. Hails (University of London).

Part IV. Continental shelf sediments off northeastern United States, James V. A. Trumbull and John S. Schlee (U.S. Geological Survey, Woods Hole, Massachusetts), David A. Ross and Jobst Hülsemann (Woods Hole Oceanographic Institution), and John C. Hathaway (U.S. Geological Survey, Woods Hole, Massachusetts). Glacial history of the Gulf of Maine, John S. Schlee (U.S. Geological Survey, Woods Hole, Massachusetts) and Richard M. Pratt (Woods Hole Oceanographic Institution). Fossiliferous bauxite in glacial drift, Martha's Vineyard, Massachusetts, Clifford A. Kaye (U.S. Geological Survey, Boston, Massachusetts). Late Quater-

nary sea levels along the North Atlantic coast of the United States, Walter S. Newman (Queens College, Flushing, New York). Commentary by Harris B. Stewart, Jr. (ESSA).

Association of American Geographers (E1)

Wednesday 28 December

Resources Development and Conservation in the Southeastern States. Symposium, program of the Middle Atlantic and Southeastern Divisions, Association of American Geographers, cosponsored by Section E. Arranged by Donald J. Patton (Carnegie Institution of Washington), who will preside, and James R. Anderson (University of Florida).

Part I. The regional economic development program and its implications for southeastern United States, Victor Roterus (U.S. Department of Commerce). Remote sensing technology: a tool in conservation resource planning, Robert W. Peplies (East Tennessee State University). The Potomac Basin development plans—the public and the public's servants, Francis T. Christy, Jr. (Resources for the Future, Inc., Washington, D.C.). The role of the industrial consumer in resource management: the case of railway timber, Sherry H. Olson (Johns Hopkins University).

Part II. The United States Department of Agriculture Resource Conservation and Development Program, John W. Barnard (U.S. Department of Agriculture). Rural labor as a resource affecting the geography of southern industrialization, Richard E. Lonsdale (University of North Carolina). Valuation of recreational lands, William H. Scofield (U.S. Department of Agriculture). East central Florida take-off: resource use development in the Cape Kennedy sphere of influence, James R. Anderson and David C. Weaver (University of Florida).

Geological Society of America (E2)

For details of the sessions cosponsored by the Society, see programs of Sections E and E4.

National Geographic Society (E3)

Annual Illustrated Lecture. For details, see Special Sessions.

National Speleological Society (E4)

Thursday 29 December

Contributed Papers on Cave Geology.

Alan D. Howard (Johns Hopkins University) will preside. Solution of limestone under laminar flow between parallel boundaries, Alan D. Howard and Barbara Y. Ellis (Johns Hopkins University). The shape, slope, and fluctuations of the basal water table in the Mammoth Cave area, Kentucky, R. V. Cushman, (U.S. Geological Survey, Louisville, Kentucky). Quantitative analysis of the Muav Aquifer, Grand Canyon National Park, Arizona, George L. Beck (Northern Arizona Research Project, Grand Canyon, Arizona). Dynamics of sediment transport in limestone caves, Elizabeth L. White (Cave Research Foundation) and William B. White (Pennsylvania State University). Vertical shafts actively promote slope retreat and dissection of the solution escarpment and the Chester Cuesta in the Central Kentucky karst, James F. Quinlan (University of Texas) and E. R. Pohl (Cave Research Foundation). The karst features of northern Puerto Rico, Watson H. Monroe (U.S. Geological Survey, San Juan, Puerto Rico). Stratigraphic and structural controls on landform development in the karst area of central Kentucky, Alan D. Howard.

Contributed Papers on Cave Exploration. Victor A. Schmidt (University of Pittsburgh) will preside. The survey and geologic investigation of Blue Spring Cave, Indiana, Arthur N. Palmer (Indiana University). Recent additions to the knowledge of cave distribution in Mexico, William H. Russell and Terry W. Raines (Association for Mexican Cave Studies, Austin, Texas). A summary of eight years of exploration in the caves and karsts of southwestern Virginia, John R. Holsinger (East Tennessee State University). Preliminary report on the Friars Hole karst, Lewis A. Bicking (Johns Hopkins University). Exploration of the Cave Hollow System, Tucker County, West Virginia, Gordon L. Smith (West Virginia University). Initial explorations in the contact caves of the Great Savanna, John M. Rutherford (West Virginia Association for Cave Studies, Charleston, West Virginia).

Friday 30 December

Contributed Papers on Cave Biology.

Program of the National Speleological Society, cosponsored by the Society of

Systematic Zoology. John R. Holsinger will preside. The occurrence and distribution of subterranean gammarid amphipods of North America, John R. Holsinger. Recent progress in our understanding of cavernicolous pseudoscorpions in North America, William B. Muchmore (University of Rochester). Notes on the new Paris Sink No. 4 fauna, Bedford County, Pennsylvania, Richard E. Graham (Rutgers). The problem of applying the biological species concept to geographical variation in the *Pseudosinella hirsuta* complex (Collembola, Insecta), Kenneth Christiansen (Grinnell College) and David Culver (Yale). Trapping and the ecology of cave *Ptomaphagus* beetles (Catopidae), Stewart B. Peck (Harvard).

Invited Review Papers on 25 Years of American Speleology. William B. White will preside. Biospeleology: past, present, and future, Thomas L. Poulson (Yale). Vertebrate fossils from Appalachian caves and their implication to Pleistocene geology, John E. Guilday and Allen D. McCrady (Carnegie Museum). Deposition in caves—a review, John Thraillkill (University of Kentucky). The speleological approach to limestone hydrology, William B. White and Elizabeth L. White (Pennsylvania State University). Classification of karst types: a review and synthesis emphasizing the North American literature, 1941-66, James F. Quinlan (University of Texas).

Paleontological Society (E5)

For details of the Society's program, see F5.

Zoological Sciences (F)

Tuesday 27 December

Biologists' Smoker. Joint program of Sections F and G—Botanical Sciences and all biological societies. All biologists are invited.

Wednesday 28 December

Business Meeting of Section F. Richard B. Roberts (chairman of Section F).

Thursday 29 December

Cocktail Hour, cash bar.

Zoologists' Dinner and Vice-Presidential Address of Section F. Joint session of Section F and all participating

zoological societies. Clifford Grobstein (president, American Society of Zoologists) will preside. Critical points of evolution, Richard B. Roberts (Carnegie Institution of Washington; vice president for Section F). All zoologists are welcome.

Friday 30 December

Wildlife Resources in a Changing World. Symposium, joint program of Section F and the Wildlife Society. Arranged by John L. Buckley (U.S. Department of the Interior, Washington, D.C.), who will also preside. Introduction, Fred George Evenden (Wildlife Society). Wildlife in urban and suburban America, Raymond Fredric Dasmann (The Conservation Foundation, Washington, D.C.). Wildlife in rural and wild America, Richard Douglas Taber (Montana State University). Wildlife in inland waters, John E. Bardach (University of Michigan). Wildlife in coastal and marine waters, John Lawrence McHugh (U.S. Bureau of Commercial Fisheries). Wildlife in developing countries, Lee Merriam Talbot (Smithsonian Institution). Discussion by speakers and from the floor. Summary by Stanley Adair Cain (Department of the Interior).

American Fisheries Society (F1)

The Society is a cosponsor of the two-part symposium, "Over-exploited Animals," of the Biometric Society, ENAR (29 Dec.). See program for Section U.

American Society of Zoologists (F2)

Tuesday 27 December

Policy Committee Meeting.

Session for Contributed Papers A. Comparative Physiology I. J. L. Frehn (Illinois State University, Normal) will preside. Nine papers will be presented.

Session for Contributed Papers B. Comparative Physiology II. C. Ladd Prosser (University of Illinois, Urbana) will preside. Nine papers will be presented.

Session for Contributed Papers C. Developmental Biology I. Antonie W. Blackler (Cornell University) will preside. Nine papers will be presented.

Session for Contributed Papers D. Protozoology and Parasitology. Willis H. Johnson (Wabash College) will preside. Eight papers will be presented.

Executive Committee Meeting I.

Session for Contributed Papers E. Comparative Endocrinology I. Howard Brinkley (University of Maryland) will preside. Nine papers will be presented.

Session for Contributed Papers F. Comparative Physiology III. Robert K. Josephson (Western Reserve University) will preside. Ten papers will be presented.

Session for Contributed Papers G. Developmental Biology II. Paul Gross (Massachusetts Institute of Technology) will preside. Nine papers will be presented.

Executive Committee Meeting II.

Session for Contributed Papers H. Comparative Physiology IV. John Buck (National Institutes of Health) will preside. Nine papers will be presented.

Session for Contributed Papers I. Comparative Physiology V. Vance Tucker (Duke) will preside. Nine papers will be presented.

Session for Contributed Papers J. Developmental Biology III. Robert C. King (Northwestern University) will preside. Nine papers will be presented.

Session for Contributed Papers K. Miscellaneous I. John R. Coleman (Brown University) will preside. Eight papers will be presented.

Wednesday 28 December

Lactogenic Hormone, Part I. Symposium, program of the Division of Comparative Endocrinology. Arranged by Irving I. Geschwind (University of California, Davis) who will also preside. Introduction, the chemistry of prolactins and their relationship to growth hormones, Irving I. Geschwind.

Neural control of the release of prolactin from the pituitary, John W. Everett (Duke). Humoral and pharmacological agents controlling the release of prolactin from the pituitary, Joseph Meites (Michigan State University). The physiological actions of prolactin in mammals, Irving Rothschild (Western Reserve University).

Chemical Activation of Developmental Processes. Symposium, joint program of the Division of Developmental Biology, American Society of Zoologists, and the Developmental Section of the Botanical Society of America, cosponsored by Section G—Botanical Sciences. Arranged by Malcolm S. Steinberg (Princeton) and Watson M. Laetsch (University of California, Berkeley). Malcolm S. Steinberg will

preside and make introductory remarks. Control of developmental processes in insects, Lawrence I. Gilbert (Northwestern University). Hormal control of enzyme synthesis in plants, Joseph E. Varner (Michigan State University). Dietary control of sexuality in a rotifer, John J. Gilbert (Dartmouth College).

Session for Contributed Papers L. Comparative Physiology VI. Donald Maynard (University of Michigan) will preside. Nine papers will be presented.

Session for Contributed Papers M. Vertebrate Morphology I. Richard J. Baldauf (Texas A & M University) will preside. Eight papers will be presented.

Luncheon and Business Meeting of the Division of Comparative Endocrinology.

Luncheon of the Division of Comparative Physiology.

Lactogenic Hormone, Part II. Symposium, program of the Division of Comparative Endocrinology. Arranged by Irving I. Geschwind (University of California, Davis). Charles S. Nicoll (University of California, Davis) will preside. The physiological actions of prolactin in birds, Robert W. Bates (National Institutes of Health). The physiological actions of prolactin in amphibia, William Etkin (Albert Einstein College of Medicine, New York). The physiological actions of prolactin in fishes, Warren R. Fleming (University of Missouri). The distribution and evolution of prolactin in vertebrate pituitaries, Howard A. Bern (The University of California, Berkeley).

Session for Contributed Papers N. Comparative Physiology VII. A. W. Martin (University of Washington) will preside. Nine papers will be presented.

Session for Contributed Papers O. Developmental Biology IV. E. Peter Volpe (Tulane University) will preside. Nine papers will be presented.

Organizational Meeting of Persons Interested in Interstitial Biology. Sponsored by the Division of Invertebrate Zoology. Donald J. Zinn (University of Rhode Island) will preside.

Business Meeting of Section F.

Thursday 29 December

Comparative Aspects of Parathyroid Function. Symposium, program of the Division of Comparative Endocrinology. Arranged by John R. Cortelyou (De Paul University), who will also preside and present introductory remarks. Parathyroid physiology in mammals as

it relates to the study of hormonal function in lower vertebrates, Roy V. Talmage (Rice University). Calcium metabolism of teleosts, Warren R. Fleming (University of Missouri). Parathyroid glands of amphibians—I. Parathyroid structure and function in the amphibian, with emphasis on regulation of mineral ions in body fluids, John R. Cortelyou. Parathyroid glands of amphibians—II. Structural and biochemical changes in amphibian tissues elicited by parathyroid glands in reptiles, Nancy B. Clark (University of Connecticut). Considerations of the role of the parathyroid glands in birds, Marshall R. Urist (University of California, Los Angeles).

Comparative Aspects of Muscle, Part I. Symposium, program of the Division of Comparative Physiology. Arranged by Graham Hoyle (University of Oregon). C. Ladd Prosser (University of Illinois) will preside. Introduction by Graham Hoyle. Ultrastructure of myofibrils of insects, Jacques Auber (University of Paris). Oscillation of glycerol-extracted fibrillar muscle; mechanicochemical coupling, Caspar Rüegg (Max Planck Institut für Physiologie, Heidelberg, Germany). Cross-bridges and periods in insect flight muscle, Michael Reedy (University of California, Los Angeles). Evidence for very thin filaments, Patricia A. McNeil and Graham Hoyle (University of Oregon). Ultrastructure of myosin-extracted striated muscle, Benjamin Walcott and Ellis Ridgway (University of Oregon).

Session for Contributed Papers P. Developmental Biology V. Hans Laufer (University of Connecticut) will preside. Nine papers will be presented.

Session for Contributed Papers Q. Invertebrate Zoology I. Eugene H. Schmitz (University of Arkansas) will preside. Eight papers will be presented.

Session for Contributed Papers R. Developmental and Experimental Biology. William B. Muchmore (University of Rochester) will preside. Nine papers will be presented.

Animal Behaviorists' Luncheon.

Luncheon of the Division of Vertebrate Morphology.

Luncheon and Business Meeting of the Division of Invertebrate Zoology.

Comparative Aspects of Muscle, Part II. Symposium, program of the Division of Comparative Physiology. Arranged by Graham Hoyle. Charles Edwards (University of Minnesota) will preside.

Molecular aspects of ultrastructure, Jean Hanson (Kings College, London). Intracellular membrane systems of insect fibers, David Smith (University of Miami). Membrane systems of crab fibers, Lee Peachey (University of Pennsylvania). Physiology of excitatory tubules in crustacean fast and slow fibers, Allen Selverston (University of Oregon). Crustacean neuromuscular mechanisms, Harold Atwood (University of Toronto). Insect neuromuscular mechanisms, Peter Usherwood (University of Glasgow).

Session for Contributed Papers S. Animal Behavior V. Comparative Endocrinology II. Dorothy Richardson (Connecticut College) will preside. Seven papers will be presented.

Session for Contributed Papers T. Invertebrate Zoology II. Charles Jenner (University of North Carolina) will preside. Seven papers will be presented.

Session for Contributed Papers U. Vertebrate Morphology II. Robert L. Boord (University of Delaware) will preside. Nine papers will be presented.

Cocktail Hour, cash bar.

Zoologists' Dinner and Vice Presidential Address of Section F. Joint session of Section F and all participating zoological societies. Clifford Grobstein (president, American Society of Zoologists) will preside. Critical points of evolution, Richard B. Roberts (Carnegie Institution of Washington; vice president for Section F).

Friday 30 December

Comparative Aspects of Muscle, Part III. Symposium, program of the Division of Comparative Physiology. Arranged by Graham Hoyle. William Van der Kloot (New York University Medical School) will preside. Neural control of molluscan "catch" muscles, Betty Twarog (Tufts University). Mechanisms of contraction in molluscan muscle, Brian Millman (Brock University, St. Catherine's, Ontario). Volume changes in striated muscle, Ronald Baskin (University of California, Davis). Tension-length relationships in heart muscle, Allen Brady (University of California, Los Angeles). Contraction dynamics of barnacle giant fibers, Graham Hoyle and Bernard C. Abbott (University of Illinois). Excitation-contraction coupling in frog fast, slow, and heart muscle, Charles Edward and H. Lorkovic (University of Minnesota).

