Reports of Sections and Societies

Mathematics (Section A)

Two vice-presidential addresses were presented at the first session which was sponsored by Section A, on Monday afternoon. The first, by G. A. Hedlund (Yale University), was entitled, "Mappings on sequence spaces." Hedlund surveyed work on infinite sequences with elements 0 or 1 and reported his own research in this field, some of it involving the use of a digital computer.

William L. Duren, Jr. (University of Virginia), retiring chairman of Section A, spoke on the "Training of college teachers of mathematics and science." After stating figures for the probable number of available college mathematics teachers and observing that the present summer programs sponsored by the National Science Foundation are permitting high school mathematics teachers in many cases to become junior college teachers, he explored possible means of increasing the number of college teachers of mathematics. Listing a set of requirements for a college teaching degree he proposed means of meeting these requirements and suggested instituting a new type of degree.

Duren presided on Tuesday morning at a symposium on "The Mathematics Course on Continental Classroom," arranged by G. Baley Price. J. L. Kelley (University of California, Berkeley), whose television appearances the first semester this year were reported to be seen by an audience estimated as in excess of half a million persons, spoke on his experience in producing these lectures under the title, "Modern algebra." Frederick Mosteller (Harvard University) spoke of the second semester course, already largely recorded for second semester telecast, under the title, "Probability and statistics." The third speaker was Julius H. Hlavaty of the DeWitt Clinton High School, who spoke of the Tuesday morning television discussion for teachers of the algebra program, under the title, "The teacher-education program." The final speaker was Marvin Einhorn, who spoke on "Problems of the producer," and showed brief excerpts from the film recordings.

Since about 200 colleges give credit for the current course and 314 have already enrolled for the second semester, the symposium might well have attracted a larger audience than it did. Film recordings of the course will be available from the Learning Resources Institute (680 Fifth Avenue, New York).

The third program sponsored by Section A took place on Wednesday morning and was jointly sponsored by the Society for Industrial and Applied Mathematics. The program, entitled "Mathematics Approaches New Problems," was arranged by Brockway McMillan (Bell Telephone Laboratories). James Griesmer (International Business Machines) presided and opened the symposium by briefly commenting on the importance of the application of mathematics to areas in the physical and social sciences. Dean Gillette (Bell Telephone Laboratories) spoke on the application of game theory to military strategy and tactics. He showed how the theory of games prescribes a method of play which guarantees a known return no matter what the opponent does, a conservatism which is consistent with sound military planning. He cautioned, however, that a complex game-theoretic analysis based on a large number of assumed values may yield quantitative answers which may have no obvious relationship to the assumptions and which may be quite sensitive to assumed values. He added that game theory can contribute greatly to military strategy through the analysis of simple problems that indicate principles and tendencies consistent with the conservative approach. Frank Harary (University of Michigan) presented a paper on an application of graph theory to group dynamics. He used concepts from the theory of graphs to define a measure which describes the cohesiveness of a group. He assumed that the cohesiveness of a group is related to the amount of connectedness of its group structure, and developed three different types of connectedness to make an initial subdivision among group structures. He then further distinguished between group structures within each connectedness type through the notion of the "centrality" of a group. John Bertram (I.B.M.) spoke on the role of mathematics in control systems development. He discussed the evolution of the mathematical formulation of the control problem from Maxwell's time to the present day. He stated that, even though theoretical analysis alone is not adequate to deal with a complicated engineering system, experience has shown that the mathematical formulation of a simplified, but related, problem is often very useful. The mathematical solution and understanding of this related problem can indicate the direction of adjustment which will best improve the performance of the actual system.

WALLACE GIVENS, *Secretary*

Physics (Section B)

The outstanding event for physicists was the interdisciplinary symposium, "Plasma—The Fourth State of Matter," held on Wednesday, 28 December. The timeliness of this topic was attested by the overflow audience and the fact that the audience did not dwindle appreciably during the three-hour symposium. There were last-minute changes in the program, since two of the speakers, Fred T. Haddock (University of Michigan) and Thomas Gold (Cornell), became ill and had to cancel their presentations, the first early in December and the second on 23 December. Thanks, however, to the emergency action taken by Lyman Spitzer of Princeton, who had assisted in arranging the program and was to preside, a substitute was found—James A. Van Allen (State University of Iowa), who gave the second paper of the symposium, on the role of adiabatic invariants in geomagnetic trapping. He spoke of the mechanisms of trapping charged particles by the earth's magnetic field, resulting in the simplest of all plasmas.

The first paper, by Melvin B. Gottlieb (Princeton), was a clear exposition of the nature of the plasma and its many strange properties. This paper was of

considerable tutorial value to the audience, which included physicists, astronomers, science writers, and other interested persons. In the third paper, on instabilities in laboratory plasmas, Stirling A. Colgate (Lawrence Radiation Laboratory, University of California) explained how these present-day demons —instabilities in the plasma stream— are thwarting man's efforts to produce a thermonuclear reaction in the laboratory. Acknowledgment is made of the co-sponsorship of this program by Section D (Astronomy), the American Astronomical Society, the Division of Plasma Physics of the American Physical Society, and Sigma Pi Sigma.

The panel discussion on the place of nuclear engineering in the university curriculum was primarily arranged by Section M (Engineering) but was cosponsored by Section B, whose representatives participated in its planning and execution. There was a vigorous discussion for the full three hours, carried on by four panel members with differing ideas, and by the moderator, and thoroughly enjoyed by a rather small but keenly interested audience.

Unfortunately it seemed advisable to cancel the Physicists' Luncheon. On the basis of the very scant early sales of tickets it was impossible to make a reasonable guarantee to the hotel. Apparently the high price of meals in private dining rooms in New York hotels simply cannot be accepted by many of our colleagues; a solution must surely be found to this unhappy problem.

STANLEY S. BALLARD, *Secretary*

Chemistry (Section C)

The sessions of the chemistry section of the 127th meeting of the AAAS are now a matter of record, but those who had the good fortune to attend will long remember them as the occasion for the presentation of new concepts, of new and interesting scientific data, and of new or modified ideas for expanded research and scientific discipline.

Topics covered at the session on submitted papers were as follows: high-temperature adsorption studies on silica-alumina and molybdena-alumina catalysts by the use of flow techniques (P. E. Eberly, Jr., and C. N. Kimberlin, Jr.); low-temperature ionic scission of carbon-carbon bonds (Alan Schriesheim); Radiation-promoted hydrocarbon reactions (Peter J. Lucchesi); direct quantitative determination of radioactivity on paper chromatograms (Sayed H. Hilal and Walter E. Kisieleski); a gravimetric method for measuring deuterium-hydrogen exchange between water and natural polymeric solids (John L. Morrison); a study of carcinolysis (Paul Fluss, Robert Willheim, Mitzi Auber, and Benedict B. O'Malley); and heterogeneous enzyme activities of certain chymotrypsin preparations (Anwar A. Hakim).

A symposium on mechanism of action of antitumor agents, arranged by Charles C. Price, covered the following topics: 6-mercaptopurine (M. Earl Balis); azaserine (John M. Buchanan); folic acid antagonists (Charles A. Nichol); fluorinated pyrimidines (Charles Heidelberger); alkylating agents (Charles C. Price and Robert J. Rutman); and cyclophosphamide (Orrie M. Friedman).

The symposium on recent advances in polymer chemistry, arranged by Charles G. Overberger and Robert Ullman, included papers on the following topics: Diels-Alder polymers (J. M. Whelan); kinetic investigation of the solution polymerization of propylene (Donald F. Hoeg); aromatic polyethers (Charles C. Price); polyaromatics (James E. Mulvaney, Herward Vogel, Takayuki Otsu, Clause J. Abshire, M. Hasegawa, and C. S. Marvel); high-resolution nuclear magnetic resonance spectroscopy of polymers (F. A. Bovey); the stretching of crystalline polymers (R. S. Stein); studies of the secondary structures of ribonucleic acid (J. Fresco); and polymerization in the crystalline state (Herbert Morawetz).

Another symposium, arranged by George T. Kerr, dealt with synthetic zeolites, under the following topics: electrical conductivity of synthetic zeolites (Dennis N. Stamires); crystal structure of Ca-H_2O-chabazite (Joseph V. Smith); continuous and discontinuous changes in zeolite structure (Rustum Roy); and kinetics of crystal growth of zeolite A (George T. Kerr).

A symposium on reactions of complexes, arranged by John C. Bailar, Jr., included papers on the following subjects: substitution reactions of metal complexes (Fred Basolo); mechanism of racemization of complexes (Gordon Harris); catalytic racemization of complexes (W. Conrad Fernelius); and reactions of coordinated ligands (Daryle H. Busch).

There was only one discordant note in the entire program—projection difficulties which resulted in embarrassment for some of the speakers. Only slides of the very best quality can be satisfactorily projected on a small screen with a relatively old lantern in a long room—conditions which are unavoidable at a meeting such as this because of the large number of concurrent sessions. All speakers should therefore provide themselves with the best possible slides. A speaker at meetings of this general type should observe the following rules in preparing his slides: (i) always use positives; (ii) never use radio mats; (iii) never place more copy on any slide than can be typed conveniently in a 3¼- by 4-inch area in case a standard projection slide is desired; and (iv) type copy for photographic reproduction on good bond paper with a new black ribbon and back the sheet with black carbon paper. If these four suggestions are followed, a speaker may be assured of relatively good projection of his slide material. In my opinion poor slides materially detract from what might otherwise be a very good presentation.

The retiring chairman of the Section C is Robert W. Schiessler (Socony Mobil Oil Company), whose efforts during the year are greatly appreciated by both the section and the AAAS. The chariman for 1961 is Essie White Cohn (University of Denver), who has a very good program organized for next year's Denver meeting of the AAAS. The secretary of the section, elected for the next four years, is Seymour L. Meisel, who served very effectively during the past year as program chairman of Section C. Papers for the Denver meeting should be submitted, on or before September 1961, to Dr. Meisel, Research Laboratories, Socony Mobil Oil Company, Paulsboro, New Jersey.

ED. F. DEGERING, *Retiring Secretary*

American Association of Clinical Chemists (C1)

The program of the American Association of Clinical Chemists consisted of two parts: (i) a symposium on the biochemical applications of gas chromatography and (ii) a series of 26 contributed papers on various subjects related to medicine and biochemistry. Donald A. M. Mackay presided over the symposium; E. C. Horning, E. O. A. Haahti, B. G. Creech, C. C. Sweeley, and W. D. Cooke spoke on the pragmatic and theoretical aspects of gas chromatography as applied to the analysis of solid and high-boiling organic compounds. Particular emphasis was given to the determination of steroids,

drugs, and various urinary metabolites which have current significance in biochemistry. The session was very well attended. It concluded with a panel discussion, in which various questions from the floor were considered.

The contributed papers were quite varied in content. They dealt with such subjects as the enzymic determination of glucose, methods for determining several enzymes of clinical interest, lipoproteins, calcification, cancer, pernicious anemia, and neurologic disorders.

HARRY GOLDENBERG,
Program Chairman

Astronomy (Section D)

Section D cosponsored with Section B (Physics) the interdisciplinary symposium, "Plasma—The Fourth State of Matter." Section D also served as cosponsor of the American Geophysical Union's symposium, "Impact of Space Research on the Sciences," the National Science Teachers Association's session, "The New Astronomy," and Section E's symposium on selenology.

Section D also was a joint sponsor of the entire program of the American Astronomical Society. This included the Section D vice-presidential address by Ira S. Bowen on problems in future telescope design. It also included the Warner lecture by Halton C. Arp on the stellar content of galaxies and 73 contributed papers on various astronomical topics. A reception and the society dinner, held at the American Museum of Natural History, were followed by an exhibition of films designed to stimulate popular interest in astronomy.