Animal Parasites of Invertebrates, Part I. Protozoa, Mesozoa, Platyhel-

minthes. Symposium, program of the Division of Invertebrate Zoology. Arranged by Frank F. Katz (Seton Hall University), who will also preside and make introductory remarks. Haplosporidian parasites of trematodes, Victor Sprague (Chesapeake Biological Laboratories, Solomons, Maryland). Recent studies on development and fine structure of the dicyemid mesozoa, Robert B. Short (Florida State University). The orthonectids—parasites of five invertebrate phyla, Eugene N. Kozloff (University of Washington). Larval stages of parasitic flatworms, Horace W. Stunkard (American Museum of Natural History). The compatibility and incompatibility concept as related to trematodes and molluscs, Thomas C. Cheng (University of Hawaii).

Session for Contributed Papers V. Comparative Endocrinology III. Robert D. Lisk (Princeton) will preside. Nine papers will be presented.

Session for Contributed Papers W. Miscellaneous II. H. C. Dalton (New York University) will preside. Eight papers will be presented.

Animal Behavior Society (F3)

The symposia and sessions for contributed papers of the Animal Behavior Society are jointly sponsored by the Section of Animal Behavior and Sociobiology of the Ecological Society of America and the Division of Animal Behavior and Sociobiology of the American Society of Zoologists.

Tuesday 27 December

Recent Advances in the Behavior of Marine Organisms, Part I. Symposium, program of the Animal Behavior Society, cosponsored by the American Society of Zoologists and the Ecological Society of America. Arranged by Howard E. Winn (University of Rhode Island), who will also preside and present introductory remarks. Aggressive, territorial, and reproductive behavior of the mantis shrimp, *Gonodactylus cerstedi* (Stomatopoda), Hugh Dingle and Roy L. Caldwell (University of Iowa). Light and schooling behavior of juvenile jack mackerel, *Trachurus symmetricus* (Ayres), John R. Hunter (U.S. Bureau of Commercial Fisheries, Washington, D.C.). Inter- and intraspecific aggressive behavior in hermit crabs, Brian A. Hazlett (University of Michigan). Continuous locomotion in scombrid fishes, John J. Magnuson (Bureau of Commercial Fisheries Bio-

logical Laboratory, Honolulu, Hawaii). The tidal movements of *Penaeus Duorarum* Burkenroad (Penaeidae: Crust), David Hughes (Institute of Marine Science, University of Miami). Behavior patterns in sea anemones in relation to commensal habits, D. M. Ross (University of Alberta). The study of the development of behavior of marine animals, Ernst S. Reese (University of Hawaii).

Social Environment and Brain Chemistry. Symposium, joint program of the Animal Behavior Society, the Ecological Society of America, and the American Society of Zoologists, cosponsored by Sections I—Psychology, N—Medical Sciences, and Np—Pharmaceutical Sciences. Arranged by Bruce L. Welch (University of Tennessee and Oak Ridge Institute for Environmental Studies), who will also preside and present introductory remarks. Isolation, grouping, aggressiveness, and brain amines, Silvio Garattini and L. Valzelli (Istituto di Ricerche Farmacologiche "Mario Negri," Milan, Italy). Social stimulus, CNS responsivity, and the metabolism of central sympathetic neurohumors, Annemarie S. Welch and Bruce L. Welch. Brain amines and environmental stress, Eugene L. Bliss (University of Utah). Influence of early environment on brain chemistry and liver constituents, Edward Geller and Arthur Yuwiler (University of California Center for Medical Sciences, Los Angeles). Effects of social status and early experience on behavior and amphetamine toxicity of different strains of mice, Delbert D. Thiessen (University of Texas). Environmental factors and drugs on brain catecholamines, Kenneth E. Moore (Michigan State University). Trends and perspectives, Bruce L. Welch.

Recent Advances in the Behavior of Marine Organisms, Part II. Howard E. Winn will preside. Behavioral signs of benthic feeding by the California gray whale in Scammon's Lagoon, Baja, California, Theodore J. Walker (Scripps Institution of Oceanography). Studies on rhythms in a school of adult bluefish, *Pomatomus saltatrix*, Bori L. Olla (Sandy Hook Marine Laboratory, Highlands, New Jersey). Studies on endogenous rhythms in marine organisms, J. T. Enright (Scripps Institution of Oceanography). Courtship behavior and distribution of fiddler crabs in Florida, Michael Salmon (De Paul University). Behavior of the bicolor damselfish, *Eupomacentrus partitus*, in the field and in the aquarium, Robert A. Stevenson, Jr., and Arthur A. Myrberg, Jr. (In-

stitute of Marine Science, University of Miami). Phonations of freeranging spotted porpoises in the eastern Pacific, David W. Waller (Bureau of Commercial Fisheries Tuna Resources Laboratory, La Jolla, California, and University of Wisconsin). Visual orientation and discrimination in seals and sea lions, Ronald J. Schusterman (Stanford Research Institute). Dolphin sonar discrimination: a motion picture technical report, W. E. Evans and B. A. Powell (Michaelson Laboratories, U.S. Naval Ordnance Test Station, China Lake, Ridgcrest, California). Final remarks by Howard E. Winn.

Wednesday 28 December

Session for Contributed Papers. Animal Behavior I. Reproductive Behavior. Frank H. Bronson (Jackson Laboratory, Bar Harbor, Maine) will preside. Nine papers will be presented.

Session for Contributed Papers. Animal Behavior II. Feeding Behavior. Mahlon W. Wagner (Valparaiso University) will preside. Six papers will be presented.

Session for Contributed Papers. Animal Behavior III. Learning Phenomena. Roger E. Davis (University of Michigan) will preside. Nine papers will be presented.

Thursday 29 December

Session for Contributed Papers. Animal Behavior IV. Communication. Stuart A. Altmann (Yerkes Regional Primate Center, Emory University, Atlanta, Georgia) will preside. Five papers will be presented.

Animal Behaviorists' Luncheon. Joint program of the Animal Behavior Society, the ASZ Division of Animal Behavior and Sociobiology, and the ESA Section of Animal Behavior and Sociobiology.

Session for Contributed Papers. Animal Behavior V. Agnostic Behavior. James A. Lloyd (Albert Einstein Medical Center, Philadelphia) will preside. Nine papers will be presented.

Animal Behavior Society Business Meeting.

Animal Behavior Society Executive Committee Meeting.

Friday 30 December

Session for Contributed Papers. Animal Behavior VI. Orientation and Behavioral Ontogeny. Jack P. Hailman (University of Maryland) will preside. Nine papers will be presented.

Session for Contributed Papers. Animal Behavior VII. Miscellaneous Behavior Problems. Paul B. Siegel (Virginia Polytechnic Institute) will preside. Nine papers will be presented.

Herpetologists' League (F4)

Thursday 29 December

Session for Contributed Papers I. Wilmer W. Tanner (Brigham Young University) will preside. Eight papers will be presented.

Session for Contributed Papers II. James E. Huheey (University of Maryland) will preside. Seven papers will be presented.

Executive Council Meeting.

Friday 30 December

Session for Contributed Papers III and Business Meeting. Max Hensley (Michigan State University) will preside. Four papers will be presented.

Saturday 31 December

Open House for visiting herpetologists, Division of Reptiles and Amphibians, U.S. National Museum.

Society of Systematic Zoology (F5)

Monday 26 December

Aspects of Systematics of Recent and Fossil Organisms. Symposium, joint program of the Society of Systematic Zoology and the Paleontological Society. Arranged by Thomas Dutro, Jr., and Ellis L. Yochelson (U.S. Geological Survey, U.S. National Museum, Washington, D.C.), who will also preside. Introduction, Ellis L. Yochelson. Systematics as practiced on Permian reptiles, Nicholas Hooten, III (U.S. National Museum). Families, genera, and species in recent marine isopods, George A. Schultz (Hampton, New Jersey). Validity of Cambrian trilobite species, Allison R. Palmer (State University of New York at Stony Brook). Species characterization in recent cephalopods, Gilbert L. Voss (University of Miami). How to tell one late Paleozoic cephalopod from another, Mackenzie Gordon, Jr. (U.S. Geological Survey). Paleozoic bivalve systematics: are shells enough?, A. Lee McAlester (Yale). Recent bivalve systematics: shells are not always enough, Ruth D. Turner (Harvard). Summary by J. Thomas Dutro, Jr.

Council Meeting I.

Tuesday 27 December

Session for Contributed Papers I. Thomas J. M. Schoff (Marine Biological Laboratory, Woods Hole, Massachusetts) will preside. Eight papers will be presented.

Session for Contributed Papers II. Perry C. Holt (Virginia Polytechnic Institute) will preside. Eight papers will be presented.

Council Meeting II.

Coffee Hour for all systematists and their guests in the SSZ library and Book Lounge.

Wednesday 28 December

Session for Contributed Papers III. Robert P. Higgins (Wake Forest College) will preside. Seven papers will be presented.

Annual Business Meeting.

Thursday 29 December

The Effect of Body Size on Species Interaction. Arranged by John L. Brooks (Yale), who will also preside. Effects on food-size selection by lake planktivores, John L. Brooks. Body size and prey size in closely related sympatric species of predatory marine gastropods, Alan J. Kohn (University of Washington). Comparative feeding ecology of sea birds of a tropical island, N. Philip Ashmole and Myrtle J. Ashmole (Yale). Food size and competitive relationships among insectivorous birds on Arctic tundra, Richard T. Holmes (Tufts University). Bill length, body size, and the evolution of birds on islands, Peter R. Grant (McGill University).

Empirical Character Weighting in Animal Taxonomy. Symposium, arranged by Ernst Mayr (Museum of Comparative Zoology, Harvard), who will also preside and present introductory remarks. The relative value of characters and recent changes in fish classification, Donn E. Rosen (American Museum of Natural History). Behavioral and structural characters in amphibian classification, Robert F. Inger (Field Museum of Natural History). Concordance and discordance of taxonomic characters in *Drosophila* classification, Lynn H. Throckmorton (University of Chicago). Comments on numerical experiments on character weighting, F. James Rohlf (University of Kansas).

Zoological and Botanical Sciences (FG)

American Society of Naturalists (FG1)

Monday 26 December

Executive Council Meeting.

Polarity of Organization in Genetic Material, Part I. Symposium, program of the American Society of Naturalists, cosponsored by Sections F and G-Botanical Sciences. Arranged by Rollin D. Hotchkiss (Rockefeller University), who will also preside. Genetic polarity in bacteria, Paul Margolin (Public Health Research Institute of the City of New York). Initiation and segregation in replicating chromosomes, K. G. Lark (Kansas State University). Synchronization of chromosome replication and gene function during spore germination of *Bacillus subtilis*, Norobu Sueoka (Princeton).

Naturalists' Luncheon, Business Meeting, and Presidential Address. Reed Rollins (Harvard) and H. Clark Dalton (New York University) will preside. Address by Reed Rollins (president, American Society of Naturalists).

Tuesday 27 December

Polarity of Organization in Genetic Material, Part II. Rollin D. Hotchkiss will preside. Evidences of organization in transfer and expression of bacterial transforming DNA, R. D. Hotchkiss (Rockefeller University). RNA synthesis in bacteriophage development, E. P. Geiduschek (University of Chicago). Sequential functioning of genes in bacteria, Gordon Tomkins (National Institute of Arthritis and Metabolic Diseases).

Association of Southeastern Biologists (FG2)

Thursday 29 December

Current Research on the Vegetation of the Southeastern States, Part I. Symposium, program of the Association, cosponsored by the Ecological Society of America, the Society for the Study of Evolution and Section G-Botanical Sciences. Margaret Gilbert (Florida Southern College) will preside. Introduction by Elsie Quarterman (Vanderbilt University). Distribution of marine algae along the coast of North America in relation to inshore oceanographic conditions, Harold J. Humm (Queens College, Charlotte, North Carolina).

Salt marsh vegetation of the south Atlantic coast, Arthur W. Cooper (North Carolina State University). Successional and environmental relationships of north central Florida vegetation, Carl D. Monk (Savannah River Ecology Laboratory, Aiken, South Carolina). Edaphic and vegetational changes in Florida pine flatwoods with fire exclusion, Joe A. Edmisten (University of Georgia). Multiresources management of coastal plain pinelands, J. B. Hilmon (U.S. Forest Service, Southeastern Station, Fort Myers, Florida).

Current Research on the Vegetation of the Southeastern States, Part II. John McGinnis (University of Georgia) will preside. Radiation sensitivity of four ecosystems, J. Frank McCormick (University of North Carolina). Granite rock outcrop endemics from the standpoint of speciation, William H. Murdy (Emory University). Vegetation studies in eastern Tennessee, E. E. B. Clebsch (University of Tennessee). Vegetation of the highlands, North Carolina, gorges, Arthur W. Cooper (North Carolina State University). Studies of forests of the Tertiary hills of western Louisiana, George Ware (Northwestern State College of Louisiana). Concluding remarks by Elsie Quarterman.

Beta Beta Beta Biological Society (FG3)

Tuesday 27 December

Dinner Meeting of Officers.

Wednesday 28 December

Biennial Business Meeting. H. P. Sturdivant (Western Maryland College) will preside.

Biennial Luncheon and Address. H. P. Sturdivant will preside. Molecular biology of bacteriophage—host cell relationships, Austin L. Taylor (University of Colorado).

Biometric Society, ENAR

See Section U.

Ecological Society of America (FG-4)

Tuesday 27 December

Session for Contributed Papers I. Animal Ecology I. Larry N. Brown (University of Wyoming) will preside. Eight papers will be presented.

Session for Contributed Papers II. Aquatic Ecology. Laurence J. Tilly (George Washington University) will preside. Eight papers will be presented.

ESA Council Meeting.

Thursday 29 December

Session for Contributed Papers III. Animal Ecology II. Michael H. Smith (Savannah River Ecology Laboratory, Aiken, South Carolina) will preside. Eight papers will be presented.

Animal Behaviorists' Luncheon.

Session for Contributed Papers IV. Plant and Animal Ecology. Jimmie D. Dodd (Texas A & M University) will preside. Eight papers will be presented.

Friday 30 December

Statistical Ecology, Part I. Symposium, joint program of the Ecological Society of America and the Biometric Society, ENAR, cosponsored by Section U—Statistics. Arranged by E. C. Pielou (Canada Department of Agriculture, Ottawa), who will also preside. The log-zero-Poisson distribution and its application, S. K. Katti and A. V. Rao (Florida State University). A statistical study of measures of aggregation in certain ecological populations, G. P. Patil (Pennsylvania State University). A stochastic model concerning cannibalism of the pupal stage in populations of flour beetles, David B. Mertz (University of California, Santa Barbara) and Robert B. Davies (University of California, Berkeley). Climatic variability and temporal variability in populations of animals, Kenneth E. F. Watt (University of California, Davis).

Session for Contributed Papers V. Plant Ecology. Joe A. Edmisten (University of Georgia) will preside. Eight papers will be presented.

Statistical Ecology, Part II. G. P. Patil will preside. A critique of statistical theories in ecology, Lawrence B. Slobodkin (University of Michigan) and Joel Cohen (Harvard). Uncertainty and structure as ecological concepts, Charles F. Cooper (University of Michigan). Intraseasonal dynamics of herbage biomass, George M. Van Dyne (Colorado State University). The development and analysis of life tables of forest stands, William E. Waters (U.S. Forest Service, New Haven, Connecticut). A simulation and analytic study of simultaneous differential equation models for population systems, D.

Gordon Mott (U.S. Forest Service, New Haven, Connecticut).

Session for Contributed Papers VI. Human Ecology. George B. Happ (Institute of Human Ecology, Elmhurst, Illinois) will preside.

Mountain Lake Biological Station "Alumni" (FG5)

Thursday 29 December

Annual Breakfast Meeting. Former students, investigators, and staff are invited to attend.

Society for the Study of Evolution (FG6)

Tuesday 27 December

Council Meeting.

Patterns of Vertebrate Evolution, Part I. Symposium, arranged by Everett C. Olson (University of Chicago), who will also preside. Another look at the phylogenetic history of the sharks, Rainer Zangerl (Field Museum, Chicago). Patterns of evolution in dicynodont reptiles, Nicholas Hotton, III (U.S. National Museum, Washington, D.C.). Evolutionary design in the phylogeny of neotropical salamanders, David B. Wake (University of Chicago).

Patterns of Vertebrate Evolution, Part II. Variation and integration in the dentition of the house mouse, Robert S. Bader (University of Illinois, Urbana). The multiple origins of the placental carnivores, Leigh Van Valen (American Museum of Natural History). Early evolution of mammalian order Perissodactyla, Leonard B. Radinsky (Brooklyn College).

Wednesday 28 December

Contributed Papers I. H. H. Ross (president, SSE; Illinois Natural History Survey, Urbana) will preside. Seven papers will be presented.

Thursday 29 December

Contributed Papers II. R. L. Carroll (McGill University) will preside. Eight papers will be presented.

Contributed Papers III. Theodosius Dobzhansky will preside. Eight papers will be presented.

Friday 30 December

Contributed Papers IV. W. F. Blair will preside. Eight papers will be presented.

Contributed Papers V. E. C. Olson (past president, SSE) will preside. Four papers will be presented.

Business Meeting and Presidential Address. E. C. Olson will preside. Mechanisms producing shifts in ecological adaptation, Herbert H. Ross.

Botanical Sciences (G)

Friday 30 December

Contributed Papers. David B. Lelinger (Smithsonian Institution) will preside. Eight papers will be presented.

Botanists' Luncheon and Vice-Presidential Address. Warren H. Wagner, Jr. (University of Michigan) will preside. The botanical sciences: trends and problems, Charles E. Olmsted (University of Chicago; vice president for Section G).

American Society of Plant Physiologists (G1)

The Society is a cosponsor of Section O's symposium.

Botanical Society of America (G2)

The Society is a joint sponsor of the symposium, Chemical Activation of Developmental Processes (28 Dec.) See Section F2.

Anthropology (H)

Monday 26 December

Contributed Papers I. Anthony Leeds (University of Texas) will preside. Five papers will be presented.

Man-Animal Linked Cultural Subsystems. Symposium, program of Section H, cosponsored by the American Anthropological Association. Arranged by Margaret Mead (American Museum of Natural History), who will also preside. The Beduin poet's identification with his camel, Mary Catherine Bateson (Harvard). Bear ceremonialism reconsidered, A. Irving Hallowell, (University of Pennsylvania). Equine-human linked behavior in the postnatal and subsequent care of highly bred horses (saddlebred pleasure horses), Gertrude Hendrix (consultant to the University of Illinois Committee on School Mathematics), Jacques D. Van Vlack (Eastern Pennsylvania Psychiatric Institute), and William E. Mitchell (University of

Vermont College of Medicine). The place of pigs in the diet, ecology, and politics of a New Guinea people, Roy-Rappaport (University of Michigan). Changes in the relationship between men and herd animals with increasing sedentarization in Baluchistan, Warren W. Swidler and Nina Bailey Swidler (Bucknell University). Species characteristics of animal heroes in north-west coast folktales, Sally Snyder (University of Alberta).

Tuesday 27 December

Frontiers of Anthropology. Cantometrics and Cultures, Part I. Symposium, program of Section H, cosponsored by the American Anthropological Association. Arranged by Alan Lomax (Columbia University). The cantometric approach, Alan Lomax. A rating system for song performance analysis: a teaching and demonstration session, Victor Grauer (Columbia University). Ventilation rate as a factor in melodic structure, Kathy Mullin with Alan Lomax (Columbia University). Consensus on cantometric parameters: the paralinguistic framework, Norman Markel (University of Florida) and Joan Halifax (Columbia University). Song performance style in its cultural distributions: an analysis based on a clustering technique of the historic distributions of musical style, Ed Erickson, Alan Lomax, and Victor Grauer (Columbia University).

Frontiers of Anthropology: Cantometrics and Culture, Part II. Gutman Scale of social complexity and complexity in song, Barbara Ayres (Harvard). Performance style in relation to production type and social structure, Conrad Arensberg (Columbia University), Ed Erickson, and Alan Lomax (Columbia University). Movement style in life and dance, Irmgard Bartenieff (Dance Notation Bureau, New York).

Frontiers of Anthropology. Cantometrics and Culture, Part III. Culture and Communication. General discussion by Conrad Arensberg, Alan Lomax, Norman Markel, and Ed Erickson, with panel members to be invited. Norman Berkowitz (Cantometrics Project Program Designer) will also participate in several of the papers.

Section H. Committee Dinner.

Contributed Papers II. Anthony Leeds will preside. Eight papers will be presented.

Thursday 29 December

Effects of Field Work on the Anthropologist as a Humanist, Part I. Symposium, program of Section H, cosponsored by the American Anthropological Association. Arranged by Mariam Slater (Queens College, Flushing, New York), who will preside and present introductory remarks. The uses of anthropology, Stanley Diamond (New School for Social Research, New York, New York). Anthropology and values: a personal record, A. Irving Hallowell (University of Pennsylvania). (Title not submitted), Laura Bohannon (University of Illinois, Chicago Circle). The "discipline" vs. the world, Charles Leslie (Western Reserve University).

Effects of Field Work on the Anthropologist as a Humanist, Part II. French perspectives of philosophy and anthropology, Jean Pouillon (Musée de l'Homme, Paris, France). Perspectives from the anthropological experience: the subject I as object, Anthony Leeds. The understanding business, Mariam Slater. Discussion and commentary, Sidney Morgenbesser (Columbia University) and Richard Brandt (University of Michigan).

Vice-Presidential Address of Section H. Anthony Leeds will preside. Ethnographers and the social scientists, Cora DuBois (Harvard; vice president for Section H).

Saturday 31 December

Coping with Urban Life. Symposium, program of Section H, cosponsored by the American Anthropological Association. Arranged by Arthur J. Rubel (University of Notre Dame), who will also preside and present introductory remarks. South African urban life, W. Peter Carstens (University of Toronto). French Canada—urbanism and nationalism, Philippe Garigue (University of Montreal). Urban life of lower class Negroes in Buffalo, Erwin H. Johnson (State University of New York, Buffalo) and Grant Hanesworth (Buffalo Youth Board). Electricity and the power structure in Rio Favelas, Anthony Leeds and David Morocco (University of Texas). Some aspects of urban life in Guatemala City, Bryan Roberts (University of Manchester, England). Urban life of Mexican-Americans in San Antonio, Texas, Arthur J. Rubel. Comparative study of the assimilation of the urban poor, Helen Icken Safa (Syracuse University).

American Anthropological Association (H1)

The Association is a cosponsor of Section H's symposia.

Psychology (I)

Thursday 29 December

Signal Detection with an Undefined Observation Interval. Symposium, arranged by David M. Green (University of California, San Diego), who will also preside. Signal detection with an undefined observation interval within the framework of the theory of signal detectability, James P. Egan (Indiana University). Performance of listeners and an artificial ear on a vigilance problem, Charles S. Watson (Defense Research Laboratory, University of Texas; Central Institute for the Deaf, St. Louis). Threshold concept in the analysis of temporally unstructured detection experiments, R. Duncan Luce (University of Pennsylvania). ROC curves as obtained from "vigilance" experiments, Wilson P. Tanner, Jr. (University of Michigan).

The Control of Behavior by Aversive Consequences, Part I. Historical Overview and Current Research. Symposium, arranged by Joseph V. Brady (Walter Reed Army Institute of Research), who will also preside. Aversive control of behavior: historical perspectives and systematic approaches, Eliot Hearst (University of Missouri). Punishment discrimination and the reinforcement of observing behavior, James Dinsmoor (Indiana University). Fixed ratio performance and aversive control effects, Joseph Dardano (University of Maryland). Psychophysical thresholds and aversive control, Harley Hanson (Merck Institute for Therapeutic Research). Liminal aversive stimuli and escape behavior, Dennis Kelly (Walter Reed Army Institute of Research). Avoidance behavior and the warm-up effect, Philip Himeline (Harvard).

The Control of Behavior by Aversive Consequences, Part II. Empirical and Systematic Approaches. Murray Sidman (Massachusetts General Hospital) will preside. Graded control of adjusting avoidance behavior by multiple warning stimuli, John J. Boren (Walter Reed Army Institute of Research). Schedules of reinforcement and aversive control of behavior by

aversive consequences, Jack D. Findley (Institute for Behavior Research, Silver Spring, Maryland).

The Control of Behavior by Aversive Consequences, Part III. Methodological Problems and Theoretical Issues. William N. Schoenfeld (Queens College) will preside. Method and theory in the study of avoidance behavior, Richard Herrnstein (Harvard). The discriminations in free operant avoidance, Douglas Anger (Western Michigan University). Aversive control in the natural environment, Charles B. Ferster (Institute for Behavioral Research).

Friday 30 December

The Role of Experience in Intellectual Development. Symposium, arranged by J. McVicker Hunt (University of Illinois), who will also preside. Experiential complexity, cerebral change, and behavior, Mark R. Rosenzweig (University of California, Berkeley). Plasticity in the early development of sensorimotor organizations, Burton L. White (Harvard). The hierarchical organization of intellectual structures, Sheldon H. White (Harvard). Early educational experience and the development of intelligence, William Fowler (University of Chicago). Discussant: Edward Zigler (Yale).

Vice-Presidential Address of Section I. Frank W. Finger (University of Virginia; secretary of Section I) will preside. Contributions of learning to human development, Robert M. Gagné. (University of California, Berkeley; vice president for Section I).

Perceptual Change. Symposium, arranged by Sherwin J. Klein (Ohio State University, Dayton) who will also preside. Through the looking glass: adapting to an optically reversed world, Charles S. Harris (Bell Telephone Laboratories, Murray Hill, New Jersey). Some aspects of the problem of visual adaptation, Irvin Rock (Yeshiva University). The conditions and consequences of adaptation, John Hay (Smith College). Maintaining stability in sensorimotor coordination, Richard Held (Massachusetts Institute of Technology). Discussant: Julian Hochberg (New York University).

Open House (29–30 Dec.) at the American Psychological Association Headquarters, 1200 Seventeenth Street, NW. Hours: 9 a.m. to 5 p.m. Refreshments will be served in the Staff Lounge and there will be a guided tour of the building.

American Speech and Hearing Association (I1)

Thursday 29 December

Experimental Techniques in the Assessment and Alleviation of Communication Disorders: Invited Papers. Arranged by Earl D. Schubert (Stanford University), who will also preside. Understanding of amplified speech by hard-of-hearing persons, Wayne Oslen and Raymond Carhart (Northwestern University). Measurement of the acoustic reflex as an audiometric technique, David Lilly (State University of Iowa). Modification of stuttering behavior, Gerald M. Siegel (University of Minnesota). Laryngeal behavior in aspirate and plosive initiation of phonation, Donald Dew (University of Florida). Variation of electroencephalic auditory response with maturation, Hiroshi Shimizu (Johns Hopkins School of Medicine, Baltimore).

Social and Economic Sciences (K)

Monday 26 December

Special Session for Invited Papers. Arranged by Donald P. Ray (National Institute of Social and Behavioral Science). Eugene B. Skolnikoff (Massachusetts Institute of Technology) will preside. Two attempts to correlate the attitudes of legislators with their voting records, Leroy C. Ferguson (Michigan State University). Economics and the underworld of crime, Thomas C. Schelling (Harvard). The American concept of counterinsurgency: some Latin American applications, Willard F. Barber (University of Maryland). The inadequacy of Soviet and American models for underdeveloped countries, Herbert S. Dinerstein (Johns Hopkins University).

American Economic Association (K1)

Thursday 29 December

Vice-Presidential Seminar of Section K. Eugene B. Skolnikoff (secretary of Section K) will preside. Dare we take the social sciences seriously? (The threat of science to traditional values), Kenneth E. Boulding (University of Michigan; vice president for Section K).

American Political Science Association (K2)

Tuesday 27 December

Social Science Research and the Federal Government. Symposium, arranged by Gene M. Lyons (National Academy of Sciences), who will also preside. Opportunities and problems in government-science relations. The physical and social sciences compared, Henry Riecken (Social Sciences Research Council, Washington, D.C.). Conducting social science research overseas, George Blanksten (Northwestern University). Discussant: Harold Orlans (Brookings Institution).

American Society of Criminology (K3)

Tuesday 27 December

Session I. Stephen Schafer (Northeastern University) will preside. Aspects of crime and delinquency in Boston, Theodore Ferdinand (Northeastern University). Homosexuality in a women's prison, Clyde Vedder (Northern Illinois University, DeKalb, Illinois). Adventitious criminality: crime pattern in an affluent society, Michael Fooner (Metropolitan Crime Prevention Project, New York, New York). Toxicological investigation of suspicious deaths, Mark Luckens (University of Kentucky). Report of the annual meeting of the American Society of Criminology, 18-20 November 1966, Philadelphia.

Annual Award Luncheon. Marvin E. Wolfgang (University of Pennsylvania; president of the American Society of Criminology) will preside. Presentation by Donal E. J. MacNamara (chairman of the Awards Committee). Address: Recipient of the *Cesare Beccaria* Award.

Session II. Jacob Chwast (president, New York Society of Clinical Psychologists) will preside. Voluntary associations of social deviants, Edward Sagarin (City University of New York). Juvenile court community development project, John M. Martin (Fordham). Juvenile courts and probation services: analysis of 1214 responses, Samuel A. Kramer (U.S. Department of Health, Education, and Welfare). Report on a VRA "stay-in-school" project, Louis Berkowitz (Education Alliance, New York). Changes in social sex roles as a vulnerability factor in criminal con-

victions, Barbara Kay (Joint Commission on Correctional Manpower and Training, Washington, D.C.).

American Sociological Association (K4)

Tuesday 27 December

Urban Influence and the Hinterland. Invited Papers. Program of the American Sociological Association, cosponsored by Section K and by the Population Association of America. Arranged by J. Allan Beegle (Michigan State University), who will also preside. The emerging country, Harold Goldsmith (National Institute of Mental Health). Patterns of village growth, 1900 to 1960, Glenn V. Fuguitt (University of Wisconsin). Urban influence on fertility and employment patterns of women, James D. Tarver (University of Georgia). Some data and theory on the social psychology of rural social movements, Denton E. Morrison (Michigan State University). Discussant Herbert H. Karp (Michigan State University).