The quality of the papers was high, and attendance at the sessions was large. Also of interest to the members was the lecture by Edward Anders, winner of the Newcomb Cleveland prize in 1959. This was entitled "Recent Work on Meteorites," and was part of the AAAS general symposium, "Moving Frontiers of Science."

F. B. WOOD, *Secretary*

Geology and Geography (Section E)

Ten symposia were held, and there were two sessions for contributed papers. Eighty-nine papers were presented; attendance at several sessions reached 250. A. John Haworth was program chairman and personally organized the geology program. The geography program was organized by Charles C. Morrison, Jr.

The symposium on "The Urban Frontier: the Conquest of Inner Space," a discussion of urban renewal, was presented as one of the AAAS general sessions.

At the Section E smoker Howard A. Meyerhoff, retiring section chairman, gave an address entitled "Mineral raw materials in the national economy," a historical account of mineral development in the Western Hemisphere and an assessment of the present position of the United States with respect to minerals.

At the Geographers' Dinner, George B. Cressey gave an illustrated lecture on his travels last fall in Saudi Arabia, Iraq, and the Mongolian People's Republic.

The geology program included symposia on palynology, frontiers in the earth sciences, the Mohole, and selenology. The Mohole symposium was an experiment; having been originally presented at the meeting of the American Association of Petroleum Geologists in Atlantic City last April, it was repeated for the AAAS audience because of the number of scientific disciplines concerned with the project. The experiment appears to have been a success; this was the best-attended symposium of Section E.

The geography symposia included further consideration of the theme of urban planning, with a discussion of the New York metropolitan region of the future. A symposium on Soviet geography considered training and current research interests in the U.S.S.R. The session on late Pleistocene events in southern South America considered glaciation, sedimentation, postglacial environmental changes, and—to emphasize the dynamic nature of the area—a description of the Chilean earthquake of 1960. In economic geography there were sessions on programming the use of natural resources and particularly timely sessions on economic development and investment in Africa south of the Sahara.

FRANK C. WHITMORE, JR., *Secretary*

National Speleological Society (E5)

The biology section of the meeting of the National Speleological Society was devoted to a symposium dealing with the physiological adaptations of cavernicolous organisms. Thomas L. Poulson outlined the varying metabolic rates of the Amblyopsidae, indicating the lower metabolic levels of the better-adapted cavernicolous forms as opposed to the higher levels in the epigean species of the same family. John W. Twente reported the principal adaptations of bats, such as heterothermy and preference for nocturnal activity, and reported that echolocation evolved as a secondary adaptation after caves had been invaded by bats for purposes of protection. Charles Mohr presented observations on a colony of *Eurycea longicauda* that indicate a homing inclination in the cave salamander. A paper by Orlando Park and Thomas C. Barr dealt with the concept of the cave ecosystem as an integrated community. Cave communities have not been well explored in this country, but preliminary studies indicate that the food chain is more complex than was formerly realized. Investigations in the Mammoth Cave area of Kentucky should produce more definite information within the next few years.

G. NICHOLAS, F.S.C.,
Program Arranger

Cave Mineralogy

A symposium on cave mineralogy was cosponsored by the National Speleological Society, the Geological Society of America, and Section E.

Cave minerals provide a unique opportunity for the study of crystal growth. In caves, conditions of temperature and partial pressure of water vapor and carbon dioxide remain nearly constant for many years. Cave mineralogists have recently focused their attention on the physics and chemistry of crystal deposition in the cave environment.

Three papers were concerned with the problem of crystal growth of the two most common cave minerals, calcite and aragonite. R. L. Curl emphasized the role of kinetic processes in explaining the metastable deposition of aragonite and suggested that foreign ions and temperature affect precipitation by changing the distribution of screw dislocations in the lattice and by changing the rate of nucleation rather than by contributing to lattice stability. G. W. Moore discussed the growth of stalactites and the role of soil carbon dioxide and ground-water *p*H. He noted that the observed preferred crystal orientation can be explained by the more rapid rate of growth of calcite in the *c*-axis direction. W. A. Bassett and A. M. Bassett reported on an observation

of a stalactite with the external form of a hexagonal crystal. They explain this occurrence by the rate of deposition of calcium carbonate and by the preferred rate of crystal growth along the *c*-axis.

In the final paper, W. B. White and G. H. Deike applied geochemical criteria to explain the magnesian calcites and other unusual mineral assemblages in Wind Cave, South Dakota.

The proceedings of the symposium, including all papers and the complete discussion, will be published as an issue of the *Bulletin of the National Speleological Society*, late in 1961.

WILLIAM B. WHITE, *Program Arranger*

Zoological Sciences (Section F)

The program of Section F represented nearly all major areas of zoology and comprised nine symposia and 19 sessions of research reports, with a total of 220 papers. R. L. Watterson served as program coordinator. Abstracts of the papers have been published by the American Society of Zoologists in *Anatomical Record* [**138** (Nov. 1960)].

Interdisciplinary discussions were again emphasized in the meetings this year; two symposia gave special attention to this approach. One, entitled "Submicroscopic Cellular Structure and Function" (arranged by Barry Commoner and Viktor Hamburger), continued the series "Unsolved Problems of Biology," on which Section F and Section G (Botany) have collaborated for the past several years. The other brought together discussions on the general theme, "Life under Extreme Conditions," with individual sessions devoted to cells and tissues (arranged by A. C. Taylor), plants and animals (arranged by C. P. Lyman), and human studies (aranged by J. P. Marbarger).

Two symposia considered problems of evolution: "The Evolution of Sex" (arranged by E. Witschi) and "Evolution and Dynamics of Vertebrate Feeding Mechanisms" (arranged by P. W. Gilbert and B. Schaeffer). Each of two half-day sessions was devoted to symposium discussions of modern aspects of population biology (arranged by R. C. Rollins), physiology of molluscs (arranged by R. A. Boolootian), and teaching animal behavior (arranged by E. B. Hale).

C. L. Hubbs and G. W. Wharton organized a delightful program in which anecdotes and recollections about famous zoologists were given. We hope that similar programs may be presented at future meetings. Another program new to Section F was a panel discussion on research opportunities for undergraduates.

The local committee, under the chairmanship of H. A. Charipper, performed splendid service in providing and operating equipment for the many simultaneous scientific sessions and in making arrangements for the Zoologists Banquet. The banquet was, again this year, a very pleasant gathering, with Emil Witschi a jovial master of ceremonies. Viktor Hamburger, the section chairman, gave a very interesting account of biological research in Japan in his address, "An embryologist visits Japan."

KARL M. WILBUR, *Secretary*

The symposium on molluscan physiology, in which each participant presented a brief paper and a summary of his recent findings, was well attended and well received. The varied discussions on such subjects as physiological ecology, functional morphology, digestive and reproductive physiology, nitrogen metabolism, and neurohormones proved to be interesting, stimulating, and provocative.

The proceedings of the symposium showed unequivocally that investigations on molluscs have contributed significantly to our understanding of basic biological phenomena and that future studies of molluscs should help us understand many basic patterns of biological activity.

R. A. BOOLOOTIAN,
Symposium Chairman

Spermatozoan Motility

Understanding of complex biological processes may be advanced by timely integration of ultrastructural, biochemical, and physiological information and principles. This was the viewpoint, in a measure supported, of a group of active investigators from British, French, and American laboratories who met to discuss the problem of spermatozoan motility at the New York meetings. Recent advances in the field were reviewed, and many new data were reported.

The four-session symposium was eloquently keynoted by Lord Rothschild (Cambridge) in an address of broad scope, entitled "Sperm movement, problems and observations." His address was followed by a provocative contribution by F. D. Carlson (Johns Hopkins), "A theory of the survival value of motility." H. B. Steinbach (University of Chicago), who presided at this session, discussed inorganic ion distribution in invertebrate sperm, and R. Rikmenspoel (Johnson Research Foundation, University of Pennsylvania) added significant comments concerning sperm velocity and wave characteristics.

The second session, generally devoted to structure in relation to function, included a paper by D. W. Fawcett (Harvard) on ultrastructure, illustrated by elegant electron micrographs; a biophysical approach by F. G. E. Pautard (Leeds University), in which he showed a film strip of an oscillating sperm-extract gel; and an excellent review by L. Nelson (Emory University), of cytochemical procedures applied to thin tissue sections and viewed in the electron microscope for the localization of enzyme complexes associated with oxidation and motility.

Biochemical processes were considered in the third session, presided over by R. J. Flipse (Pennsylvania State University). Current aspects of glycolysis, mainly investigated by isotopic techniques, were discussed by C. Terner (Boston University). P. H. Gonse (Centre de Recherches de Lyon) summarized his very impressive quantitative studies of the cytochrome components of bull sperm and the role of oxidative phosphorylation in motility. G. W. Salisbury (University of Illinois) reviewed the extensive work, principally from the Illinois group, of ionic and osmotic relationships of sperm in regard to motility.

The final session, presided over by T. Hayashi (Columbia), was primarily directed toward the mechanism of motility per se. J. Tibbs (St. Andrews) reviewed the status of sperm adenosine triphosphatase and included his recent findings on adenosine triphosphatase and acetylcholinesterase from fish sperm. The characteristics and significance of extracted flagellar models were discussed by D. W. Bishop (Carnegie Institution). The last paper, that of C. J. Brokaw (University of Minnesota), considered studies on algal flagella and constituted a memorable survey of motility processes and principles related to those of spermatozoa.

While some problems were seemingly settled by these discussions, freely entered into by an alert audience, perhaps more were raised. Certainly no final explanation of the mechanism of sperm motility emerged from these meetings, but many points were clarified, the main issues were defined, and certain feasible

routes of future investigation were suggested.

This symposium was cosponsored by the AAAS and the American Society of Zoologists supported by a grant from the National Institutes of Health. Publication of the complete proceedings is anticipated.

DAVID W. BISHOP, *Program Arranger*

Society of Systematic Zoology (F2)

The 12th annual meeting of the Society of Systematic Zoology included a session of contributed papers, a symposium on famous zoologists, a preview and discussion of the new International Code of Zoological Nomenclature, and other special events. Unfortunately, the society's collection of books on zoology was snow-bound in Illinois and was not available for the book lounge at this meeting.

One of the highlights of the meeting was the session on the lives of five famous American zoologists, arranged by Carl L. Hubbs and George W. Wharton and cosponsored by the American Society of Zoologists and AAAS Section F. The lives and personalities of Thomas Barbour, Leonhart Stejneger, Stephen A. Forbes, Joseph Grinnell, and A. S. Pearse were sketched by Alfred S. Romer, Waldo L. Schmitt, Harlow B. Mills, Alden H. Miller, and George W. Wharton, respectively. Carl L. Hubbs presided at the session. These sketches are to be combined with those from a previous program and published in book form.

Another high point was the lively discussion of various provisions of the new International Code of Zoological Nomenclature, under the leadership of W. I. Follett. Panelists for this discussion included Richard E. Blackwelder, Carl L. Hubbs, Ernst Mayr, and Curtis W. Sabrosky.

Another important event was a tour of the American Museum of Natural History, with visits to the various working departments of the museum by individual systematists, followed by a coffee hour. Arrangements for this pleasant visit were made by Horace W. Stunkard.

Retiring president W. I. Follett presided at the annual business meeting and received the reports of various officers. Recent actions and plans of the council were reviewed by secretary R. Tucker Abbott, and the elections committee announced the election of Curtis W. Sabrosky as president-elect for 1961. Fenner A. Chace, Jr., and R. R. Miller were elected councilors for the period 1961–64. Richard E. Blackwelder is president of the society for 1961.