Metric Association (K5)

Wednesday 28 December

Annual Meeting. Session I. Robert P. Fischelis (president, Metric Association) will preside. Opening remarks by the president; appointment of Nominating Committee; minutes of previous annual meeting and interim meetings of Board of Directors; report of secretary-treasurer, John P. DuBois (*Design News*); report of the executive officer, Robert P. Fischelis; and reports of Committees.

Annual Meeting. Session II.

National Institute of Social and Behavioral Science (K6)

Wednesday 28 December

Contributed Papers I. Program of the Institute with the collaboration of Section K. Arranged by Donald P. Ray, who will also preside. Six papers will be presented.

Friday 30 December

Contributed Papers II. Arranged by Donald P. Ray. Six papers will be presented.

Population Association of America (K7)

The Association is a cosponsor of the program of the American Sociological Association (K4) and of the symposium on Symbolism (L3).

Society for the Scientific Study of Religion (K8)

Tuesday 27 December

Science, Religion, and Society; Research Studies. Theoretical Considerations and Implementations for Contemporary Living.

Part I. Religion and Science. Speakers: Fred E. Henry (The Devereux Foundation, Devon, Pennsylvania) and Gordon J. Lester (Redemptorist Monastery, San Francisco).

Part II. Medicine and Religion. Speakers: Owen W. Garrigan (Seton Hall University), Lawrence Gilbert (Beth Israel Hospital, Newark, New Jersey), Mia Parsonnet (Hoffman-La Roche Pharmaceutical Company, Newark, New Jersey).

Part III. Psychology and Religion. Speakers: Lois-Ellen Datta (National Institute of Mental Health), Marvin A. Iverson (Adelphi University, Garden City, Long Island, New York), Abraham I. Katsh (New York University), Hirsch Lazaar Silverman (Seton Hall University), and Francis R. LoBianco (Mt. Carmel Guild Center, Newark, New Jersey).

History and Philosophy of Science (L)

Tuesday 27 December

Ernst Mach—Scientist and Philosopher. Symposium, joint program of Sections B-Physics and L and the History of Science Society. Arranged by Raymond J. Seeger (National Science Foundation). Allen V. Astin (National Bureau of Standards) will preside. Ernst Mach: His life as a teacher and thinker, Otto Blüh (Vanderbilt University). Mathematical implications of Mach's views, Karl Menger (Illinois Institute of Technology). Mach's view on the atomic theory, Erwin N. Hiebert (University of Wisconsin). On Mach's interest in fluid dynamics, Raymond J. Seeger. Ernst Mach and Contemporary

Physics, Peter G. Bergmann (Syracuse University). Mach's contributions to the analysis of sensations, Floyd Ratliff (Rockefeller University). Mach on physics and perception, Robert S. Cohen (Boston University).

Thursday 29 December

Vice-Presidential Address of Section L. Peter F. Drucker (president, Society for the History of Technology) will preside. The disunity of science-technology, Melvin Kranzberg (Case Institute of Technology; vice president for Section L).

History of Science Society (L1)

Tuesday 27 December

Isis Editorial Board Meeting.

Reception for members and guests of the History of Science Society and of the Society for the History of Technology will be held at the Museum of History and Technology, Smithsonian Institution.

Executive Council Meeting.

Wednesday 28 December

Topics in the History of Optics. Joint session with Section L. E. Scott Barr (University of Alabama) will preside. The influence of Alhazen's optics in the west, David C. Lindberg (University of Michigan). Uneasily fitful reflections on fits of easy transmission, Richard S. Westfall (Indiana University). Herschel's dilemma in the interpretation of thermal radiation, D. J. Lovell (University of Michigan). Zeeman and Faraday: the history of nineteenth century magneto-optical discovery, Brookes Spencer (Oregon State University). The scientific correspondence and working papers of Lord Rayleigh with emphasis on his research in optics, John Howard (Air Force Cambridge Research).

Theoretical Assumptions Concerning Species before Darwin. Joint session with Section L. Everett Mendelsohn (Harvard) will preside. The geographic and ecological framework for the species problem before 1859, Leonard G. Wilson (Yale). Species and the idea of nature in early nineteenth century philosophy of zoology, Harold Fruchbaum (Amherst College). Commentator: Ernst Mayr (Harvard).

Luncheon and Annual Business Meet-

ing. Charles C. Gillispie (president, History of Science Society) will preside.

Miscellaneous Work in Progress. Robert Siegfried (University of Wisconsin) will preside. The spread of western science, George Basalla (University of Texas). The fate of Kepler's model of planetary motion in the seventeenth century, Wilbur Applebaum (University of Illinois). David Rittenhouse versus Brooke Hindle, Walter F. Cannon (Smithsonian Institution). The Michelson-Morley experiments before 1905, Lloyd S. Swensen, Jr. (University of Houston). Maxwell, Osborne Reynolds, and the Radiometer, Stephen G. Brush and C. W. F. Everitt (Harvard Project Physics). Early effects of the discovery of radioactivity on the problem of the age of the earth, Joe D. Burchfield, (Johns Hopkins University). Collegium curiosum at Altdorf, Betty Hauck (University of Pennsylvania).

Miscellaneous Work in Progress. John L. Heilbron (University of Pennsylvania) will preside. Rutherford, Boltwood, and the age of the earth, Lawrence Badash (University of California, Santa Barbara). Fermentation, a chemico-medical process in the late seventeenth century, Audrey B. Davis (Johns Hopkins University). Mechanical matter and spiritual forces, Frederic B. Burnham (Johns Hopkins University). Electrical researches of Henry Cavendish, Russell McCormmach (Case Institute of Technology). Aurora and enlightenment, Josiah Morton Briggs, Jr. (Kansas State University). Clausius and Boltzmann on the reduction of the second law, Edward E. Daub (University of Kansas). James Hutton's geological theory and his theory of matter, Patsy A. Gerstner (Case Institute of Technology).

Thursday 29 December

Topics in the History of Astronomy. Joint session with Sections D-Astronomy and L. C. Doris Hellman (Pratt Institute, Brooklyn) will preside. Observations and theory in Babylonian astronomy, Asger Aaboe (Yale). Three great planetary tables: Alphonsine, Prutenic, and Rudolphine, Owen Gingerich (Smithsonian Astrophysical Observatory, Cambridge, Massachusetts). Brahe, Kepler, and the lunar theory, Victor E. Thoren (Indiana University). Thomas Wright: heaven, hell, and the Milky Way, Michael Hoskin (Cambridge University).

Science Courses for Baccalaureate Education Project (L2)

Wednesday 28 December

Program of the Science Courses for Baccalaureate Education Project, co-sponsored by Section L. V. L. Parsegian (Rensselaer Polytechnic Institute) will preside and present the first paper, Report on the status of the Project. What role for the new course?: at technological institutes, Alan S. Meltzer (Rensselaer Polytechnic Institute). What role for the new course?: at liberal arts colleges, K. Scott Kinerson (Russell Sage College) and Thomas S. Mendenhall (Finch College, New York). What role for the new course?: on the university campus, Harry Soodak (City College of New York). Panel discussion: What role for use in junior colleges?

Society for General Systems Research (L3)

Monday 26 December

Application of General Systems Theory to International Affairs. Arranged by Richard F. F. Tyner (U.S. Department of State). Richard W. Barrett (director of Management Planning, U.S. Department of State) will preside. The U.S. role in the evolving world environment—expanding patterns of political Associations, Howard E. Ball (U.S. Department of State). Planning and programming our total diplomatic effort—integrated foreign affairs programming: a system in design, John Golden (U.S. Department of State). Dimensions of the world food problem—progress and frustrations, Howard W. Mattson (Monsanto Company, St. Louis, Missouri). A systematic attack on the worsening imbalance of food and mouths—optimization vs. Malthus, George C. Szego (Institute for Defense Analysis). Commentators: George S. Pettee (Research Analysis Corporation), Clifford C. Matlock (Agency for International Development), Theodore R. Vallance (American University), and Wreatham E. Gathright (U.S. Department of State).

Dynamics of Industrial and Economic Systems. Symposium, arranged by Edward B. Roberts (Massachusetts Institute of Technology), who will also preside. A dynamic model of a region's

development, Alexander L. Pugh III (Pugh-Roberts Associates, Inc., and Massachusetts Institute of Technology). Modeling strategies for corporate growth, Robert S. Spencer (Dow Chemical Company). A systems approach to policy design in a vertically-integrated firm, Dan I. Abrams (Steinberg's Ltd), Edward B. Roberts (Montreal, Canada), and Henry B. Weil (Pugh-Roberts Associates, Inc., Cambridge, Massachusetts). Cost dynamics of a large-scale government-sponsored research and development program, Glen D. Self (Texas A & M University).

Tuesday 27 December

The Dialogue of Change: Systems in Interaction. Symposium, program of the Society for General Systems Research, cosponsored by Sections K-Social and Economic Sciences, L, P-Industrial Science, and T-Information and Communication. Arranged by John B. Calhoun (National Institute of Mental Health), who will also preside and present introductory remarks.

Part I. Goals and evolution, Lawrence B. Slobodkin (University of Michigan). The process of adjustment within small groups, Fred L. Strodtbeck (University of Chicago). Invisible colleges, Derek de Solla Price (Yale). The growth of symbols of sacred goals in terms of a scientific world view, Ralph W. Burhoe (University of Chicago).

Part II. Self-organization: strategy for synthesis in the social context, Milton C. Marney (Research Analysis Corporation). The role of computing and information sciences as a prosthesis in facilitating cultural, scientific, and technological change, Sergio R. Beltran (National University of Mexico, Mexico City). Exchange of views between speakers and audience follows both sessions.

Wednesday 28 December

Open Discussion for members and friends—The future of the Society for General Systems Research.

Thursday 29 December

Symbolism. Four-session symposium. Joint program of the American Academy of Psychoanalysis and the Society for General Systems Research. Part IV is cosponsored by the American Political Science Association. Arranged

by Edwin A. Weinstein (Washington School of Psychiatry).

Session I. Symbolism and general systems theory, Ludwig von Bertalanffy (University of Alberta). Discussant: Roy R. Grinker, Sr. (Institute for Psychosomatic and Psychiatric Research and Training, Chicago, Illinois). Concepts as operants, Israel Goldiamond (Institute for Behavioral Research).

Session II. Models of meaning and the analysis of delusional language, Raymond L. Johnson and Herbert Gross (Walter Reed Army Institute of Research). Discussant: Henry A. Segal (Washington School of Psychiatry). Contextual analysis of symbolism in language, Julius Laffal (Yale). Discussant: Rose Spiegel (William Alanson White Institute of Psychoanalysis). Pauses, hesitations, and blocking as information, Joseph Jaffe, (Columbia University). Discussant: Robert Cohn (National Naval Medical Center).

Dinner and Presidential Address. Science and system: on the unity and diversity of scientific knowledge, Peter J. Caws (Hunter College).

Friday 30 December

Session III. Dreams as metaphors in motion, Montague Ullman (Maimonides Hospital, Brooklyn). Discussant: Maurice R. Green (William Alanson White Institute of Psychoanalysis). Language, social class, and ego organization, Hagop S. Mashikian (Wiltwyck School for Boys, Yorktown Heights, New York). Discussant: Herman A. Meyersburg (Washington Psychoanalytic Institute). Symbolism in the communications of schizophrenics, John L. Cameron (Washington School of Psychiatry).

Session IV. Private disorder and public order: a proposal for collaboration between psychoanalysts and political scientists, Fred I. Greenstein (Wesleyan University). Discussant: Joseph S. Murphy (Brandeis University). Administrative language and behavior, Murray Edelman (University of Wisconsin). Discussant: Kenneth L. Artiss, Chestnut Lodge, Rockville, Maryland.

Society for the History of Technology (L4)

Tuesday 27 December

Case Studies in the History of Contemporary Technology. Bern Dibner (Burndy Library, Norwalk, Connecticut).

cut) will preside. Project Mercury, Lloyd S. Swenson (University of Houston). The main battle tank—70: an American view, Ralph Sanders (Industrial College of the Armed Forces). Recent agricultural developments, Wayne Rasmussen (U.S. Department of Agriculture).

The History of Scientific Instruments. Symposium, joint session with the History of Science Society. I. Bernard Cohen (Harvard) will preside. The Tower of the Winds, Derek J. de Solla Price (Yale). Mathematical practitioners in Colonial America, Silvio A. Bedini (Smithsonian Institution). The development of materials for instruments, Cyril Stanley Smith (Massachusetts Institutes of Technology).

Wednesday 28 December

Technological Change and Manpower Implications. Symposium, program of the Society for the History of Technology, cosponsored by Sections L and P-Industrial Science. Arranged by A. J. Jaffe (Columbia University). John Durand (University of Pennsylvania) will preside. Historical notes on technology and manpower, A. J. Jaffe. Technological change in the United States and Western Europe, Joseph Froomkin (U.S. Office of Education). Technological change and public policy, Irving H. Siegel (Upjohn Institute) and Edgar Weinburg (U.S. Bureau of Labor Statistics). Discussants: Lazare Teper (International Ladies' Garment Workers' Union). Tulo Montenegro (Inter-American Statistical Institute, Washington, D.C.).

Social Aspects of the Philosophy of Technology. Technological Determination. Symposium, arranged by Joseph Agassi (Boston University). Emmanuel G. Mesthene (Harvard) will preside. Speakers: Philip Morrison (Massachusetts Institute of Technology) and Robert L. Heilbroner (New School for Social Research). Commentators: George Hein (Harvard Medical School), I. C. Jarvie (York University, Toronto), William Haskett (Illinois Institute of Technology), and Robert S. Cohen (Boston University).

Executive Council Meeting.

Thursday 29 December

Conference: Work in Progress in the History of Technology. Elmer A. Belt (Los Angeles) will preside. The genesis

of the diesel engine, Lynwood Bryant (Massachusetts Institute of Technology). Changing technology and industrial discipline in early 19th century America, W. David Lewis (State University of New York at Buffalo). An early electric motor in India, Mel Gorman (University of San Francisco).

Annual Luncheon and Business Meeting.

Standardization and Rationalization in American Engineering. Symposium, arranged by Monte A. Calvert (Smithsonian Institution). John B. Rae (Harvey Mudd College, Claremont, California) will preside. The attitude of the American Society of Mechanical Engineers, 1880-1910, Monte A. Calvert. The rationale of 19th century design, John H. White, Jr. (Smithsonian Institution). Interindustry cost effects of an innovation in transport technology: a case study involving the automobile industries, Charles B. Edwards (University of South Carolina).

Tour of the National Cathedral. For wives and members of the Society for the History of Technology and of the History of Science Society.

Vice-Presidential Address of Section L. Peter F. Drucker (president, Society for the History of Technology) will preside. The disunity of science-technology, Melvin Kranzberg (Case Institute of Technology; vice president for Section L).

Friday 30 December

The New Patent Policy. Symposium, program of the Society for the History of Technology cosponsored by Sections C-Chemistry, K-Social and Economic Sciences, L, M-Engineering, N-Pharmaceutical Sciences, P-Industrial Science, and T-Information and Communication. Arranged by Joseph Gray Jackson (William Steel Jackson & Sons, Philadelphia, Pennsylvania), who will also preside. This will be the first formal presentation of the new patent policy and the first large-scale discussion of it. The report of the President's Commission on the Patent System, Howard K. Nason (Monsanto Research Corporation; member of the President's Commission on the Patent System). Commentators: The entrepreneurial aspect, Peter F. Drucker (New York University). The engineering viewpoint, Eugene S. Ferguson (State University of

Iowa). The businessman's viewpoint, Helge Holst (American Tool and Machine Co., Boston, Massachusetts.) The international implications, Edward Brenner (Commission of Patents, Washington, D.C.).

Engineering (M)

Monday 26 December

Engineering Film Theatre. Arranged by Charles F. Savage (General Electric Co., New York, New York). This program will be repeated on 27 and 28 December.

Thursday 29 December

Engineering in Pollution Management. Symposium arranged by P. H. McGauhey (University of California, Berkeley). Linvil G. Rich (Clemson University) will preside. Pollution of the water environment, Gerard A. Rohlich (University of Wisconsin). Pollution of the air environment, Donald H. Pack (U.S. Weather Bureau, Washington, D.C.). Pollution of the land environment, Frank R. Bowerman (Aerojet General Corporation, El Monte, California). Problems of pollution in resources management, Harvey O. Banks (Leeds, Hill & Jewett, Inc., San Francisco, California). Environmental quality management, Walter R. Lynn (Cornell).

Vice-Presidential Address. Newman A. Hall (Commission on Engineering Education; secretary of Section M) will preside. Engineers and the AAAS, Paul Rosenberg (Paul Rosenberg Associates, Pelham, New York; vice president for Section M).

Friday 30 December

Lasers and the Biomedical Sciences. Symposium arranged by Samuel Fine (Northeastern University) and Edmund Klein (Roswell Park Memorial Institute, Buffalo, New York). Samuel Fine will preside. Laser principles and state of the art of crystal and semiconductor lasers, Robert Kingston (Massachusetts Institute of Technology). Gas lasers—principles and state of the art, Roy Paananen (NASA Electronics Research Center, Cambridge, Massachusetts). Lasers in biology and biochemistry, Edmund Klein (Roswell Park Memorial Institute, Buffalo, New York). Laser biophysical studies, Samuel Fine. Ocular studies with laser radiation, William

T. Ham, Jr. (Medical College of Virginia). Panel Discussion: Walter Geeraets (Medical College of Virginia), Ben Fine (George Washington University), Alfred Ketchum (National Cancer Institute, Bethesda, Maryland), John J. Kovacic (Office of the Surgeon General, U.S. Army), Martin Litwin (Tulane University), and Ronald Scott (Northeastern University).

Holography. Symposium arranged by Anthony Di Pentima (CBS Laboratories, Stamford, Connecticut), who will also preside. Speakers: Dennis Gabor (Imperial College of Science and Technology, London, England), Emmet N. Leith (University of Michigan), Winston E. Kock (NASA Electronics Research Laboratory, Cambridge, Massachusetts), Gary Cochran (Conductron Corporation, Ann Arbor, Michigan), and George W. Stroke (University of Michigan).

Medical Sciences (N)

Thursday 29 December

Metabolic Control in Biological Systems. Symposium, arranged by John R. Williamson (University of Pennsylvania).

Part I. Sidney Weinhouse (Temple University School of Medicine) will preside and present introductory remarks. Hormonal control of liver enzymes, George Weber (Indiana University School of Medicine). The regulation of glycolytic and gluconeogenic enzymes in liver, Alberto Sols (Centro de Investigaciones Biologicas, Instituto G. Maranon, Madrid, Spain). Control of gluconeogenesis and ketogenesis in rat liver in vivo, John R. Williamson (University of Pennsylvania). Panel Discussion: The Molecular Basis of Hormone Action. Howard Rasmussen (University of Pennsylvania) will preside. Gordon Tompkins (National Institutes of Health), R. W. Butcher (Vanderbilt University), Eugene Knox (Harvard), and Jack Gorski (on leave, University of Illinois).

Part II. Ronald W. Estabrook (University of Pennsylvania) will preside. Metabolic control at the molecular level, Daniel E. Atkinson (University of California, Los Angeles). Control mechanisms, John Lowenstein (University of Pennsylvania). Vice-Presidential Address of Section N: Control of energy metabolism in isolated cells and mitochondria, Britton Chance (University of Pennsylvania). Control of

mitochondrial activity by adenine nucleotide translocation, Martin Klingenberg (Physiologisch Chemisches-Institut, Universitat Marburg, Marburg, Germany).

Friday 30 December

Biological Functions of Lipids. Symposium arranged by Robert E. Olson (Saint Louis University).

Part I. Role of Lipids in Membranes. Robert E. Olson will preside. Electron microscopy of the unit membrane, J. David Robertson (McLean Hospital, Belmont, Massachusetts). Models of animal membranes, F. A. Vandenheuvel (Canadian Department of Agriculture, Ottawa, Ontario). Structure and function of mitochondrial membranes, Sidney Fleischer (Vanderbilt University). Properties of synthetic membranes, Thomas Thompkins (Johns Hopkins University Medical School).

Part II. Function of Fat-soluble Vitamins. Wendell H. Griffith (Federation of American Societies for Experimental Biology) will preside. Function of vitamin A, George Wolf (Massachusetts Institute of Technology). Function of vitamin D, Hector DeLuca (University of Wisconsin). Function of vitamin E, John G. Bieri (National Institutes of Health). Function of vitamin K, Robert E. Olson.

Alpha Epsilon Delta (N1)

Wednesday 28 December

Preparation for the Practice of Medicine in the Next Decade. Symposium, program of the Society, cosponsored by Section C—Chemistry, F—Zoological Sciences, and N, and by Beta Beta Beta Biological Society. Arranged by Maurice L. Moore (national secretary, Alpha Epsilon Delta). Norman F. Witt (University of Colorado) will preside. Purpose of the conference, Norman F. Witt. Trends for medical practice in 1975, John Parks (George Washington University). Impact of Medicare on medical education and personnel needs, William L. Kissick (U.S. Public Health Service). Need for ancillary health services, K. Albert Harden (Howard University). Education for health careers, John C. Rose (Georgetown University). A panel discussion will follow.

Luncheon and Address. Changes in premedical education affecting medical school admissions and the education of medical students, Daniel H. Funkenstein (Harvard Medical School).

American Academy of Psychoanalysis (N2)

The Academy has a joint program with the Society for General Systems Research (L3).

American Association of Bioanalysts (N3)

Wednesday 28 December

Invited Papers. Milton M. Cohen will preside. Recent advances in clinical enzymology, Bernard Klein (Veterans' Hospital, Bronx, New York). Problems of perception in practical microscopy, Arthur M. Siegelman (Community Hospital, Glen Cove, New York). Amniocentesis and the Rh-sensitized pregnant female, Arthur Sawitsky (Long Island Jewish Hospital, New Hyde Park, New York). Identification of pathogenic enterobacteriaceae, William Rollender (Misericordia Hospital, Bronx, New York). A simple method for the determination of serum thyroxine, Bernard Kaplan (Morristown Clinical Laboratories, Morristown, New Jersey).

American Physiological Society (N4)

Wednesday 28 December

Circadian Rhythms. Program of the Society cosponsored by Section F—Zoological Sciences. Arranged by Franz Halberg (University of Minnesota Medical School) and Robert E. Smith (University of California, Los Angeles).

Part I. Robert E. Smith and Harry Lipscomb (Baylor University) will preside. The hours of changing resistance, Alain Reinberg (Foundation A. de Rothschild, Paris, France). Circadian rhythms in susceptibility of rodents to nicotine and amphetamine, Lawrence E. Scheving (Chicago Medical School). Circadian rhythm in sensitivity of rat atria to acetylcholine, Ryk Spoor (University of South Dakota). Circadian rhythms in susceptibility to insecticides, William Sullivan (U.S. Department of Agriculture, Beltsville, Maryland). Circadian temperature rhythms in the clinic, Sheldon Wolff (National Institutes of Health). Biochemical rhythms of high frequency, Britton Chance (University of Pennsylvania). Circadian rhythms in biochemical variables, Julius Axelrod (National Institute of Mental Health). The adrenal cycle, Frederic

C. Bartter (National Heart Institute). Internal timing of biochemical rhythms, Franz Halberg (University of Minnesota). Rhythms and psychology, Charles Stroebel (Institute for Living, Hartford, Connecticut). Rhythms and the psychotic patient, D. Eccleston (University of Edinburgh, Scotland).

Part II. Edward Batschelet (University of Chicago and Catholic University of America) will preside. Metabolic techniques for the study of rhythms in the deer mouse (*Peromyscus*), Robert E. Smith (University of California, Los Angeles). Telemetry of biorhythm data in a primate (*Cebus albifrons*), Charles M. Winget (NASA Ames Research Center, Moffett Field, California), Nello Pace and D. F. Rahlmann (University of California, Berkeley). Telemetry of rhythms in the Arctic, G. Edgar Folk, Jr. (State University of Iowa). Circadian rhythms and ornithology, Albert Wolfson (Northwestern University). Neurophysiologic aspects of rhythms, Felix Strumwasser (California Institute of Technology). Circadian rhythms and marine biology, Frank A. Brown, Jr. (Northwestern University).

American Psychiatric Association (N5)

Monday 26 December

Recent Research in Alcoholism. Three-session symposium arranged by Jonathan O. Cole (National Institute of Mental Health).

Part I. Jack H. Mendelson (National Institute of Mental Health) will preside. Group therapy with alcoholics, Ebbe C. Hoff (Medical College of Virginia, Richmond). Placebo responses and placebo responders on chronic alcoholics, Benjamin Kissin, Stanley M. Charnoff, and Sidney Rosenblatt (State University of New York Downstate Medical Center, Brooklyn). A follow-up study of Maryland alcoholics, Albert A. Kurland (Maryland Department of Mental Hygiene, Baltimore, Maryland). A comparison of abstainers and heavy drinkers in a national survey, Ira H. Cisin (George Washington University).

Tuesday 27 December

Part II. Ira H. Cisin will preside. Prognostic factors in alcoholism, Benjamin Kissin, Sidney Rosenblatt, and Solom Machover. Experimental analysis of drinking patterns of alcoholics: risk-taking behavior and motivation for al-

cohol, Nancy K. Mello and Hugh B. MacNamee (Harvard Medical School and Massachusetts General Hospital, Boston) and Jack H. Mendelson. Trends in the prevention of alcoholism, Howard T. Balen (Massachusetts General Hospital, Boston).

Part III. Jonathan O. Cole will preside. Sleep disturbances in acute alcoholic psychoses, Milton M. Gross and Donald Goodenough (State University of New York Downstate Medical Center, Brooklyn). The electroencephalographic and clinical effects of flagyl in schizophrenic patients, Turan Itil, Michael Holden, and Ali Keskiner (University of Missouri Medical School). A review of the use of a thiazole derivative, hemineurin, in delirium tremens and allied conditions, Samuel Gershon (New York University). Fatty liver, cirrhosis, and metabolic effects related to problem drinking, Charles S. Lieber (Bellevue Hospital, New York, New York). The National Institute of Mental Health's National Center on Control and Prevention of Alcoholism, Jack H. Mendelson.

Dentistry (Nd)

The four-session program of Section Nd on the biology of the mouth is cosponsored by the American Association of Dental Schools, American College of Dentists, American Dental Association, American Society of Oral Surgeons, the International Association for Dental Research, North American Division, and by Section H—Anthropology. The program was arranged by Philip Person (Veterans Administration Hospital, Brooklyn, New York).

Thursday 29 December

Part I. Albert A. Dahlberg (University of Chicago) will preside. The place of dentistry in science, Carl A. Ostrom (U.S. Navy). Announcements by S. J. Kreshover (National Institute of Dental Research). Introductory remarks on the theme of the symposium, Philip Person. Enamel, dentine, and bone and the origin of vertebrates, Melvin L. Moss (Columbia University). Tooth and jaw in assessment of the origins of man, John T. Robinson (University of Wisconsin). Cleaning symbiosis and oral grooming on the coral reef, Elliot C. L. Maynard (University of Miami). The influence of the mouth on the brain, John Z. Young (University of London).

Part II. Melvin L. Moss will preside. On the resemblances between cartilage and plant tissues, Philip Person and Delbert E. Philpott (NASA, Moffett Field, California). The role of the macromolecular environment in cellular biochemical processes: the plant cell wall matrix as a model system, Sanford M. Siegel (Union Carbide Research Institute, Tarrytown, New York). A study of the peroxidase, lactoperoxidase, found in the salivary gland, Martin Morrison (City of Hope Medical Center, Duarte, California). Growth-stimulating factors from the salivary gland, Stanley Cohen (Vanderbilt University).

Cocktails, Dinner, and Address. Carl A. Ostrom will preside. Science in dental education, James A. English (State University of New York at Buffalo; past vice president, Section Nd).

Friday 30 December

Part III. Milton B. Engel (University of Illinois) will preside. A physicist looks at biology, Hartmut Kallman (New York University). The role of water in some biophysical properties of skeletal tissues, Robert O. Becker (Veterans Administration Hospital and Upstate Medical Center, Syracuse, New York). Water and electrolyte balance in cells and connective tissues, Norman R. Joseph (University of Illinois). The biological significance of water structure, Herman J. C. Berendsen (Groningen University, The Netherlands).

Part IV. Marie U. Nylen (National Institute of Dental Research) will preside. The comparative structure and organization of, and the relationship between, the inorganic crystals and organic matrices of some mineralized tissues, Dorothy F. Travis (Harvard and Massachusetts General Hospital). Molecular evolution of animal connective tissues, Martin B. Mathews (University of Chicago). The biosynthesis of crosslinks in collagen and elastin, Karl Piez (National Institute of Dental Research). The biology of oral tissues and oral disease: Darwin and quantum, Philip Person.

Business Meeting of Section Nd. Carl A. Ostrom will preside.

American Association of Dental Schools (Nd1)

The Association is a cosponsor of Section Nd's program.

American College of Dentists (Nd2)

The College is a cosponsor of Section Nd's program.

American Dental Association (Nd3)

The Association is a cosponsor of Section Nd's program.

International Association for Dental Research, North American Division (Nd5)

The Association is a cosponsor by Section Nd's program.

Pharmaceutical Sciences (Np)

The program of Section Np consists of eight sessions; it is cosponsored by the American Association of Colleges of Pharmacy, the American College of Apothecaries, the American Pharmaceutical Association, the American Society of Hospital Pharmacists, and the National Association of Boards of Pharmacy.

Thursday 29 December

Session I. Contributed Papers. Hospital Pharmacy I. Arranged by George F. Archambault (U.S. Public Health Service), Don E. Francke (hospital pharmacy consultant), and Joseph A. Oddis (American Society of Hospital Pharmacists, Washington, D.C.). Joseph A. Oddis will preside. Five papers will be presented.

Session II. Luncheon. Arranged by E. R. Squibb & Sons, New York.

Session III. Vice-Presidential Address of Section Np. George F. Archambault will preside. Pharmaceutical education: a dual challenge, André Archambault (University of Montreal; vice president for Section Np).

Session IV. Contributed Papers. Hospital Pharmacy II. Don E. Francke will preside. Five papers will be presented.

Session V. Dinner. Program arranged by McKesson & Robbins, Inc., New York.

Friday 30 December

Session VI. Contributed Papers I. Arranged by Joseph P. Buckley (University of Pittsburgh). Wallace L. Guess

(University of Texas College of Pharmacy) will preside. Fifteen papers will be presented.

Session VII. Distinguished Lecture. André Archambault will preside. Hypertension—pathogenesis and treatment, Arthur Grollman (University of Texas Southwestern Medical School, Dallas).