CHARLES F. LYTLE, *Program Chairman*

Biomedical Information-Processing Organization (FG4)

The Biomedical Information-Processing Organization held its first meeting 30 December, 1960. The new organization considers itself extremely fortunate in having had three distinguished speakers discuss problems related to its aims and goals. Joseph S. Murtaugh (National Institutes of Health) spoke on "Some developments in medical research of meaning for the computer field," discussing many of the areas of significant advances in biomedical research and the related possible role of the computer. Harold K. Skramstad (National Bureau of Standards) spoke on "Analog-digital devices and problems involved in suggesting standards," describing the basic technology of analog and digital devices and the problems of suggesting standards in this area. Walter M. Carlson (American Institute of Chemical Engineers and E. I. du Pont de Nemours) spoke on "Problems involved in sharing digital computer codes and programs," reviewing the problems encountered and solutions proposed by the Machine Computation Committee, American Institute of Chemical Engineers, in sharing computer programs from a subject-oriented point of view.

Officers were elected and a constitution outline was accepted during the business meeting. The officers are as follows: inaugural president, Robert S. Ledley; president, Max A. Woodbury; president-elect, Norman F. Shapiro; secretary-treasurer, Charles J. Roach; council members, Lee D. Cady, Jr., and John F. Hearon.

ROBERT S. LEDLEY, *Program Arranger*

Nature Conservancy

At an open meeting of the National Committee for Natural Areas for Schools, the topic of outdoor research for indoor education was introduced by John Brainerd (Springfield College). A welcome was extended in the name of the AAAS and of nature conservancy, and the importance of outdoor experience with natural phenomena as a stimulus for interesting young people in science was emphasized. Kodachrome diagrams indicated that the design of school grounds has not kept pace with that of school buildings. Kodachromes of school sites demonstrated the modish but sterile uniformity of many school sites as compared with the grounds of schools that carefully preserve or create environmental diversity useful for programs of outdoor education correlated with indoor classes.

Stanley Cain (University of Michigan) discussed plant distribution on school grounds, bringing to the fore such basic problems as nomenclature, areal distribution, and causality. He indicated possibilities for planning environmental studies in connection with physical-science courses. He stressed the need for mathematics in sampling, and stated that an understanding of botany is needed for studies of plant density, frequency, coverage, and life form—studies which can be made on school grounds or in neighboring fields.

Leslie Clark (Society for Protection of New Hampshire Forests) led a discussion of woodland natural areas and school forest research and emphasized the tremendous number of possible research projects that require a minimum of equipment.

David Davis (Pennsylvania State University) provided information on trapping, marking, and humane methods of handling small animals. He indicated ecological questions which can challenge young scientists studying "animal populations on school grounds." Photography as a research technique and stimulus to scientific inquiry was presented by Charles Mohr (Philadelphia Academy of Natural Sciences).

Jacob Shapiro (Wisconsin State College) stressed the difficulties of training teachers in natural science and described this all-important work.

JOHN W. BRAINERD, *Program Arranger*

Society for the Study of Evolution (FG10)

The society held seven meetings, all in the Biltmore Hotel, with a total of 39 papers presented. On 27 December it held a symposium jointly with the American Society of Naturalists and others, on modern aspects of population biology. This was arranged by Reed C. Rollins of the American Society of Naturalists and Harlan Lewis of the Society for the Study of Evolution. It included sessions on phylogenetic aspects of evolution, genetic aspects of evolution, speciation and variation, and ecological aspects and methods.

At the general session of the society Alfred E. Emerson delivered the presidential address, "Vestigial characters of termites and the processes of regressive evolution." To everyone's regret, illness prevented H. J. Muller from presenting his invited paper at this session.

At the business meeting it was announced that D. Dwight Davis is managing editor of *Evolution* (a new office). Announcement was also made of the new officers and councilors for 1961: president, Harlan Lewis; president-elect, W. Frank Blair; vice presidents, M. J. D. White, John A. Moore, and E. C. Olson; treasurer, Robert E. Beer; council members, Verne Grant and Dean Amadon.

HERBERT H. ROSS, *Secretary*

Botanical Sciences (Section G)

The successful program of Section G was organized jointly with Section F (Zoological Sciences), the Torrey Botanical Club, and the American Society of Zoologists. A symposium on fundamental developments in plant growth, consisting of eight invited papers, was planned by the Torrey Botanical Club. A symposium, cosponsored with Section F, on life under extreme conditions, consisted of seven papers.

The 1960 "Unsolved Problems in Biology" program, organized by sections G and F and arranged by Barry Commoner in cooperation with the American Society of Zoologists, was titled "Submicroscopic Cellular Structure and Function." Another symposium, "Machine Methods in Biology," was organized for Section G by David Rogers of the New York Botanical Garden. A session of contributed papers completed the scientific offerings.

The usual dinner sponsored by the Botanical Society of America was replaced by a luncheon arranged by the Torrey Botanical Club. At this luncheon Commoner gave his address as retiring section chairman. Publication of the address ("In defense of biology") in expanded form will be an event of interest to all biologists.

HARRIET B. CREIGHTON, *Secretary*

Anthropology (Section H)

The program in anthropology lasted five days and included seven symposia ranging through nearly all aspects of the discipline.

The session on physical anthropology ranged in subject matter from chromosome numbers in primates, to the application of blood-group studies, to physical anthropology and the genetic aspects of certain social groupings. A closely coordinated session on archeology gave a world view of salvage projects and needs, including Egyptain, British, Canadian, and Chinese programs in addition to our own River Basin salvage program. Applied anthropology was represented by a session on the interdisciplinary approach to methods of implementing desegreation; another session on the development of new nations, specifically those in West Africa, Southeast Asia, and the West Indies; and still another on the development and future of applied anthropology. Social anthropology was further served by a symposium on theories and models of energy in human society and a session of contributed papers. A symposium on language and cognition was cosponsored by Section I (Psychology).

An eighth symposium, on ecology and anthropology, was arranged by Paul Baker for the Ecological Society of America and was cosponsored by Section H.

In welcoming remarks at the beginning of the annual meeting, Cornelius Osgood, section chairman, expréssed a New Year's wish that there might be established in our federal government a department of cultural affairs in which trained specialists would concern themselves with the empirical evaluation of both foreign ideals and United States culture for the use of all who need unbiased information of this kind.

The unhurried atmosphere of the meeting and the ample periods of discussion and questioning are to the credit of these who arranged the excellent symposia and other sessions—especially Eleanor Leacock, who put together the entire program.

J. L. GIDDINGS, *Secretary*

Psychology (Section I)

The program of Section I included the vice-presidential address of Clifford T. Morgan on the nature of color reception in the human retina; four symposia arranged by the section ("The Physiology of Feeding and Drinking Behavior," "Some Recent Approaches to the Learning of Concepts," "Applications of Behavioral Technology," and "Theories of the Visual Contrast Threshold"); a series of five symposia arranged by the American Psychiatric Association and cosponsored by the section, on expression of the emotions in man; and two symposia cosponsored with Section H ("Interdisciplinary Approach to Methods of Implementing Desegregation" and "Language and Cognition"). Attendance was good, and audience participation was outstanding, especially for the first two symposia.

The section committee held its usual luncheon meeting. Basic plans were formulated for the Denver meetings, with an increased emphasis upon cross-disciplinary subjects (such as sleep and factors in food acceptance). Opportunity for voluntary participation in the symposia will be provided, to supplement the usual method of invitation. There was discussion of means for involving the affiliated organizations more effectively in the activities of the AAAS.

The vice president for 1961 is Carl Pfaffmann of Brown University, and the new member-at-large of the section committee is Lloyd G. Humphreys of the University of Illinois.

FRANK W. FINGER, *Secretary*

Social and Economic Sciences (Section K)

The American Economic Association effected a breakthrough in the activities of Section K by holding its first session at an AAAS meeting under its own initiative. Praise for an excellent program goes to Kenneth E. Boulding (University of Michigan), assisted by Samuel J. Mantel (Case Institute). The American Political Science Association, the American Sociological Association, and the American Statistical Association again cooperated in the general section program. All of these sessions were cosponsored by Section K, which also served as a joint sponsor of the AAAS general session on "The Urban Frontier."

A feature session of the section program was that on "Some Perspectives on Political Science and Science." This session, at which Pendleton Herring (Social Science Research Council) delivered the vice-presidential address, was jointly sponsored by the American Political Science Association, AAAS Section K, and the National Institute of Social and Behavioral Science. Carl B. Swisher (Johns Hopkins) presided on behalf of the American Political Science Association. Herring delivered a

thoughtful and incisive address on "science and the polity," and the session developed useful material on substantive problems in political science and on science problems in the area of public administration. The National Institute of Social and Behavioral Science also cosponsored the session of the National Science Teachers Association on the biology of the mind.

The section gratefully acknowledges the contribution of Vincent H. Whitney (University of Pennsylvania) in arranging the sessions of the American Sociological Association on the sociology of science and on population trends and policies in the Communist countries. The latter program was cosponsored by the Population Association of America. Similarly, it acknowledges the contribution of Monroe Lerner (Health Information Foundation) and of Abram J. Jaffe (Columbia) and Nathan Morrison (New York State Department of Employment) for arranging the two excellent sessions of the American Statistical Association.

Other society programs included a session of the Metric Association, with John T. Johnson presiding, and a session of Pi Gamma Mu and the National Academy of Economics and Political Science, with John Green (U.S. Department of Commerce) presiding. The Social Science Research Council served as a cosponsor of the AAAS general session on the Sciences in Communist China.

The general Section K program was concluded with two sessions for contributed papers, on 30 and 31 December. All fields of social and behavioral science were represented in the ten papers presented. Both sessions were well attended, and there was lively discussion on the part of the interested and knowledgeable audience. Donald P. Ray, section secretary, presided.

The officers of Section K and the section committee appreciate greatly the cooperation and effort of all those who contributed to the success of the New York programs. It is felt that the interest of both social and natural scientists in the undertakings of the section has become firmly established.

Section K was fortunate to have had the leadership during 1960 of Pendleton Herring, political and social scientist, as vice president and chairman. This year Frederick F. Stephan (Princeton), social statistician, is the elected chairman, and Marshall E. Dimock (New York University), political scientist, begins a 4-year term of service as member-at-large of the section committee. Dimock fills the vacancy created by the retirement of political scientist Luther H. Gulick (Institute of Public Administration), who has rendered gracious service in this position.

DONALD P. RAY, *Secretary*

American Society of Criminology (K3)

The six sessions of the American Society of Criminology's 20th annual meeting were well attended (200 to 300 participants) and spirited. Among the more important areas of discussion were the following. Society defeats the rehabilitative objectives of even the best prison programs by its open hostility to the ex-convict, but society itself is legitimately concerned about the low level of protection it receives from the attacks and other depredations of the offender group (Melitta Schmideberg). Judicial decisions, rulings, and sentences are conditioned not only by the politico-socioeconomic backgrounds of the judges but by their mental and physical health, age, perceptive capacity, prejudices, and personality quirks (Charles Winick, New York University). Female homosexuals can be cured by long-term psychoanalytic therapy, but the prognosis is very poor for the more masculine type (Richard C. Robertiello). The patients seen at the New Jersey Diagnostic Center are largely the minor sex offenders, often immature and inadequate, while more dangerous sex offenders, arrested and convicted of crimes usually not considered "sex crimes" (arson, assaults, and homicide) are frequently institutionalized (or released) without diagnosis (Eugene Revitch). Citizens' crime commissions can be ineffective and can even impede the proper administration of criminal justice if they are organized solely for political purposes, are improperly staffed, or are unrealistic and unsympathetic in their approach to the problems of police and prosecutors (Alvin J. T. Zumbrun). The influence of the communications media (radio, television, moving pictures, comic books, newspapers) on crime and delinquency patterns has been grossly exaggerated by Wertham *et al.* Not only is there no demonstrable cause-and-effect relationship between crime and the violence and sex presented in these media but a strong, logical case might be made for the proposition that, by identifying with the antisocial protagonist, even the disturbed and potentially dangerous individual might well satisfy his lusts vicariously and become less of a threat to society (D. E. J. MacNamara, New York Institute of Criminology). Only in an interdisciplinary center, organized along nonauthoritarian lines and truly collegial in its approach, can effective studies of delinquency and its associated phenomena be carried on (Kenneth Kindelsperger, Syracuse University). The apparently motiveless homicide, if intelligently and intensively analyzed, can be understood in terms of the developmental influences and stresses peculiar to the murderer (James M. Reinhardt, University of Nebraska).

Also, state programs in delinquency prevention and control should be largely coordinating and supportive (Milton Luger, New York State Youth Commission). Both social workers and police officers must make greater efforts to understand not only each others' problems but the differential backgrounds and training which lead at times to seemingly conflicting approaches to the same general objectives (Russell Hogrefe, Chicago Youth Centers). Leaders of antisocial (fighting) gangs should be identified early and isolated for psychiatric treatment; referring to them as "psychos" instead of "hoods" will lower their prestige and status among the large, amorphous gang membership (Lewis Yablonsky, University of Massachusetts). The gang-leadership project of the New York City Youth Board has proved, even though it has been inadequately financed and staffed, that the antisocial energies of even very violent youth gangs can be redirected toward more socially acceptable activities (Hugh Johnson, New York City Youth Board). Changing the vacation schedules of attendance officers, recreation leaders, and teachers specially trained in the handling of delinquents, and using all school facilities at maximum capacity during the summer period, resulted in drastic reductions in summer delinquency statistics (Arthur Clinton, New York City Board of Education). With rare exceptions, conditions in juvenile detention facilities throughout the United States are depressingly inadequate: staffs are poorly selected, poorly paid, poorly trained, and poorly supervised; overcrowding makes rehabilitative programs impossible; and inadequate classification and segregation make some institutions veritable "crime schools" (Sherwood Norman, National Council on Crime and Delinquency). Extremely high positive correlations have been established between drinking and the com-

mission of the felony for which convicts were serving sentences in Raiford (Florida) State Prison (Shaw Grigsby, University of Florida).

Also, containment is posited as a new operational theory for criminology (Walter Reckless, Ohio State University). A scientific concept for criminal responsibility is perhaps the most crucial issue in contemporary criminology (Frank Hartung, Wayne State University). A complete reorganization and reorientation of the Liberian National Police becomes effective in 1961, reflecting the influence of an ICA survey and the increasing urbanization and westernization of the Liberian population (Stephan Horton, Liberian National Police). International exchange of information is as basic to advances in criminal law and criminology as it is to advances in other scientific fields (Horst Schroder, University of Tübingen). The International Penal and Penitentiary Commission contributed significantly to advances in penology during the past century, and its files and reports, now indexed, are a gold mine for penological researchers (Thorsten Sellin, University of Pennsylvania). August Vollmer introduced scientific experimentation and professional standards to American policing and is outstanding among 20th-century contributors to criminological and police science (John Kenney, University of Southern California). Study of some 600 murders during a 4-year period in Philadelphia has introduced new methodological techniques of value in criminological research and has called into question certain commonly held, though unvalidated, assumptions as to the previous arrest and conviction records of murderers (Marvin Wolfgang, University of Pennsylvania).

The 1959 annual award of the American Society of Criminology was presented to Thorsten Sellin, president of the International Society of Criminology, for distinguished contributions to the science of penology. August Vollmer awards for research in criminology were presented to Paul Bohannan, Northwestern University anthropologist, for his *African Homicide and Suicide*, and to Marvin E. Wolfgang (University of Pennsylvania) for his *Patterns in Criminal Homicide*.

Officers of the American Society of Criminology for 1961 are as follows: president, Donal E. J. MacNamara (dean, New York Institute of Criminology); vice-presidents, Karl Menninger (Topeka, Kansas), Sheldon Glueck (Harvard), Gordon Barker (University of Colorado), and Pedro M. Velez (director of special investigations, Commonwealth of Puerto Rico); executive board member, John Kenney (University of Southern California); secretary-treasurer, Jacob Chwast (chief consulting psychologist, Educational Alliance, New York). Marcel Frym, the outgoing president, was named principal program consultant for the 5th International Congress of Criminology, to be held in Los Angeles in 1962. Charles Newman (University of Louisville) was appointed coordinator of research and studies for the congress, and Clyde Vedder (Northern Illinois University) was appointed liaison officer, to work with the sociology departments of American universities.

JACOB CHWAST, *Secretary-Treasurer*

Sociology of Science

The session on "Sociology of Science: The Organization of Research" was cosponsored by Section K and the American Sociological Association. The session was organized by Vincent H. Whitney (University of Pennsylvania) and chaired by Simon Marcson (Princeton and Rutgers). Marcson also reported on the organization of an industrial research laboratory and the relation of authority to organization.

William Evan (Bell Telephone Lab-

oratories) continued the discussion of the industrial laboratory in terms of the pressures and role strains created by a specific organizational form. David N. Solomon and Silvia Lamb of McGill University reported on a study of industrial scientists (chemists) and their values vis-à-vis science. Norman Kaplan (Cornell) compared the role of the research administrator in the Soviet Union with that of his counterpart in the United States and pointed out differences which suggest the possibility of a simplification of administrative practices in large-scale research organizations in this country.

A vigorous discussion followed, with participation from the floor.

VINCENT H. WHITNEY,
Program Chairman

Population Trends and Policies

The session on population trends and policies in the Communist countries was cosponsored by Section K, the American Sociological Association, and the Population Association of America. The growth of population, changes in population structure and distribution, and the consequences of these developments were discussed for three major regions with Communist governments. Jerry W. Combs, Jr., (Foreign Manpower Research Office, U.S. Bureau of the Census) reported on Eastern Europe; John F. Kantner (Population Council) analyzed changes in the Soviet Union; and Irene Taeuber (Office of Population Research, Princeton) discussed mainland China in terms of three interrelated factors—political philosophy, culture, and population. Irene Taeuber also served as chairman of the session, which was organized by Vincent H. Whitney of the University of Pennsylvania.

VINCENT H. WHITNEY,
Program Chairman

American Statistical Association (K5)

The New York Area Chapter of the American Statistical Association and AAAS Section K jointly sponsored a program on hospital statistics in community planning, arranged by Monroe Lerner (Health Information Foundation, New York). Paul M. Densen, deputy commissioner of health, New York City, presided.

J. Douglas Colman (Associated Hospital Service of New York) described research opportunities in the use of data routinely collected for administrative purposes by health agencies. Careful analysis of such data could provide answers to questions about comparative rates of hospital utilization, trends in the type and amount of hospital services, the impact of repeated admissions on hospital use, and so on. Such data are available at relatively little additional effort or cost from records or from already existing tabulations.

Paul Sheatsley (National Opinion Research Center, University of Chicago) discussed some methodological problems in a survey of the pattern of hospital use in Massachusetts. Interviews were conducted with 2500 patients (a sample of all admissions in the state over a 12-month period), with the physicians and hospital administrators involved, and with a sample of the general population. The purpose was to reconstruct the exact chain of events—physiological, socioeconomic, and psychological—leading to the decisions to hospitalize the patient and, subsequently, to discharge him from the hospital.

Monroe Lerner (Health Information Foundation) discussed some preliminary results of a survey comparing hospital utilization under Blue Cross in Indiana during 1956 and under a government insurance program in Saskatchewan during 1957. This survey was offered as an example of the use of already existing data. Hospital use was higher in Saskatchewan than in Indiana; this was especially true for obstetrical and respiratory cases, but was true to some extent for cases of all kinds.

Marta Frankel (New York City Department of Hospitals) described patterns of hospital utilization by the aged in New York City's municipal hospitals. The data were derived from administrative reports of individual hospitals and from patients' medical charts. The aged account for 18 percent of all patients discharged from these hospitals and for 35 percent of the hospital population in a randomly selected day. Diseases of the circulatory system constituted the most important cause of hospitalization in these patients.

MONROE LERNER, *Program Arranger*

The AAAS and the New York Area Chapter of the American Statistical Association held a joint session on "Some Statistical Problems in Social Insurance Research." Mortimer Spiegelman (Metropolitan Life Insurance Company) was chairman. Harry Malisoff (Brooklyn College) spoke on "Some invarient characteristics of unemployment in-

surance beneficiary experience"; David Robbins (Health Insurance Association of America), on "Some statistical problems in medical insurance programs"; A. Berman (New York State Labor Department), on "Selected studies in the field of workmen's compensation"; and A. J. Jaffe (Columbia University), on "The family and social insurance programs."

A. J. JAFFE, *Program Arranger*

Metric Association (K6)

The Metric Association held a symposium on 27 December, with J. T. Johnson, president of the association, as moderator and with the following participants: Lewis L. Strauss (former Secretary of Commerce), Carl F. Kayan (Columbia), Robert P. Fischelis (National Drug Trade Conference), and Karl E. Ettinger (research counselor, New York). Fred J. Helgren, secretary of the association, was unable to be present.

Strauss emphasized the importance of immediate consideration of the question of adopting the metric system. The following quotation gives the gist of his remarks: "Most of us in this room probably share the conviction that eventual change to the metric system is inevitable, and if inevitable, then most of us would wish this to occur before we have suffered more severely in our relationship with metric system countries than today has been the case, this in spite of the fact that we are aware that the change will be expensive and, in instances, difficult. We are fortunate in having a very able and distinguished scientist as Director of the National Bureau of Standards, Dr. Allen Astin. Dr. Astin has assigned Dr. A. T. McPherson, his Associate Director, the responsibility of conducting studies on the problem of conversion. The Bureau expects to explore the progress realized in Japan and India and the problems encountered in transfer to the metric system by those great populations."

The luncheon was attended by 15 of the 30 members present for a business session. A group was organized to act as an interim committee of trustees to organize the Metric Association for new and wider activities, international in scope, during the next two months. Members of this committee are as follows: Robert P. Fischelis (Washington, D.C.), chairman; Carl F. Kayan (New York City); Frank Y. Speight (American Society for Testing Materials, Phil-

adelphia); Floyd W. Hough (Committee for Study of Metric System under Auspices of American Geophysical Union); and Karl E. Ettinger.

J. T. JOHNSON, *President*

National Academy of Economics and Political Science (K7)

The National Academy of Economics and Political Science, with the collaboration of the national social science honor society Pi Gamma Mu, presented a program on "The Research Revolution and Public Policy." Leonard S. Silk, author of the recent book, *The Research Revolution*, presented a paper on "The research revolution and its economic implications," and Jacob Perlman of the National Science Foundation contributed one on "Public policy and the inter-sectoral flow of funds for research and development in the United States."

In his analysis of the growth of our economic system, Silk related the easing of the pains of technological change to further scientific and technological progress. After stating that "the present situation, in which international military and political conflict also involve a race for scientific and technological supremacy, has made the formulation of science policy one of the major public issues of our time," Perlman outlined the results of a program of surveys of expenditures and manpower involved "in basic and applied research and development throughout the economy"—surveys which he and his associates at the National Science Foundation made in order to provide the data essential to the formulation of science policy.

John C. Green, director of the Office of Technical Services of the U.S. Department of Commerce, presided and, through his practical experience and services of many years, contributed ably to the discussion. The two papers were exceptionally well received, and the academy plans to give them the widest possible distribution.