Session VIII. Therapeutic Incompatibilities Involved in Drug Dosage. William J. Kinnard, Jr. (University of Pittsburgh School of Pharmacy) will preside. The problem of therapeutic incompatibilities: past and present, Frank J. Ayd, Jr. (*International Drug Therapy Newsletter*, Baltimore, Maryland). The incidence of therapeutic incompatibilities and adverse drug reactions, Joseph D. McEvilla (University of Pittsburgh School of Pharmacy). Mechanisms involved in therapeutic incompatibilities, James R. Gillette (National Heart Institute). Importance of the preclinical predictiveness of abnormal drug interaction, Karl H. Beyer, Jr. (Merck, Sharp and Dohme Research Laboratories). Clinical predictiveness of therapeutic incompatibilities, Leighton E. Cluff (Johns Hopkins University).

Agriculture (O)

The program of Section O is a seven-session program on the agriculture and the quality of our environment. It is cosponsored by: American Society of Agronomy, American Society of Animal Science, American Society of Plant Physiologists, Entomological Society of America, Poultry Science Association, Society of American Foresters, and Soil Conservation Society of America. Arranged by Nyle C. Brady (Cornell University).

Monday 26 December

Part I. Agriculture and Air Quality. R. K. Arnold (University of Michigan) will preside. The scope of the air pollution problem with emphasis on its effect on agriculture, J. T. Middleton (University of California, Riverside). Some effects of air pollution on plants, R. H. Daines (Rutgers University). The concept of hidden injury in plants, D. C. McCune, L. H. Weinstein, D. C. MacLean, and J. S. Jacobson (Boyce Thompson Institute, Yonkers, New York). Air quality and forestry, J. R. Hansbrough (U.S. Department of Agriculture, Washington, D.C.). Airborne radionuclides and plants, R. G. Menzel

(U.S. Department of Agriculture, Beltsville, Maryland).

Part II. Agriculture and Air Quality (continued). O. G. Bentley (University of Illinois) will preside. Airborne radionuclides and animals, M. C. Bell (UT-AEC Agricultural Research Laboratory, Oak Ridge, Tennessee). Fluorides and other chemical air pollutants affecting animals, G. M. Merriman (University of Tennessee). Aerial transmission of pathogens, R. F. Kahrs (Cornell University). Agricultural practices influencing air quality, K. C. Walker (U.S. Department of Agriculture, Washington, D.C.). Economic and administrative aspects of air pollution as it relates to agriculture, Emanuel Landau (U.S. Department of Health, Education, and Welfare).

Tuesday 27 December

Part III. Agriculture and Water Quality. R. R. Renne (U.S. Department of the Interior) will preside. An overall view—water quality as it relates to agriculture, J. M. Quigley (U.S. Department of the Interior). Pesticides in our national waters, R. S. Green (U.S. Department of the Interior). Monitoring of pesticide content in water in selected areas, L. G. K. Iverson (U.S. Department of Agriculture). Eutrophication and agriculture, Jacob Verduin (Southern Illinois University). Fertilizer nutrients in water supplies, G. E. Smith (University of Missouri).

Part IV. Agriculture and Water Quality (continued). C. H. Wadleigh (U.S. Department of Agriculture). Industrial wastes from agriculture, S. R. Hoover and Lenore Jasewicz (U.S. Department of Agriculture). Siltation—its consequences and control, L. M. Glymph and H. C. Storey (U.S. Department of Agriculture). Salinity in our national waters, D. W. Thorne and H. B. Peterson (Utah State University). Waste water renovation by the land, a living filter, L. T. Kardos (Pennsylvania State University). Economic and administrative problems of water pollution, E. N. Castle (Oregon State University).

Wednesday 28 December

Part V. AAAS Interdisciplinary Symposium. Control of Pollution. Joint program of Sections O and M—Engineering.

Thursday 29 December

Part VI. Soil Pollution in Agriculture. W. P. Martin (University of

Minnesota) will preside. The extent and significance of soil contamination with radionuclides, R. F. Reitemeier and H. L. Hollister (U.S. Atomic Energy Commission) and L. T. Alexander (U.S. Department of Agriculture). The extent and significance of pesticide buildup in soils, T. J. Sheets (North Carolina State University). The breakdown of pesticides in soils, Martin Alexander (Cornell University). Heavy-metal contamination of soils, J. V. Lagerwerff (U.S. Department of Agriculture).

Part VII. Human and Animal Wastes. L. E. Hawkins (Oklahoma State University) will preside. Human waste disposal problems in rural areas (Cornell University). The animal waste disposal problem, E. P. Taiganides (Ohio State University). Biological aspects of the animal waste disposal problem, R. H. Deibel (University of Wisconsin). Properties of poultry manures affecting their disposal, D. C. Ludington (Purdue University). Disposal of animal manures, T. L. Willrich (Iowa State University).

Industrial Science (P)

Wednesday 28 December

The Application of Operations Research to Governmental Problems. Symposium, program of the Society of Section P, cosponsored by the Operations Research Society of America and The Institute of Management Sciences. Arranged by John C. Honig (U.S. Arms Control and Disarmament), who will also preside. Criteria for evaluation and acceptance of operations research activities in nondefense government areas, John H. Moss (Social Security Administration). Computer simulation of railroad network freight operating policies, William P. Allman (Chicago and Northwest Railway Company). Mathematical modeling of patent application flow in the Patent Office, George Suzuki (National Bureau of Standards). An analytical model of the law enforcement system, Alfred Blumstein (Institute for Defense Analysis). Program planning and budgeting in civilian federal bureau, Walter A. Hahn, Jr. (ESSA).

Luncheon and Retiring Vice-Presidential Address of Section P. Ellis A. Johnson (U.S. Department of Health, Education, and Welfare; vice president for Section P) will preside. Industrial sciences in retrospect and prospect, Al-

len T. Bonnell (Community College of Philadelphia; retiring vice president for Section P). Presentation of 1966 Industrial Science Achievement Award by Burton V. Dean (Case Institute of Technology; secretary of Section P).

Operations Research in Branches of the Government. Symposium, program of Section P, cosponsored by the Operations Research Society of America and The Institute of Management Sciences. Arranged by W. Edward Cushen (U.S. Department of Commerce), who will also preside. Operations research/management sciences in the executive branch of the government, W. Edward Cushen. Operations research in the legislative branch of government, Edward Wenk (Library of Congress). Congestion and delays in the Court, James C. Hetrick (Arthur D. Little, Inc.). Operations research at the state and local levels of government, William Spring (University of Wisconsin).

Thursday 29 December

The Prospects and Problems of Improved Health Service in the United States. Symposium, program of Section P, cosponsored by the Operations Research Society of America and The Institute of Management Sciences. Arranged by Ellis A. Johnson, who will also preside. The development problems of large information systems for health, Jordan J. Baruch (General Electric Company). Medical logic in computer-aided diagnosis, Frederick J. Moore (International Business Machines Corporation). Research and development in large-scale preventive health services, Morris F. Collen (Kaiser Permanente Group). The application of new systems, communications, and computer technologies to improved health delivery systems, John Moss (Office of Surgeon General, Washington, D.C.).

Quantitative Studies in Research and Development Management. Symposium, program of Section P, cosponsored by the Operations Research Society of America and The Institute of Management Sciences. Arranged by Marshall C. Yovits (Ohio State University). Decision making under uncertainty in large research and development organizations, Burton V. Dean. Economics of parallel and sequential strategies in research and development, Richard S. Rosenbloom (Harvard) and W. J. Abernathy (University of California, Los Angeles). Behavioral studies of research communication, Herman D.

Lerner (Bethesda, Maryland). Dynamics of research and development organizations, Edward B. Roberts (Massachusetts Institute of Technology).

Operations Research Society of America (P1)

The Society is a cosponsor of Section P's program.

The Institute of Management Sciences (P2)

The Institute is a cosponsor of Section P's program.

Education (Q)

Tuesday 27 December

Contributed Papers. Arranged by Frederick B. Dutton (Michigan State University). Clarence H. Boeck (University of Minnesota) will preside.

Undergraduate Education in the Biological Sciences, Agriculture, and Conservation. Joint session of Section Q, the Commission on Education in Agriculture and Natural Resources (CEANR), and the Commission on Undergraduate Education in the Biological Sciences (CUEBS). Arranged by R. E. Geyer (National Academy of Sciences). Lloyd E. Partain (U.S. Department of Agriculture) will preside and present introductory remarks. An agricultural scientist looks at modern biology teaching, Paul B. Siegel (Virginia Polytechnic Institute). Mountain-top and seashore biology, George A. Gries (University of Arizona). Education for the changing field of conservation, Lawrence S. Hamilton (Cornell University).

Section Q Committee Meeting.

Business Meeting of Section Q.

Thursday 29 December

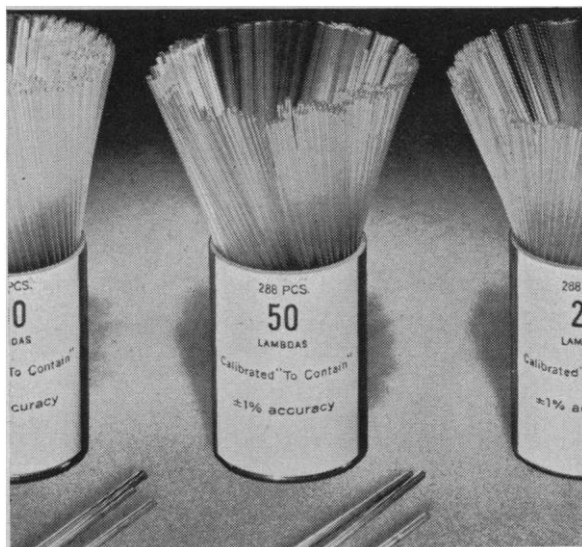
Perspectives of Research in the Natural Sciences. Some Implications for Educational Research. Symposium, joint program of Section Q and the American Educational Research Association. Arranged by J. Myron Atkin (University of Illinois), who will also preside. Speakers: John A. Easley, Jr. (University of Illinois) and Richard E. Schutz (Southwest Regional Laboratory, Los Angeles).

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Vice-Presidential Address of Section Q. Craig Sipe (George Peabody College for Teachers) will preside. Dinosaurs and dodo birds in higher education, Clarence Boeck (University of Minnesota; vice president of Section Q).

Teacher Education for the Eighties. Symposium, joint session of Section Q and the National Association for Research in Science Teaching. Arranged by Craig Sipe, who will also preside. Preparing the science teacher for the elementary school of 1980, Willard Jacobson (Columbia University). Preparing secondary school science teachers for 1980, James A. Rutledge (University of Nebraska).

AAAS Commission on Science Education (Q1)

Panel. Science—A Process Approach, and Experimental Program in Science for Grades Kindergarten through 6. Program sponsored by the Commission. Arranged by John R. Mayor and Arthur H. Livermore (AAAS). John R. Mayor will preside. Panel members: Edwin B. Kurtz, Jr. (AAAS), Arthur H. Livermore (AAAS), Daniel M. Rochowiak (Oliver Cromwell School, Baltimore, Maryland), and Henry Walbesser (AAAS).

Technical and Vocational Education. Symposium, arranged by George B. Brain (Washington State University), who will also preside. Speakers: Grant Venn (U.S. Office of Education), David Bushnell (U.S. Office of Education), and Gordon McCloskey (Washington State University).

American Educational Research Association (Q2)

The Association has arranged a joint session with Section Q (29 Dec.).

American Nature Study Society (Q3)

The ANSS program will be found in the coordinated programs of the Science Teaching Societies. See Q13.

Central Association of Science and Mathematics Teachers (Q4)

The program for CASMT will be found in the coordinated programs of the Science Teaching Societies. See Q13.

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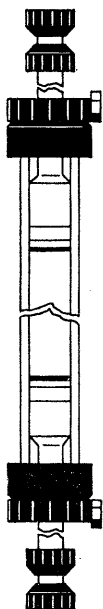
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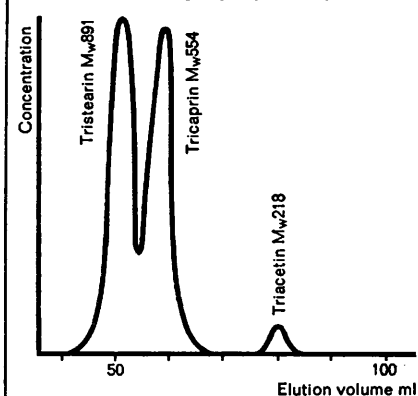
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Commission on Education in Agriculture and Natural Resources (Q5)

The Commission has arranged a joint session with Section Q (27 Dec.).

Commission on Undergraduate Education in the Biological Sciences (Q6)

The Commission has arranged a joint session with Section Q (27 Dec.).

Cooperative Committee on the Teaching of Science and Mathematics (Q7)

Wednesday 28 December

Some Conjectures with Regard to the Future of Science Education. Symposium. Robert L. Silber (American Chemical Society) will preside. Speakers: Richard L. Shetler (General Learning Corp., Washington, D.C.) and I. A. Warheit (International Business Machines Corp., San Jose, California).

Educational Policies Commission (Q8)

Tuesday 27 December

Education and the Spirit of Science. Program of the Commission, cosponsored by the National Science Teachers Association. Arranged by James E. Russell (National Education Association) and Robert H. Carleton (NSTA). James E. Russell will preside. Speakers: I. I. Rabi (Columbia University), Isaac Asimov (science writer, Newton, Massachusetts), and J. Darrell Barnard (New York University).

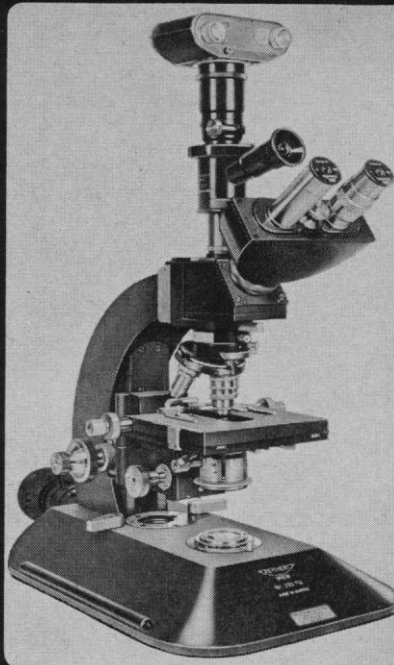
National Association for Research in Science Teaching (Q9)

NARST has arranged a joint session with Section Q (29 Dec.).

National Association of Biology Teachers (Q10)

The NABT program will be found in the coordinated programs of the Science Teaching Societies. See Q13.

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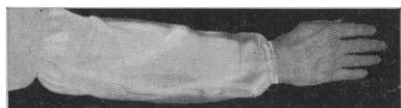


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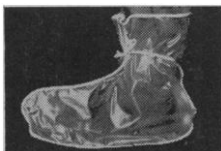
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National Science Teachers Association (Q11)

The NSTA program will be found in the coordinated programs of the Science Teaching Societies. See Q13.

Pennsylvania Science Teachers Association (Q12)

On Thursday, 29 December, the Association will hold its Annual Business Meeting.

Science Teaching Societies Affiliated with AAAS (Q13)

The following is the coordinated program of: American Nature Study Society (Q3), Central Association of Science and Mathematics Teachers (Q4), National Association for Research in Science Teaching (Q9), National Association of Biology Teachers (Q10), and National Science Teachers Association (Q11), in chronological sequence.

Monday 26 December

NSTA Session I. New Approaches in The Laboratory for College Physical Science. Program cosponsored by The Central Association of Science and Mathematics Teachers. Arranged by Albert F. Eiss (NSTA). Conrad E. Ronneberg (Denison University) will preside. Physical science laboratory programs need new approaches, James H. Mathewson (San Diego State College). Laboratory projects in physical science for general education, Conrad Ronneberg. Laboratory projects in physics for science and engineering students, John G. King (Massachusetts Institute of Technology).