AMOS E. TAYLOR, *Chairman*

History of Science Society (L2)

The History of Science Society had a successful and well-attended meeting. The highest honor of the society, its Sarton medal, was presented to Owsei Temkin, professor of the history of medicine, Johns Hopkins. The Schuman prize, given for the best published book in the field, went to Mar-

shall Clagett (University of Wisconsin) for his book *The Science of Mechanics in the Middle Ages* (University of Wisconsin Press, 1959), and the Pfizer prize was awarded to Harold L. Burstyn, a graduate student at Harvard, for his research on Galileo, which is to be published in a forthcoming number of *Isis*.

In his address as outgoing president, Henry Guerlac stated that professional emphasis on the history of science had increased enormously during his period of office. The society now has a central core of university teachers of the subject, as well as a band of distinguished amateurs. I. Bernard Cohen (Harvard) was elected president for the current term of office. A special feature of the meeting was the first George Sarton Memorial Lecture, delivered before the AAAS by Rene Dubos of Rockefeller Institute. It was a noteworthy beginning for a series that will undoubtedly prove to be one of the major attractions at future AAAS meetings.

Two of the sessions of contributed papers deserve special mention. One, on the sociology, psychology, and economics of science, with papers from Bernard Barber, Karl Deutsch, and Anne Roe, was something of an innovation and displayed how important these interdisciplinary areas are for the historian of science. It is hoped that the proceedings of this session may be published in their entirety. A second innovation for the society was a session comprised of 15-minute papers on work in progress. This was most successful and gave the members an opportunity to hear from a large number of their younger colleagues, and from several projects whose final results will not be available for some time.

Unfortunately Anne Roe and Martin Dyck were unable to attend because of illness. Dr. Roe's paper was read for her by Mr. Mendelsohn, of Harvard University.

DEREK J. DE SOLLA PRICE,
Program Chairman

Society for the History of Technology (L5)

Emphasis upon technology as a causative factor in historical development and upon the sociological and scientific interrelations of technological change marked the third annual program of the Society for the History of Technology.

In a joint session with the American Historical Association on the topic "Technology as Cause in History," Roger Burlingame pointed out that technology is a "neglected clue to historical change," for historians have written of wars, economic theory, explorations, and the like, without expounding on the technological developments which lay at the foundation of the historical events. As counterpoint to Burlingame's thesis, Lewis Mumford claimed that history was a "neglected clue to technological change," for the historian of technology must open his eyes to the whole cultural milieu in order to understand technical change. Mervin J. Kelly, retired president of the Bell Telephone Laboratories, presided over this session, and H. Stuart Hughes (Harvard) commented on the papers of Burlingame and Mumford, indicating that the history of technology is not merely a specialized area of history of technology but is itself a way of understanding the past.

Papers on the development of automation, by John Diebold (industrial consultant, New York) and by James R. Bright (Harvard Graduate School

of Business Administration), led to a spirited discussion on the impact of automation on society. A. J. Jaffe (Columbia) stimulated the discussion by his trenchant commentary on the prepared papers. Preston R. Bassett (former president of the Sperry Gyroscope Corporation) served as chairman of this session held jointly with AAAS sections L and M.

Another highlight of the meeting was the day-long symposium on "Patents and the Advancement of Knowledge," an outgrowth of the controversy on inventing and patenting which appeared in a recent issue of *Technology and Culture* (Summer 1960). In this session, cosponsored by the society and by Section L, there was sharp criticism as well as strong defense of the existing patent system as a factor in the advancement of knowledge. J. William Hinkley (Research Corporation) presided over the first part of the symposium, in which Jacob Rabinow (Rabinow Engineering Company), Richard P. McGrail (American Cancer Society), and Johan Bjorksten (American Institute of Chemists) gave papers on various aspects of this subject.

Because of illness, Harry Woolf's scheduled vice-presidential address on "The evils of secrecy" was not given; an additional symposium panel was substituted, in which Melvin Kranzberg, editor-in-chief of *Technology and Culture,* introduced S. Colum Gilfillan (research sociologist) and I. Jordan Kunik (patent attorney, New York), who presented statements of their positions in the original controversy.

Robert L. Johnson (Temple) presided over the final session of the symposium, wherein Fritz Machlup (Princeton) and Charles C. Price (University of Pennsylvania) presented papers dealing with the economic and scientific incentives of the patent system. Rudolph F. Bannow (National Association of Manufacturers) introduced Robert C. Watson, who concluded the symposium by summing up some of his personal experiences as head of the U.S. Patent Office.

In a session on 19th-century technology, held jointly with AAAS sections L and M and presided over by Sidney Withington, Arnold R. Daum (Loyola) presented some new evaluations in the history of the petroleum industry and Thomas P. Hughes (Washington and Lee) indicated that the lag in the British electrical industry during the period 1882 to 1888 was caused by factors more complex than the legislation of

1882, to which it is customarily attributed. Bern Dibner of the Burndy Library commented on the papers.

A session held jointly with the History of Science Society featured a paper by Alexander M. Ospovat (University of North Dakota), on "Abraham Gottlieb Werner's ideas on science and education," and one by Harold I. Sharlin (Polytechnic Institute of Brooklyn), on "The engineering gap between Faraday's discovery of electro-magnetic induction and the electric dynamo."

Despite its formidable title—"Eilmer of Malmesbury: An eleventh-century aviator, a case study of technological innovation, its context and tradition"—Lynn White's presidential address enlivened the annual luncheon of the society. In a truly virtuoso performance, with wit and erudition, White showed how technological error persists despite the records of human experience. This luncheon was the capstone of this third annual meeting—a meeting which demonstrated the vast range of interests of this interdisciplinary organization, the advantages to be derived from bringing together the academician and the practicing technologist, and the vitality of this young and fast-growing society.

MELVIN KRANZBERG, *Secretary*

Nuclear Engineering

Nuclear engineering and its role in the engineering curriculum were the subjects of a panel discussion arranged by Section B (Physics) and Section M (Engineering) and held at the Biltmore Hotel, New York, on the morning of 30 December. John W. Healy (General Electric Company, New York) presided over a spirited discussion among the four panel members—Thomas B. Drew (Columbia), Irving Kaplan (Massachusetts Institute of Technology), John Lamarsh (Cornell), and V. Lawrence Parsegian (Rensselaer Polytechnic).

Nuclear engineering was generally defined as the branch of engineering involved with nuclear processes, and the nuclear engineer, as one with over-all competence in these processes. There was a difference of opinion among the panel members as to the distinction between nuclear engineering curricula and curricula of scope and depth in physics and in chemical, mechanical, and metallurgical engineering, particularly at the undergraduate level. In the graduate area, departments of nuclear engineering have a definite field of usefulness.

CLARENCE E. DAVIES, *Chairman*

Medical Sciences (Section N)

Section N held its annual symposium, organized along the conventional lines of an interdisciplinary discussion, from 26 to 29 December. The subject of the symposium, arranged by Abraham M. Shanes, was "Biophysics of Physiological and Pharmacological Actions." There were five half-day sessions.

The first session covered elementary systems. The chairman of this session was T. Shedlovsky (Rockefeller Institute). J. F. Hoffman reviewed the use of red-cell ghosts in studying transport phenomena. Robert L. Post (Vanderbilt) presented a very interesting concept of the relationship of adenosine triphosphatase activity to red-cell permeability. Existing relationships between this adenosine triphosphatase and the sodium pump were discussed. T. Hoshiko gave a lucid description of electrogenesis in frog skin. He emphasized that the transport mechanism for sodium is located at the corium facing membrane of the epithelial cell. S. Dikstein, of Jerusalem, presented evidence to show that model systems employing monomolecular layers of lipids gave characteristic actions of drugs that could be studied in relationship to the spatial distribution of functional groups. It will be interesting to follow the development of this approach to the mechanism of drug action.

The second session, which was concerned primarily with nerve, opened with a paper by J. D. Robertson (McLean Hospital, Boston). The current knowledge of intimate nerve structure as determined by electron-microscopic techniques was presented. In three papers which followed, the characteristics of the resting nerve cell, the theories of spike generation, and the current concepts of afterpotentials were reviewed and discussed. Of particular interest was the point made by F. A. Dodge, that the reduction of calcium and small depolarizations cause similar membrane changes. Very interesting evidence was presented by K. Kotetsu (University of Illinois) that sodium is dispensable for membrane excitation in certain excitable tissues. This complicates interpretation of many of the currently held concepts in this field.

The third session was concerned with a discussion of muscle. After presentation of the classical concepts of the properties of striated muscle, discussions on electrochemistry, the coupling of excitation and contraction, and the modification of action potentials were

presented. Of particular interest was a paper by W. Freygang on work done in collaboration with R. H. Adrian, in which he discussed anomalous rectification in muscle fibers. C. Paul Bianchi presented information on the action of caffeine on muscle contraction. He showed that caffeine may act through an action on calcium influx, which can occur in the absence of depolarization. A. M. Shanes (National Institutes of Health), who presented work on slow fibers, confirmed the importance of calcium as perhaps the most intimate link between membrane phenomena and muscle contraction. This is an extension of his earlier work on twitch fibers.

In the fourth session, on the contractile properties of muscle, the authors of papers attempted to correlate structure and function, but quite clearly this is a field which needs much more concentrated effort before even tentative relationships are well established. This is in no way meant to indicate that great strides have not been made in the energetics of muscle contraction.

The fifth and final session was concerned with cardiac muscle and smooth muscle. Brian Hoffman summarized the recent evidence bearing on the question of whether heart muscle, functionally, should be thought of as a syncytium or a group of individual cells. He also reviewed at some length the differences and similarities between the properties of nodal fibers and those of cardiac muscle fibers. J. W. Woodbury discussed the cardiac action potential and indicated, on the basis of electrochemical evidence presented, that it seems unlikely that the repolarization phase can be entirely explained on the basis of the rate of potassium efflux from the depolarized tissue. Leon Hurwitz (Vanderbilt) reviewed the electrochemistry of smooth muscle and its relationship to contraction. He emphasized that the calcium ion appears to have a depressing action on smooth-muscle excitability but at the same time is essential for smooth-muscle contraction. It would therefore appear that in striated, cardiac, and smooth muscle, depolarization is associated with calcium influx. L. Barr (University of Michigan) presented evidence of the importance of potassium in the functional activity of arterial smooth-muscle strips. When dog carotid artery strips were stored at 4°, he found that sodium was gained and potassium was lost. The ability to respond to stimuli was also lost. As the potassium ion concentration increased, contractility and the rate of relaxation following a stimulus increased, yet an optimum K_i/K_o was necessary for maximum excitability.

Although the title of the symposium included the "physiological and pharmacological actions," it was apparent from the papers presented that we are only now beginning to consider the pharmacological events at the cell membrane or in muscle tissue itself. It would appear that the more basic concepts of ion movement across cell membranes are reasonably well established. However, there is much to be learned before action potential, contraction of muscle, and so on can be thoroughly correlated with membrane activity. It would appear that pharmacological agents have been used less extensively than they might have been in the elaboration of mechanisms in these systems. The use of caffeine by Bianchi, cocaine by Shanes, and alcohol by Hurwitz indicates the valuable contributions of chemical agents employed as tools.

ALLAN D. BASS, *Secretary*

Expression of the Emotions in Man

The symposium "Expression of the Emotions in Man," sponsored by the American Psychiatric Association and cosponsored by AAAS Section I (Psychology) and the American Psychoana-

lytic Association, centered around methods of study and psychological classification of certain emotional phenomena in the adult human being. A historically oriented introduction by P. H. Knapp, program chairman, stressed the need for convergence between biologic (particularly neurophysiologic) and psychologic (particularly psychoanalytic) advances in the study of emotional phenomena.