ANSS Board of Directors Meeting.

Tuesday 27 December

ANSS Session I. Nature Study and Conservation. Howard E. Weaver (University of Illinois) will preside. Broadened ecological perspectives for understanding man and nature, Sanford S. Farness (Michigan State University). Why wilderness and how biologists can help save it, M. Rupert Cutler (The Wilderness Society, Washington, D.C.). Natural areas: their management and use, Charles H. W. Foster (The Nature Conservancy, Washington, D.C.). Nature study and conservation education programs, Matthew J. Brennan (Pin-

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shot Institute for Studies in Conservation, Milford, Pennsylvania). Conservation of conservation materials, Carl S. Johnson (Ohio State University).

NABT. Contributed Papers. Arranged by Philip Fordyce (Florida State University), who will also preside. Six papers will be presented.

All Science Teaching Societies. After BSCS, What? Arranged by Jay Barton II (CUEBS, Washington, D.C.), who will also preside. Introduction: Possible directions for the biology program of the future, William V. Mayer (BSCS). Organizing principle 1; intellectual history, Garland E. Allen (Harvard). Organizing principle 2; social relevance, Sherwood L. Washburn (University of California, Berkeley). Organizing principle 3; quantitative rigor, Wayne Thornburg (Dartmouth).

Joint Mixer of ANSS, CASMT, NABT, NARST, and NSTA. Planned by the Arlington Science Teachers Association. Phoebe Knippling (supervisor of Science, Arlington County Schools) is chairman.

ANSS Board of Directors Meeting.

Wednesday 28 December

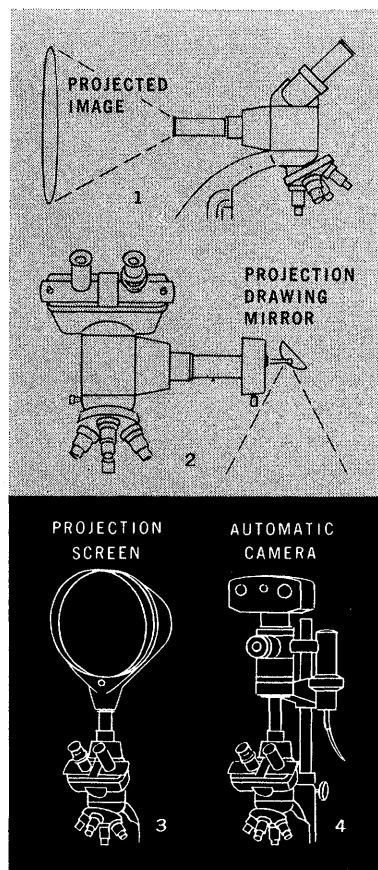
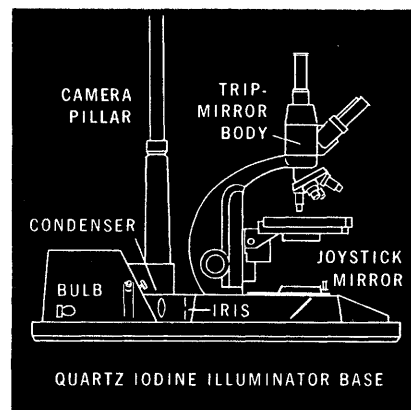
ANSS Session II. Frontiers for Nature Study. John A. Gustafson (State University of New York, Cortland) will preside. New horizons in outdoor education through Title III, Kingsley L. Greene (Outdoor Education Project, Lima, Pennsylvania). Outdoor education for rural disadvantaged, Robert L. Vogl (Northern Illinois University). Are naturalists neglecting nature?, Paul E. Goff (Toledo, Ohio, Metropolitan Park District). School site development: site planning; site development; curriculum enrichment; and community use, William B. Stapp (University of Michigan).

NSTA Session II. Science Education and Children. Program cosponsored by the CASMT. Arranged by Albert F. Eiss. Harold E. Tannenbaum (Hunter College) will preside. Introducing children to science, Mrs. Deanna Brummett (elementary teacher, Webster Groves, Missouri). Widening vistas: inservice education, David Butts (University of Texas). Innovation in science education for elementary teachers, Archie L. Lacey (Hunter College).

NABT Luncheon and Address. William K. Stephenson (Earlham College) will preside. Presentation of NABST Presidential Award, Andrew S. Macalaster (Macalaster Scientific Corpora-

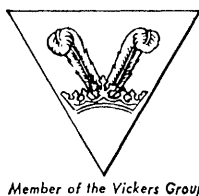
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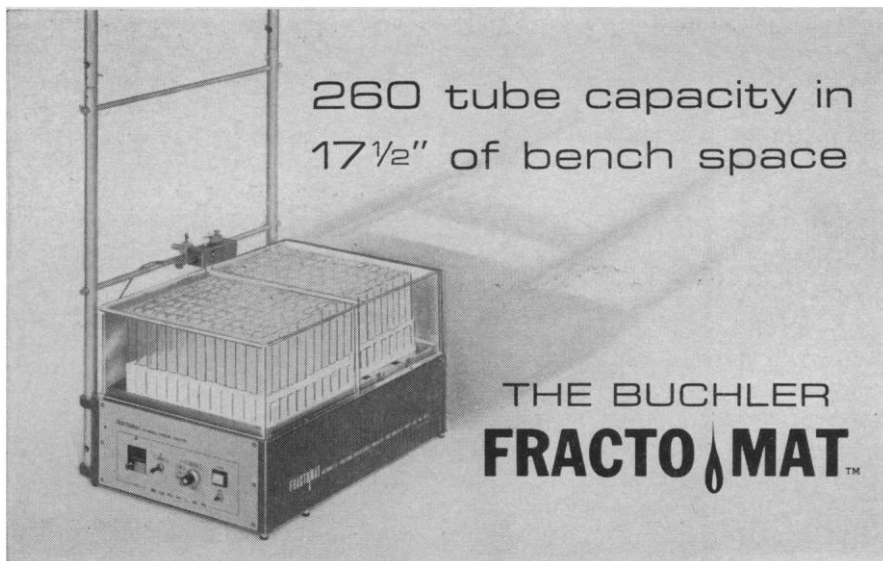


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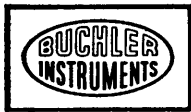
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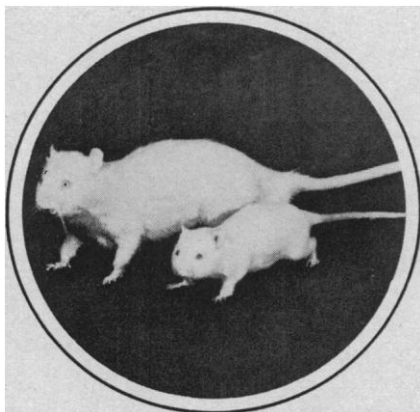
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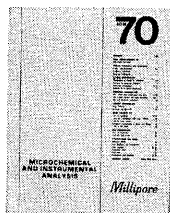
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tion) to Arnold B. Grobman (retiring president, NABT; Rutgers). Behavioral technology and social change, Francis Mechner (Institute of Behavioral Technology, Pleasantville, New York.).

ANSS Annual Luncheon. Douglas E. Wade (Northern Illinois University) will be master of ceremonies. Presidential address: ANSS—present and future, Howard E. Weaver (University of Illinois). Presentation of the Eva L. Gordon Award in Nature Literature.

Thursday 29 December

All Science Teaching Societies. Joint General Session. Human Ecology. Arranged by Jay Barton II (CUEBS, Washington, D.C.). Jack B. Bresler (Tufts University) will preside. A definition of human ecology, Stanley A. Cain (Assistant Secretary of the Interior). Human ecology in the classroom, Jack B. Bresler. Panel: Paul Baker (Pennsylvania State University) and John Paul Scott (Bowling Green State University).

ANSS Session III. Nature Study Approaches Basic to Science Curricula and Programs. H. Seymour Fowler (Pennsylvania State University) will preside. Using slides to stimulate observing and recording, John W. Brainerd (Springfield College). Engendering a sense of wonder, Stanley B. Mulaik (University of Utah). Exploring winter aspects, Richard B. Fischer (Cornell University). Meeting some problems of outdoor education, Ruth W. Kearns (East Hill School, Camillus, New York).

NSTA Session III. The Physical Sciences in Oceanography. Program co-sponsored by the CASMT. Arranged by Albert F. Eiss. Victor J. Linnenbom (U.S. Naval Research Laboratory) will preside. Geophysics, Brackett Hersey (Office of Naval Research). Geochemistry, John Lyman (U.S. Department of the Interior). Fueling of the air-sea system, Michael Garstang (Florida State University).

Joint Committee Meeting to Plan the 1967 Meeting.

ANSS Board Meeting.

Joint Field Trip of ANSS and NABY. Arranged by ANSS and Association of Interpretive Naturalists. Exploring and interpreting some urban ecology in the Washington, D.C., area.

Field Trip of NSTA. Field trip to Goddard Space Flight Center, Greenbelt, Maryland.

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Information and Communication (T)

Tuesday 27 December

The Place of Information Retrieval and Scientific Communication in the Education of the Scientist, Part I.

Symposium, program of Section T, co-sponsored by Section Q—Education. Arranged by Eugene Garfield (Institute for Scientific Information, Philadelphia, Pennsylvania), who will also preside. Scientists and literature resources, Andrew Lasslo (University of Tennessee Medical Units). How can patent literature be made more useful, John Barden (University of Illinois). The pedagogical politics of educating scientists, Frederick L. Goodman (University of Michigan). Sweetness and light, Daniel Gore (Ashville-Biltmore College). Training in scientific thinking through the teaching of scientific writing, F. Peter Woodford (Rockefeller University).

Part II. Panel discussion: comments and critiques on papers presented in Part I. Eugene Garfield will preside. Panel members: Sanborn C. Brown (Massachusetts Institute of Technology), Leonard Ornstein (Mount Sinai Hospital, New York, New York), Richard R. Overman (University of Tennessee Medical Units), Halvor N. Christensen (University of Michigan Medical School), John T. Edsall (Harvard), William A. Fowler (California Institute of Technology), Alvin M. Weinberg (Oak Ridge National Laboratory), and John Pinzelik (Purdue).

Wednesday 28 December

Society and Information Resources.

Interdisciplinary symposium, arranged by Robert A. Harte (American Society of Biological Chemists, Bethesda, Maryland). C. E. Sunderlin (National Academy of Sciences) will preside. Information as a social catalyst, Louis Levin (National Science Foundation). Dynamics of information exchange: scientists in communication, William D. Garvey (Johns Hopkins University). The federal viewpoint, John Sherrod (U.S. Atomic Energy Commission). The international viewpoint, Harrison Brown (National Academy of Sciences).

Thursday 29 December

Luncheon and Address. Phyllis V. Parkins (BioSciences Information Service, *Biological Abstracts*) will preside. Introductory remarks by Edward G. Sherburne, Jr. (Science Service). Isaac Asimov (Boston University School of



The Mammals of Eastern Canada

By RANDOLF L. PETERSON, *Curator of the Department of Mammalogy, Royal Ontario Museum, Toronto*. This book describes the measurements, distribution, habitat and habits, life history, and the role in the environment of all mammals, land and marine, that are known to have appeared in recent times within the boundaries of eastern Canada. There are 233 line drawings illustrating all the species described, and detailed distribution maps. Synopses cover 102 native species, nine introduced, ten domestic, and two extinct; counting the geographic races, there are 235 forms listed. \$15.95

A Monograph of Cantharelloid Fungi

By E. J. H. CORNER, *University of Cambridge*. This is a scientific review of the mushroom-like genera *Cantharellus*, *Craterellus*, *Gomphus*, and fifteen others, of which two are described as new. Their interest lies in the fact that they are intermediate between the gill-less Basidiomycetes and the true agarics. Mr. Corner suggests that all cantharelloid fungi may be degenerate agarics. The greater part of this study is devoted to an illustrated account of the species of the world, in which are incorporated keys to the identification of genera, species, and varieties. 135 text figures. (*Annals of Botany Memoirs* No. 2.) \$14.40

The Life of William Harvey

By SIR GEOFFREY KEYNES. "Medical historians have been accustomed for many years to remark how little is known of the life of William Harvey and thereby to imply that little can be known. In this splendid book the author has demonstrated that in fact a fairly complete picture of Harvey in his own environment can be formed. . . . In these pages we see Harvey as a living figure in his relations with his colleagues, patients, and friends, in his work at St. Bartholomew's, in his position at the courts of King James and King Charles, in his travels, and in his sufferings during the social turmoils that disturbed his later years. . . . It is by far the best biography about the discoverer of the circulation of the blood. It will be a classic."—*The Lancet*. 36 plates; map. \$14.40

The Measure of the Universe

A History of Modern Cosmology

By J. D. NORTH, *Oxford University*. This comprehensive history of modern scientific cosmology gives emphasis to the first half of the twentieth century. The first section provides an historical background for present cosmological studies, while the second part deals with related philosophical issues such as the concepts of "absolute and relative" and "infinite and actual." Illustrated. \$11.20

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SCIENCE, VOL. 154

Medicine) will speak on escape to reality.

The Technical Writer and Society. Symposium, joint program of Section T and the Society of Technical Writers and Publishers. Arranged by Isaac D. Welt (American University), who will also preside. Science writing—the communication of concepts, Irlene R. Stephens (City University of New York). Readability—an essential element of communication, Paul W. Howerton (American University). Technical writing and the copyright problem, Bella L. Linden (Linden and Deutsch, Manhattan). Spot science news and the spirit of science, Chauncey D. Leake (University of California Medical School, San Francisco).

Vice-Presidential Address of Section T. Phyllis V. Parkins (secretary of Section T) will preside. Toward a national information system for the life sciences, William C. Steere (New York Botanical Garden).

Business Meeting. William C. Steere will preside.

National Association of Science Writers (T1)

Tuesday 27 December

Business meeting and reception by Invitation.