Papers by P. MacLean, on neurophysiologic interrelations between sexual, oral, and aggressive responses in the monkey and their progressive socialization during phylogenesis, and by Spitz, on the origins of emotional responses in infancy, continued the introductory theme. The symposium then focused on approaches to emotional expression within the evolutionary frame of reference by the use of newer media. A short film by F. Deutsch served to introduce discussion of the study of expressive manifestations at various levels—the lexical and linguistic, discussed by G. Mahl; the kinesic, discussed by R. Birdwhistell; and the visceral, discussed by J. Lacey, who brought forward the evidence of adaptive cardiovascular patterns facilitating intake or exclusion of environmental input.

In closing sessions K. Pribram discussed the neuropsychologic model which Freud had advanced in his *Project for a Scientific Psychology* as a sophisticated precursor of the type of unified model urged in the introductory presentation—a type which present-day communication theory is serving to elaborate. G Engel discussed problems of classifying emotions. D. Hamburg, in a paper amplified by M Mead, discussed evidence from contemporary primitive cultures, from historical anthropological investigations, and from animal studies, stressing the evolution of emotions and their adaptive role, particularly in forming social bonds.

PETER H. KNAPP, *Program Chairman*

Alpha Epsilon Delta (N1)

The symposium on "Career Opportunities in Medicine and Dentistry" cosponsored by Sections C–Chemistry, F–Zoological Sciences, N–Medical Sciences, and Nd–Dentistry, attracted an attendance of about 200 persons, including premedical and predental advisers and students. An exceptional program featured W. H. Stewart, chief of public health methods, U.S. Depart-

ment of Health, Education, and Welfare, and director of the study staff of the surgeon general's consultant group on medical education, whose report "Physicians for a Growing America" was recently published. Stewart presented a cogent outline of the physician needs for the future. The need for dentists was outlined by Shailer Peterson, secretary, Council on Dental Education, American Dental Association, and assistant secretary of the Association for Educational Affairs, who works very closely with the Association of American Dental Colleges on these problems. A panel discussion on opportunities in dentistry was moderated by Raymond J. Nagle, dean, New York University College of Dentistry, while the panel on opportunities in medicine was moderated by James O. Pinkston, associate dean and professor of physiology, Downstate Medical Center, State University of New York, Brooklyn.

A wide variety of career opportunities in medicine and dentistry were brought out during the discussion and in the question-and-answer period that followed. After the luncheon, I. S. Ravdin, vice-president for medical affairs, University of Pennsylvania, discussed "The doctor's dilemma" in solving the numerous complex scientific, professional, and social problems facing the medical and dental professions today in providing health care for the American people. The afternoon was devoted to informal conferences with admissions officials in attendance and visits to the medical and dental schools in the city.

Tentative plans are under way to sponsor a similar program at the Denver AAAS meetings in December 1961.

MAURICE L. MOORE, *Secretary*

Dentistry (Section Nd)

In keeping with the general program scheme of recent years, Section Nd again organized a multidisciplinary symposium on a topic basic to oral biology—*fundamentals of keratinization.*

The two-session symposium, held at the Biltmore Hotel on 30 December, was organized under the direction of Earl O. Butcher (New York University School of Dentistry), with cosponsorship by Section N (Medicine), the International Association of Dental Research (North American Division),

the American Dental Association, and the American College of Dentists.

During the morning session (moderated by Butcher, section program chairman), various aspects of keratinization were discussed: (i) sequential mechanisms involved (A. G. Matoltsy, University of Miami); (ii) distribution of SH and SS reactions in various vertebrate keratins (R. J. Barrnett, Yale; R. F. Sognnaes, University of California, Los Angeles; G. Pettengill, Harvard); (iii) tissue culture keratinization (G. Szabo, Harvard); (iv) ultrastructure of keratinizing tissues (J. A. Rhodin and E. J. Reith, New York University); and (v) the effects of vitamin A on keratinizing tissues (H. A. Bern and D. J. Lawrence, University of California, Berkeley; J. P. Parnell and B. Sherman, State University of New York).

The afternoon session (moderated by Sognnaes) began with a discussion of physical properties of cornified epithelium (I. H. Blank, Massachusetts General Hospital) and proceeded to deal with structural and chemical aspects of oral epithelial derivatives—keratinization of the oral mucosa (J. Meyer and H. Medak, University of Illinois); keratin formation in dental cysts (J. J. Pindborg, Royal Dental College, Copenhagen); environmental and genetic effects on oral cornification (C. J. Witkof, Jr., National Institute of Dental Research); ultrastructural demonstration of the extracellular deposition of enamel (M. L. Watson, University of Rochester); and the microchemical constituents of the enamel protein (K. A. Piez, National Institute of Dental Research).

The symposium was well attended; at times the Biltmore Suite was filled to capacity (150), and there was a good deal of audience participation. During the morning session discussion centered around the definition of keratinization versus cornification, and the appropriateness of the classical terms "hard" and "soft" keratin. On the basis of the distribution of SH and SS reactions, a classification by site and origin was suggested as most appropriate by one discussant (Barrnett). During the afternoon session discussion of the enamel protein resulted in rejection of the views that this curious epithelial product is either a typical keratin or a collagen. It arises extracellularly, unlike typical keratins, and it contains no hydroxyproline, unlike collagen. One discussant (Pautard, Leeds University) even suggested that the enamel matrix may resemble a silk protein in structure. This may have important implications with respect to concepts of calcification.

In addition to sponsoring its own program, Section Nd cosponsored a meeting on career opportunities in medicine and dentistry, arranged by Alpha Epsilon Delta, which attracted a large audience on the morning of 29 December in the music room of the Biltmore. After introductory remarks (C. V. Reichart, Providence College), two comprehensive reports were presented, on future needs for physicians (W. H. Stewart, U.S. Department of Health, Education, and Welfare) and future needs for dentists (S. Peterson, American Dental Association). The remainder of the morning was devoted to two panel discussions on challenges in store for psysicians and dentists. The panel dealing with career opportunities in dentistry was moderated by R. Nagle (New York University College of Dentistry), with discussants from several Eastern dental schools—J. A. Cuttita (Columbia), M. M. Maxwell (Seton Hall), W. A. Wilson (Fairleigh Dickinson), J. H. Oaks (Harvard), L. W.

Burket (Pennsylvania), and L. Herman (Temple).

After a group luncheon, with an address by vice president I. S. Ravdin (University of Pennsylvania), opportunity was provided for individual conferences with college admission officials and for visits to local professional schools.

Harold J. Noyes, dean of the University of Oregon Dental School, was elected to succeed Joseph L. T. Appleton as vice president and chairman of Section Nd (for 1961). Albert A. Dahlberg (Zoller Memorial Dental Clinic and department of anthropology, University of Chicago) was elected committeeman-at-large, to succeed Joseph C. Muhler, who has completed his 4-year term of office.

The secretary took official notice of the great loss the organization had sustained in the untimely death of two very distinguished members—Balint Orban and Joseph P. Weinmann, both of the School of Dentistry, University of Illinois, and both active researchers in the area covered by the symposium on keratinization.

REIDAR F. SOGNNAES, *Secretary*

Pharmacy (Section Np)

Section Np held eight sessions from 27 through 30 December. A total of 43 contributed papers on various studies was reported, and one symposium was held jointly with the Committee on Cosmetics of the American Medical Association. Over 450 persons registered as having attended one or more of the section meetings.

The AAAS Council, the governing body of the Association, elected Joseph A. Oddis (American Society of Hospital Pharmacists) a vice president of the Association and elected Lee H. MacDonald (Upjohn) to serve on the committee-at-large of the section for a 4-year term. Oddis will serve as chairman of the section for the coming year and will preside at the Denver meeting in December 1961. John E. Christian (Purdue) continues to serve as secretary of the section.

Of major interest to the group in attendance was a stimulating vice-presidential address entitled "Dedication to Pharmacy," presented by Joseph V. Swintosky. A symposium entitled "The Scientist's Contribution to the Safe Use of Cosmetics" also attracted considerable interest, not only on the part of the pharmaceutical scientists in

attendance but also on that of many individuals from other scientific disciplines and of cosmetic scientists located in the New York area. Over 300 persons attended each of the two sessions.

In addition, the hospital pharmacy group had a most informative and well-attended full-day session of discussions and contributed papers on the scientific aspects of hospital pharmacy, under the guidance of George F. Archambault and Joseph A. Oddis. The following groups were represented: the American Society of Hospital Pharmacists, the American Pharmaceutical Association, the New York State Council of Hospital Pharmacists, the American Hospital Association, and the American Association of Colleges of Pharmacy. Luncheon, entertainment, and dinner were sponsored by E. R. Squibb and Sons, Wyeth Laboratories, and McKesson and Robbins, respectively.

John Autian (College of Pharmacy, University of Texas) opened the first session for contributed papers which consisted of presentation of the results of original scientific investigations. Norman J. Doorenbos and his coworkers at the University of Maryland presented a series of six papers describing work recently completed on the synthesis of aza steroids. C. E. Breckinridge (Oak Ridge National Laboratory) and J. E. Christian (Purdue) discussed a new method for isotope dilution analysis of chlorotetracycline. The polarographic properties of some pyridine derivatives were explained by Nicholas G. Lordi (Rutgers).

The effects of corticosteroids and tranquilizers on experimental amebiasis was discussed by James Ingalls (Long Island University). Lee H. MacDonald (Upjohn) described comparative testing of preservative systems. Other papers presented before the first session were "Comparative pharmacology of diphenylmethane derivatives," "Modification of the action of chloral hydrate in mice by the prior administration of nicotinamide," "Facilitation of metrazol-induced seizures by iproniazid," "Structural consideration of steroid borates," "The effect of ultrasound on the production of microcrystalline progesterone," and "Evaluative procedures for film-forming materials used in pharmaceutical applications." These papers were presented by Arlan G. Roberts (J. B. Roerig and Company), Robert G. Brown (University of Texas), Albert M. Ellman (Rutgers), George M. Sieger (Led-

erle), Donald M. Skauen (University of Connecticut), and Joseph L. Kanig (Columbia), respectively.

Lee H. MacDonald opened the second session of contributed papers and presided over the meeting. The papers presented were as follows: "A discussion of the electro-magnetic wave theory," "A comparison of operating characteristics of a liquid and plastic scintillator," Sterilization of regenerated collagen with beta-propiolactone," "Re-evaluation of certain atomic refractions," "Growth of medicinal plants in culture," "Description of a volatile oil obtained from a plant indigenous to Louisiana," "A continuous practical method for production granulation," "Binding of cations and anions by a nonionic surface active agent," "A technique for studying thermally induced phase transitions," and "The synthesis of 2-methyl-2-phenyl-3-(dialkylaminoalkyl) benzothiazolines and 2,2, - dimethyl - 3 - (dialkylaminoalkyl) benzothiazolines as potential tranquilizers." These papers were presented by Harry Lobel (Nebraska Iowa Electrical Council), George Foster (Purdue), Edwin L. Ball (Lederle), P. J. Jannke (University of Connecticut), A. E. Demaggio (Rutgers), John T. Goorley (Northeast Louisiana State College), E. T. Martin (Merck, Sharp, and Dohme), P. P. De Luca (Temple), D. R. Reese (Smith, Kline, and French), and C. S. Davis (Purdue), respectively.

This was one of the most successful meetings Section Np has held and was exceedingly well attended.

JOHN E. CHRISTIAN, *Secretary*

Safe Use of Cosmetics

The symposium, "The Scientist's Contribution to the Safe Use of Cosmetics," cosponsored by the Committee on Cosmetics of the American Medical Association and Section Np (Pharmacy) of the AAAS, met for two sessions on 29 December. Nine papers were presented, indicating ways in which the research biologist, the dermatologist, and the cosmetic chemist could work together to formulate safer cosmetics and outlining the responsibilities of manufacturers and the government with respect to the marketing of cosmetic products.