Statistics (U)

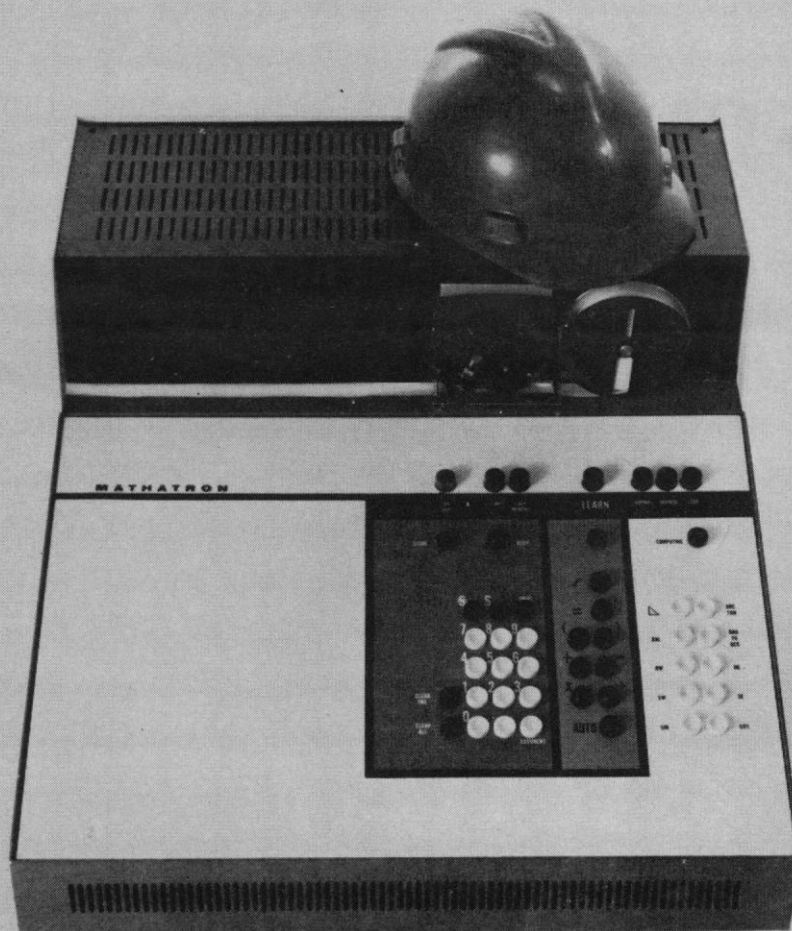
Monday 26 December

Experimental Design in Education. Symposium, joint program of Sections U and Q—Education. Arranged by Rosedith Sitgreaves (Columbia University). Morris B. Ullman (Bureau of the Budget) will preside. A design to assess the effect of given information on judges' ratings, Benjamin Rosner (Educational Testing Service, Princeton, New Jersey). Designs for measuring change over time, Richard H. Lindeman (Columbia University). Some problems in designs for educational research, William W. Farquar (Michigan State University).

Tuesday 27 December

Experimental Design in Epidemiology. Symposium joint program of Sections U and N—Medical Sciences. Arranged by Rosedith Sitgreaves. Lila M. Elveback (Mayo Clinic) will preside. Mouse population experiments with ectromelia (a favorite Topley-Wilson design), Lauritz R. Christensen (Berg Institute, New York University). The

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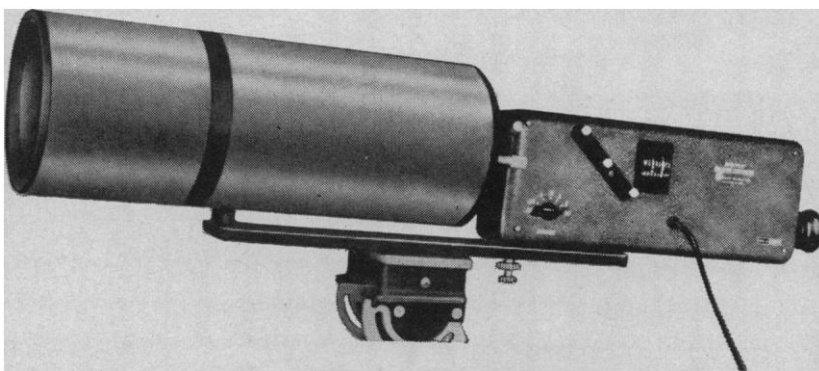
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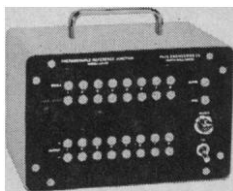
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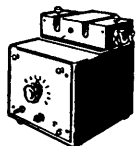
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iatrotropic stimulus and clinical spectrum of a disease: a source of constant bias in epidemiologic comparisons, Alvan R. Feinstein (Yale University School of Medicine). A model for Dengue hemorrhagic fever (a Ph.D. thesis with Colin White), Diana Fisher (Yale).

Thursday 29 December

Vice-Presidential Session. W. J. Youden (George Washington University) will preside. R. A. Fisher: A memorial address by Jerzy Neyman (University of California, Berkeley; past vice president for Section U). A few footnotes by William G. Cochran (Harvard; vice president for Section U).

Friday 30 December

Experimental Design in Agriculture. Symposium, joint session of Sections U and O—Agriculture. Arranged by Rosedith Sitgreaves. Fred Schultz (U.S. Department of Agriculture, Beltsville, Maryland) will preside.

American Statistical Association (U1)

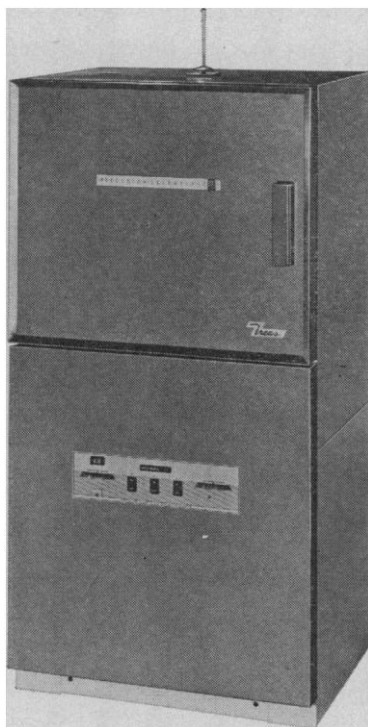
Cosponsor of Section U's entire program. The American Statistical Association (Washington Statistical Society Chapter) and Section U will jointly sponsor a luncheon and address on 29 December at 12:30 p.m. at the Presidential Arms, 1320 G Street, NW. W. Edwards Deming will preside, and Churchill Eisenhart (NBS, Gaithersburg), past chairman of Section U, will speak on "Antecedents of modern experimental design."

Biometric Society, Eastern North American Region (U2)

Thursday 29 December

Over-exploited Animal Populations, Part I. Symposium, joint program of the Biometric Society, ENAR, and Sections F—Zoological Sciences and U, co-sponsored by the American Fisheries Society. Arranged by Douglas S. Robson (Cornell). Walter F. Crissey (Bureau of Sport Fisheries and Wildlife, Laurel, Maryland) will preside. Population dynamics of Antarctic baleen whales, Douglas G. Chapman (University of Washington). Effect of hunting mortality in North American ducks, Aelred D. Geis (Bureau of Sport Fisheries and Wildlife, Laurel, Maryland). Responses of seal populations

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to exploitation, Ian A. McLaren (Dalhousie University). Social behavior in relation to exploitation of California sea lion and northern fur seal, Richard S. Peterson (University of California, Santa Cruz).

**Institute of Mathematical
Statistics (U3)**

Science in General

Academy Conference (X1)

Tuesday 27 December

Breakfast Meeting of the Executive Committee.

Business Meeting of the Academy Conference. James A. Rutledge (president, Academy Conference) will preside. Topics: Reports of officers, reports of committees, discussion of Academy programs and problems, and election of officers.

Public Understanding of Science. James A. Rutledge will preside. The role of state and local Academies of Science in the public understanding of science, E. G. Sherburne, Jr. (Science Service, Washington, D.C.). Discussants: Henry Eyring (University of

Utah), John H. Melvin (Ohio Academy of Science), and J. Teague Self (University of Oklahoma).

Publications and Academies of Science. Program of the Academy Conference, cosponsored by Section T-Information and Communication. V. Elving Anderson (president elect, Academy Conference) will preside. The role of Academies of Science in the field of scientific publications, Robert E. Gordon (University of Notre Dame). Discussants: Gordon H. Bixler (editor, *Chemical and Engineering News*, American Chemical Society, Washington, D.C.), R. Hobart Ellis, Jr. (editor, *Physics Today*, American Institute of Physics, New York City), and Sylvia W. Rosen (Minnesota Academy of Science, Minneapolis).

Academy Conference Dinner and Presidential Address. Karlem Riess (past president, Academy Conference) will preside. Presentation of Distinguished Service Awards by Clinton L. Baker (Southwestern College, Memphis). The requisites of a strong academy, James A. Rutledge.

Wednesday 28 December

American Junior Academy of Science Program I. Robert C. Fite (Oklahoma State University) will preside. Sawdust effects on filth, Lyn Grandt (LaGrove High School, Farina, Illinois). Chlorioalantoic studies, Letantia Jankowski (Immaculate Conception High School, Lodi, New Jersey). Developing a method for determining temperatures in a planetary nebula, Carol Anne Farlow (James Madison High School, Vienna, Virginia). Influence of riboflavin on the effects of 3-amino-1,2,4-triazole on *Schizosaccharomyces octosporus*, Ann Cosgrove (Norman High School, Norman, Oklahoma). The effects of thioracil on the thyroid gland of the albino mouse, Patricia Patridge (Mason City, Iowa). Fossils, the story of ancient life, Larry Lundardi (Notre Dame High School, Niles, Illinois). Photosynthetic gas exchanger in a closed ecosystem for space, Thomas Paul Starch (Marist High School, Bayonne, New Jersey). Determination of the structural change involved in learning in planarians through the application of retrograde amnesia, Jack Gaughan, Jr. (Homer L. Ferguson High School, Newport News, Virginia). An algebraic ring of F-sequence and determinant solutions to simultaneous equations in the system, Ken A. Dill (Putnam City High School, Oklahoma City, Oklahoma).

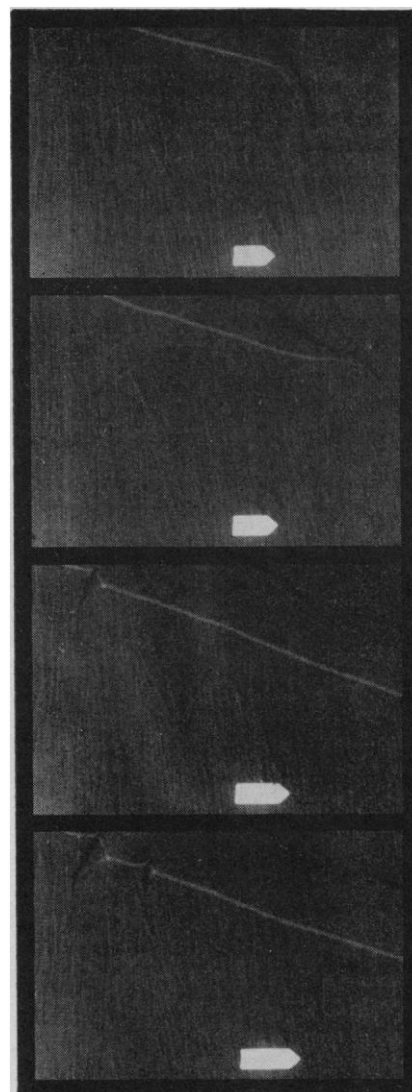
American Junior Academy of Science



Magnetic domains made visible by the electron microscope

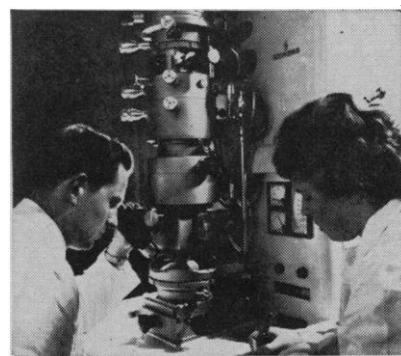
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Program II. Wilmer W. Tanner (Brigham Young University) will preside. The research, design, and development of the ARC-jet engine and its application, Gary Hudson (St. Bernard's High School, St. Paul, Minnesota). A comparison of methods of interpretation, Don Barry (Cedar Rapids, Iowa).

Scientific Research Society of America (X2)

Thursday 29 December

Joint Luncheon of the Society of the Sigma Xi and the Scientific Research Society of America.

Annual Address of the Scientific Research Society of America and Award of the William Procter Prize. Chauncey Starr will preside. Speaker: Elmer W. Engstrom (Radio Corporation of America). Award of William Procter Prize by Chauncey Starr.

18th Annual Convention of the Scientific Research Society of America. Chauncey Starr will preside.

Scientists' Institute for Public Information (X3)

The Institute's Committee on the Biological and Social Aspects of Race is a joint sponsor of the symposium, The Utility of the Construct of Race (30 Dec.). See General Sessions.

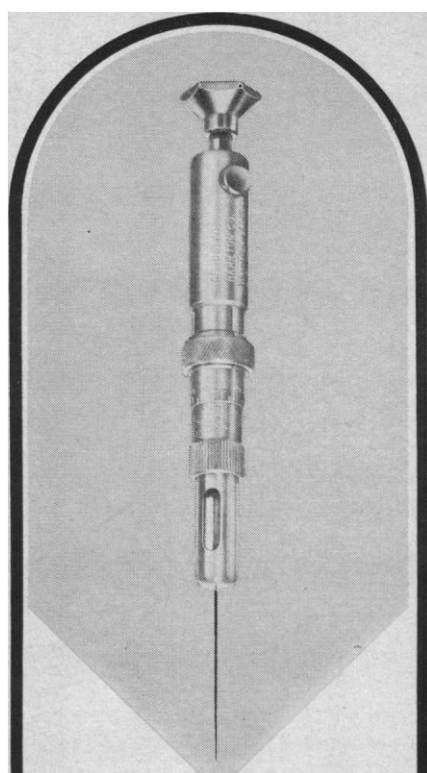
Sigma Delta Epsilon (X4)

Monday 26 December

Coffee Hour (4 p.m.) for all women in science.

Tuesday 27 December

Member Research on Cancer and Infectious Disease. Symposium arranged by a committee: Agnes Hansen (University of Minnesota, chairman; Barbara Roth (Burroughs Wellcome & Company, Tuckahoe, New York); El-tora M. Schroeder (U.S. Department of Agriculture, Beltsville, Maryland). Irene C. Diller (Institute for Cancer Research, Philadelphia, Pennsylvania) will preside and present the first paper, The infectious nature of cancer. Bacterial implications of cancer, Eleanor Alexander-Jackson (College of Physicians and Surgeons, Columbia University). Viruses and cancer, Bernice E. Eddy (National Institutes of Health). Mechanisms of chemical carcinogenesis,



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Helen M. Dyer (National Science Foundation). Environmental factors influencing radiation-induced genetical damage to the cell, Anna R. Whiting (Oak Ridge National Laboratory). Chemotherapy based on differential enzyme inhibition, Barbara Roth (Burroughs Wellcome & Company). A new experimental animal for medical research—the miniature pig, Almut E. Dettmers (University of Minnesota).

Wednesday 28 December

Luncheon for all women in science. Eltora M. Schroeder (president, Sigma Delta Epsilon) will preside. What is a hortorium?, Margaret H. Stone (L. H. Bailey Hortorium, Cornell University).

Society of the Sigma Xi (X5)

Thursday 29 December

7th Annual Convention of the Society of the Sigma Xi, Part I. Farrington Daniels (University of Wisconsin, Madison) will preside.

Joint Annual Address of the Society of the Sigma Xi and the United Chapters of Phi Beta Kappa. H. Bentley Glass (member, AAAS Board of Directors) will preside. Science, a well-spring of our discontent, Walter Orr Roberts (National Center for Atmospheric Research, Boulder, Colorado).

United Chapters of Phi Beta Kappa (X6)

The program consists of the joint address of Phi Beta Kappa and Sigma Xi (29 Dec.).

Washington Academy of Sciences (X7)

Tuesday 27 December

Special Invited Lecture. John K. Taylor (president, Washington Academy of Sciences) will preside. The ever-widening gap, P. M. S. Blackett (president, The Royal Society, London, England).

Wildlife Society (X8)

Friday 30 December

Wildlife Resources in a Changing World. Symposium, joint program of Section F—Zoological Science and the Wildlife Society. Arranged by John L. Buckley (U.S. Department of the Interior). For details, see Section F.



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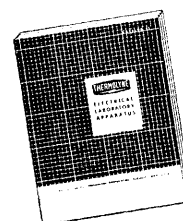
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