In presenting the research biologist's view, William Montagna (Brown) discussed some problems of biological research related to the development and use of cosmetics, with particular refer-

ence to the degree to which the ingredients of various cosmetics penetrate human skin. Kenneth Wilson (U.S. Army Chemical Research and Development Laboratories) discussed new methods for the study of percutaneous absorption. He presented slides and a film illustrating the methods that he uses to study skin penetration, including radioisotope tracer methods and an improved technique of preparing a perfused skin flap. William Bousquet (Purdue) discussed the general properties of radioactive isotopes as well as ways in which tracer techniques should prove valuable to the cosmetic scientist and manufacturer. Glen Sperandio (Purdue) discussed the qualifications of a cosmetic chemist, standards for a "safe" cosmetic, and a formulation technique that can be used to achieve such standards.

Allan Lorincz (University of Chicago), speaking from the standpoint of the dermatologist, stated that dermatologic research should play a fundamental guiding role in the formulation of cosmetics. Types of reactions which the dermatologist encounters in his practice were discussed by Howard T. Behrman (New York) along with causal mechanisms, clinical features, diagnosis, and therapy. Adolph Rostenberg (University of Illinois) gave an evaluation of currently used methods of appraisal for potential hazard, indicating their limitations and the need for better screening techniques.

Willard Bright (Lever Brothers) indicated that the industry wants to market only safe cosmetic products and, to this end, is sponsoring ever-expanding company research programs and cooperating more and more extensively with both scientific investigators and U.S. Food and Drug Administration representatives. Irvin Kerlan (U.S. Food and Drug Administration) outlined the government's role in the control of cosmetics.

Extensive and lively discussion periods followed the afternoon and evening programs.

JOSEPH B. JEROME,
Symposium Secretary

Agriculture (Section O)

Section O followed the precedent of recent years in designing a symposium program to illuminate a major national problem of great concern to everyone, but one in which leadership may well rest with the agricultural segment of

the economy of the United States. This year's symposium, "Land Zoning in Relation to Agricultural, Suburban, Industrial, Forest, and Recreational Needs of the Future," was divided into five sessions of a half-day each, synchronized with an additional AAAS-sponsored half-day session on urban redevelopment (the complementary phase of land planning and use).

The entire symposium involved a wide range of disciplines; thus AAAS members affiliated with Section O were given an opportunity to review broad subject-matter areas in a way not generally provided by any individual scientific society in its own programs. The attendance at the various sessions totaled about 625. These audiences were composed of responsible professional, scientific, and civic leaders from many states, who are deeply concerned with land planning, land zoning, and land use to meet the needs of the whole population in the near future and the decades beyond.

The entire program was developed and directed by vice president Firman E. Bear, 1960 section chairman. The excellence of the program was insured by the participation of speakers of outstanding ability who have made notable contributions in this field. Part 1 dealt with rural land zoning, with Wallace D. Bowman of the Conservation Foundation serving as chairman. Speakers at this session were D. A. Williams (Soil Conservation Services), E. D. Solberg (Agricultural Research Service, U.S. Department of Agriculture), Karl J. Belser (Santa Clara County, California, Planning Department), and T. W. Schulenberg (Department of Commerce and Public Relations, Indiana).

Part 2 dealt with suburban planning, under the chairmanship of Louis Wolfanger (Michigan State University). Four phases of this subject were developed by H. R. Pomeroy (West Chester, N.Y., County Planning Department), L. J. Bartelli (U.S. Soil Conservation Service), Marion Clawson (Resources for the Future, Inc.), and G. F. Whitehead and Robert Kates (University of Chicago).

Part 3, which followed the AAAS program on urban renewal, concentrated on community planning, under chairman Byron E. Munson (Ohio State University). Rural, county and regional, and small city communities were included. The speakers were H. H. Smith (Community Planning Associates), G. H. Deming ([New York]

Conference on Metropolitan Area Problems), S. S. Farness (Tri-County Regional Planning Commission, Lansing, Michigan), and W. J. Wayne (Indiana Geologic Survey).

Part 4 on forest and recreational planning, was presided over by Edward Higbee (University of Delaware). Four phases of this subject were discussed, by Paul B. Sears (chairman, conservation program, Yale), Charles W. Eliot (planning consultant, Cambridge, Massachusetts), Edward C. Crafts (U.S. Forest Service), and Raleigh Barlowe (Michigan State University).

Part 5 concluded the symposium with a program on "Government as Land Owner and Redistributor"; William Miller (New York University) was chairman of the session. The following four speakers developed this subject: Max S. Wehrly (Urban Land Institute), Shirley A. Siegel (Assistant Attorney General for New York State), Charles Abrams (planning consultant, New York City), and Robert E. Lowry (Tennessee Valley Authority).

The symposium was most successful in bringing the problem of land planning and land use for the public welfare into sharp focus. The many aspects of the subject were clearly presented; the amount of information and experience already available from regional and national leaders and specialists is substantial and all that is now needed is the dissemination of this information to communities and regions that will carry the responsibility for action.

The election of Wynne Thorne as a vice president of the AAAS and 1961 chairman of Section O was confirmed by the Council. Thorne succeeds Firman E. Bear, who was elected to a 4-year term as a committeeman-at-large. Thorne, director of the Utah Agricultural Experiment Station, has accepted the responsibility for developing a symposium program for the 1961 Denver meeting on the agricultural potential and development of the Great Plains and the Intermountain Regions.

HOWARD B. SPRAGUE, *Secretary*

Education (Section Q)

The New York meeting was the most successful meeting for Section Q in many years. The programs attracted a large attendance. At meeting after meeting there was standing room only, and in some instances substantial numbers had to be turned away, though one program—an evening program on 30 December—was poorly attended.

The quality of the programs seemed better than in former years. It was gratifying to note the attendance and the vigorous and constructive contributions of colleagues from the academic disciplines in many of the Section Q programs.

Section Q cosponsored two sessions with the Council for Exceptional Children and two sessions with the American Educational Research Association. The teaching societies sponsored their usual extensive and diversified programs. Section Q sponsored four sessions of contributed papers and the vice-presidential address. One session of contributed papers was concerned with problems associated with education of the gifted student. Another focused on the instructional problems associated with the use of educational television. The other two sessions were more varied but reflected interest in the cultural and social factors associated with discipline and vandalism, at-

titudes, vocational choices, and other problems.

A symposium on data-processing machines and educational research was provocative and stimulating. John C. Flanagan's vice-presidential address was devoted to a discussion of the educational implications of the research investigation "Project Talent," which he directs.

The section committee met formally on the day prior to the annual business meeting and met again, informally, after the business meeting. Problems of communication, future programs, and other matters were discussed.

The business meeting was probably the best attended in the history of the section. Participation was excellent, and great interest in section affairs was evinced. A number of helpful suggestions were made, which will guide the Section officers in meeting their responsibilities.

HERBERT A. SMITH, *Secretary*

The Retarded Child

The joint session of Section Q and the Council for Exceptional Children, on 26 December, was very successful. There were about 175 persons in the audience. Margaret Giannini, talked on the etiological and diagnostic aspects of the retarded child. She made it very clear that mental retardation is not an illness in itself, and that we must know about the pathological causes of retardation in order to truly understand and plan a program for mentally retarded children.

Lawrence Taft discussed "pseudoretardation." He stressed the importance of team work in diagnosis and in clinical therapy. Elsa Haussermann made a plea for a thorough evaluation and a team of professional persons to work with retarded children, especially with children who have serious multiple handicaps—children that she called "special specials." William C. Barger stressed the importance of team work, then narrowed his discussion to aphasiac children and told of success in using the mirror board with these children. The audience asked many questions, and nearly half of them remained to see special slides of work with aphasiac children.

The audience of the morning session on 27 December was smaller but gave close attention to the speakers. Emphasis at this session was on the education of handicapped children, although two of the speakers discussed problems

with gifted children. Raphael F. Simches listed trends in the education of special children and then discussed briefly some of the problems that are arising because of these trends and described expansion of work with the special children.

Romaine P. Mackie discussed research that is needed in working with all types of special children. She said that a terminology is very important, in order that mechanical cards can be used in research. She said that research is needed for the child, for parents and their needs, and for the teachers. She urged that research be reported in such a way that it can be understood.

I. I. Goldberg gave a description of a research project with preschool, mentally retarded children. The study will compare children in regular classes who have had this preschool training with others who have not had the training.

The audience asked many questions of all three speakers, and time was called before all of the questions could be heard. This seems to be one proof of an excellent meeting.

KATHERINE D. LYNCH,
Program Chairman

Research Symposium (Q4)

"Research and implications in teaching science," in the elementary school, in the secondary school, and at the college level, was the subject of the Research Symposium of the National Association for Research in College Teaching. The speakers were Cyrus W. Barnes (New York University), Hubert M. Evans (Teachers College, Columbia University), and Nathan S. Washton (Queens College).

NATHAN S. WASHTON, *Program Arranger*

National Science Teachers Association (Q5)

The theme of the sessions of the National Science Teachers Association meeting with the AAAS was "The New Science—A Teaching Challenge." The papers, each by a distinguished scientist, presented recent developments in five different areas of science. Each paper was followed by a discussion, by educational specialists, of the significance of the information presented by the speakers for elementary and secondary classrooms.

Alfred B. Garrett (Ohio State University) spoke on "The new chemistry." Wasley S. Krogdahl (University of Kentucky) dealt with "The new astronomy." Hugh Odishaw (U.S. Na-

tional Committee for the International Geophysical Year) spoke on discoveries in earth science resulting from IGY activities. Harry Wexler (U.S. Weather Bureau) discussed recently developed methods in weather forecasting. The fifth paper in the series, by Irvin J. Kopin (National Institute of Mental Health), was "The biology of the mind." Kopin discussed the biochemical bases for human behavior.

In addition, three IGY films were shown and a program on current NSTA activities was presented.

The coffee hour for members of the American Nature Study Society, the National Association of Biology Teachers, the National Association for Research in Science Teaching, and NSTA was a pleasant occasion and was well-attended by members of all four societies.

MARGARET J. MCKIBBEN,
Program Chairman

Academy Conference (X1)

The Academy Conference program opened on 26 December with a session on junior academies, with E. M. Gurr (Central High School, Phoenix, Arizona) presiding. The status of the junior academy movement and problems of organization and operation were discussed by Harry Bennett and Wayne Taylor, respectively. This presentation was followed by a panel discussion on the projected programs of junior academies, with Gerald Acker, Bennett, Elnore Stoldt, Taylor, and Floyd West as participants.

The morning of 27 December was given over to the business meeting and discussion of activities of the academies of science. A considerable part of the discussion centered around the relationship of junior academies to senior academies and the sponsorship of all junior science programs. The consensus was that the senior academies were in the best position to head up the varied programs directed toward the development of future scientists. The meeting was closed with the election of officers. E. Ruffin Jones (University of Florida) and J. Teague Self (University of Oklahoma) were chosen as president-elect and secretary, respectively.

The afternoon session was devoted to a discussion of the utilization of National Science Foundation grants by academies of science. Programs of four states were discussed by James Rutledge (University of Nebraska), John

Yarbrough (Meredith), and Arlo Smith (Southwestern University of Memphis). Charles La Motte (Texas A. and M.), who was to have been the fourth participant, was unable to be present but provided copies of his talk.

The traditional banquet featured the presidential address by John G. Arnold, Jr. (Loyola). His topic was "The fate of our junior scientists."

A. M. WINCHESTER,
Program Chairman

Junior Scientists' Assembly

At the 14th annual Junior Scientists' Assembly, held in the auditorium of the American Museum of Natural History on 27 December, each of the first 500 "early birds" received a copy of a Science Study Series paperback donated by Doubleday and Company.

Miss Evelyn Morholt welcomed the audience of some 1100 students (and some parents). Donald Barr (School of Engineering, Columbia) spoke on the "Image of the scientist."

Two students reported on their own research, conducted at Roscoe Jackson Memorial Laboratory: Judy Dick (Erasmus High School) described her work on learning in mice and on socialization of puppies; Robert Kamen (Andrew Jackson High School) told of the effects of nitrogen mustards on congenital deformities in mice and used slides to illustrate his talk. John Fuller, assistant director of the student-training program, described the objectives of the laboratory program for high school students, emphasizing the opportunity the program gives them to read original sources and do creative work.

Barr described the objectives of the Saturday Honors Program in Science, sponsored by the School of Engineering at Columbia University, and two students in this program described their work. Michael Steinitz (Harrison High School) described work on sapphire crystals and Erwin Morton, Jr., (Horace Mann High School) spoke of problems of thrust and fuels for rockets.

Conrad Ronneberg described the aims of the National Science Foundation in providing summer science institutes for high school students and described the kinds of courses to be offered in 1961.

During a closing question period, students (and some parents) asked questions about the supervision of students in out-of-town National

Science Foundation courses; about methods of selecting students for honors programs under the foundation; and about specific problems in the papers presented by the four students.

EVELYN MORHOLT,
Program Chairman

American Association of Scientific Workers (X2)

The American Association of Scientific Workers held a round-table discussion on "Obstacles to the Application of Science to Human Welfare," on 27 December. Topics discussed were the economic and social factors that impede possible applications of science to human welfare; the misdirection of science into destructive channels; and the responsibilities of scientists in removing these obstacles, furthering human welfare, and maintaining peace and human freedom.

The main speakers were Otto Nathan (New York University), who spoke on "Science and peace"; Theodor Rosebury (Washington University), who spoke on "Reflections on the crisis in medicine"; Nathan S. Kline (Rockland State Hospital, Orangeburg, N.Y.), who spoke on "Cybernetics and human welfare"; and William H. Meyer (U.S. Representative from Vermont), who spoke on "Deficiencies in science and man."

A period of discussion followed; members of the panel were David Singer (University of Michigan), Lawrence Scott (Fellowship of Reconciliation), and George Yevick (Stevens Institute of Technology).

MIRIAM L. YEVICK,
Program Chairman

American Geophysical Union (X4)

The symposium on the impact of space research on science was held 27 December in the Bowman Room of the Biltmore Hotel, with E. Purcell of Harvard University and Brookhaven National Laboratory presiding. The hall was filled to capacity.

Gordon MacDonald (University of California, Los Angeles; currently on leave to the Goddard Space Flight Center, National Aeronautics and Space Administration) led off the symposium with an excellent account of the relationship between the earth sciences and the space program. He surveyed

the geodetic data resulting from the satellite orbit analyses and the implications of the satellite results for the structure of the earth's interior. He discussed the satellite meteorology program, emphasizing the importance of infrared detectors in future NASA weather satellites, as opposed to the cloud-cover photographs on which emphasis was placed in the preliminary Tiros operation. MacDonald also discussed the determination of atmospheric properties from the analysis of satellite orbits. He pointed to the possibility of a magnetic drag as a source of the fluctuations in satellite deceleration at altitudes above 400 kilometers.

In the second lecture, Philip Abelson, director of the Geophysical Laboratory of the Carnegie Institution, discussed the suitability of extraterrestrial environments for the growth of living organisms. Abelson summarized the available body of information on the atmospheres of the moon, Mars, and Venus, in the context of conditions known to be suitable for the development of living organisms on earth. He stressed the improbability of finding living organisms on or near the surface of the moon, in view of the almost certainly dehydrated condition of the surface of that body. He considered it probable that the surface of Venus is also barren, as a consequence of the high temperatures which have been reported for that planet by radio astronomers. Abelson concluded with a critique of the evidence for the existence of living organisms on Mars. He pointed out alternative explanations in terms of reactions involving inert substances only.

In the concluding lecture, Martin Schwarzschild, of the department of astronomy, Princeton, discussed some of the benefits which would accrue to astronomy from the availability of orbiting telescopes. Schwarzschild envisioned that almost every field of astronomy would benefit substantially from the space program. One of the more fundamental problems that he discussed pertains to the amount of matter in the universe. There is indirect evidence for the existence of some ten times more matter than can be directly observed by currently available techniques. It is a matter of the greatest interest and importance to determine whether nine-tenths of the matter in the universe is in fact unaccounted for as yet, and if this is the case, what the composition of this missing matter may be. Current speculations center on the possibility that the unseen matter may be molecular hydrogen or deuterium. It is expected that the answer to this question will be obtained when satellite telescope spectrographs become available, a few years hence. Schwarzschild also discussed several questions of general interest to the scientific community, including the relative merits of manned and unmanned space exploration and the general benefits which may accrue to science as a whole from the investigations now being undertaken in support of space research.

ROBERT JASTROW, *Program Arranger*

American Nature Study Society (X5)

The 53rd annual meeting of the American Nature Study Society had a program indicative of the American people's increasing interest in interpretive nature programs for their schools. Sessions on outdoor laboratories, on nature projects of members, and on glaciation, and the showing of

kodachromes, attracted over 100 people.

The field trip to the Brooklyn Botanical Gardens, jointly sponsored by the Society and the National Association of Biology Teachers, was led by Charles Mohr and Shirley Miller. At the gardens, Frances Miner and George Avery, aided by staff members and children, explained and demonstrated their youth program.

Approximately 80 members and guests attended the annual banquet, arranged by John Ripley Forbes. Emery L. Will, president, introduced the speaker, Edwin Way Teale, who gave an illustrated talk on his *Journey Into Summer*.

On the last morning a joint session, arranged by Mohr, with the Photographic Society of America centered on new approaches, techniques, and evaluation in nature photography. During the final session a panel discussed writing, illustrating, and publishing for the nature audience.

The council held four meetings. Eva L. Gordon and C. M. Goethe were made honorary life members in recognition of their service to the cause of nature education. E. L. Palmer was reappointed representative to the AAAS Council. A committee was appointed to develop, in cooperation with the American Camping Association, criteria for certification of nature counselors. It was also planned to expand the services of the society through its newsletter and through development of a broader interpretive program at the local level.

STANLEY MULAIK, *Program Arranger*

Conference on Scientific Manpower (X7)

This year's general topic for the conference was "Developing Student Interest in Science and Engineering." Five papers were presented, in a morning session on 27 December.

Samuel Schenberg (New York City Board of Education) served as conference chairman. Harold H. Edgerton (Richardson, Bellows, Henry and Company) discussed "Summer research experience for high school students." John C. Flanagan (American Institute of Research) discussed the development of scientific aptitude tests and "Project Talent" as a means of identifying scientific abilities in high school students. M. H. Trytten and Lindsey Harmon of the National Research Council reported on a recent

study of the high school backgrounds of recipients of doctoral degrees in 1958, from the standpoint of ability levels, region, class size, and field of study. Phoebe H. Knipling (Arlington County, Virginia, Public Schools) discussed the beneficial motivational aspects of science fairs. Finally, Richard T. Fallon (Michigan State University) described the program of the Junior Engineering Technical Society.

The conference was sponsored by the Engineering Manpower Commission, the Scientific Manpower Commission, the National Research Council, the National Science Foundation, and AAAS Section M. Papers delivered at the conference will be published and will be available in limited numbers from the National Science Foundation, Washington, D.C.

THOMAS J. MILLS, *Program Chairman*

National Association of Science Writers (X9)

Earl Ubell, president, conferred honorary membership certificates on Henry A. Wallace, Warren Weaver, and Paul Dudley White for exceptional cooperation in communicating science news to the public.

Lifetime membership certificates were awarded to Watson Davis, David Dietz, Thomas R. Henry, William L. Laurence, Herbert B. Nichols, Robert D. Potter, Allen Shoenfield, Jane Stafford, and Marjorie van de Water.

Watson Davis, director of Science Service, was named the association's 1960 nominee for the Kalinga prize, international award for popularizing science.

The members authorized an increase in annual dues from $10 to $15 and publication of a sample issue of what may become a regular supplement to the NASW *Newsletter*, to include samples of current newspaper and other science writing throughout the country. The members also authorized consideration of an amendment to open associate membership to those who spend a "substantial" rather than a "principal" part of their time in science communication.

VICTOR COHN, *Vice President*

The National Association of Science Writers' annual dinner and presentation of the AAAS-Westinghouse science-writing awards was staged 27 December in the East Ballroom of the Hotel Commodore. Earl Ubell, NASW

president and science editor of the New York *Herald Tribune*, presided.

Ubell also was recipient of the $1000 newspaper division award for nonmedical science writing. Philip Morrison, Cornell University physicist, received a similar award in the magazine division.

William Hines, of the Washington, D.C., *Evening Star*, and Edwin Diamond, science editor of *Newsweek*, were given honorable mention certificates in the newspaper and magazine divisions, respectively.

NATE HASELTINE, *Secretary-Treasurer*

Meetings

Forthcoming Events

March

12–17. American College of Allergists, annual, Dallas, Tex. (P. Gottlieb, 818 Medical Arts Bldg., Philadelphia, Pa.)

13–17. National Assoc. of Corrosion Engineers, annual, Buffalo, N.Y. (W. A. Mapler, 18263 W. McNichols Rd., Detroit 19, Mich.)

13–24. Radiological Health, course in, Cincinnati, Ohio. (Chief, Training Program, Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26)

14–16. Clinico-Pathological Significance of Renal Biopsy, Ciba Foundation symp. (by invitation only), London, England. (Ciba Foundation, 41 Portland Place, London, W.1)

14–16. Inter-Station Supersonic Track Conf., 6th symp., China Lake, Calif. (U.S. Naval Ordnance Test Station, Code 307, China Lake, Calif.)

15–17. Medical Photography and Cinematography, intern. cong., Cologne, Germany. (Deutsche Ges. für Photographie, Neumarkt 49, Cologne)

16–17. Textile Engineering Conf., American Soc. of Mechanical Engineers, Clemson, S.C. (ASME Meetings Dept., 29 W. 39 St, New York 18)

16–18. Aviation/Space Education, 5th natl. conf., Washington, D.C. (Natl. Aviation Education Council, 1025 Connecticut Ave., NW, Washington 6)

17–19. International Medical Conf., Liège. Belgium. (Medical Commission of the FIR, Castellezgasse 35, Vienna II)

19–25. American Soc. of Photogrammetry, American Cong. on Surveying and Mapping, Washington, D.C. (C. E. Palmer, ASP, 1515 Massachusetts Ave., NW, Washington 5)

19–25. Caribbean Region, American Soc. for Horticultural Science, 9th annual, Miami, Fla. (E. H. Casseres, Londres 40, Mexico 6, D.F., or W. H. Krome, Box 596, Homestead, Fla.)

20–22. American Physical Soc., Monterey, Calif. (W. A. Nierenberg, Univ. of California, Berkeley 4)

20–23. Institute of Radio Engineers, 1961 intern. convention, New York, N.Y. (E. K. Gannett, IRE, 1 E. 79 St., New York 21)

20–24. American Surgical Assoc., Boca Raton, Fla. (W. A. Altemeier, Cincinnati General Hospital, Cincinnati 29, Ohio)

20–24. National Health Council, forum and annual meeting, New York, N.Y. (NHC, 1790 Broadway, New York 19)

20–24. Western Metal Cong. and Exposition, 12th, Los Angeles, Calif. (A. R. Putnam, American Soc. for Metals, Metals Park, Ohio)

21–23. American Meteorological Soc., general meeting, Chicago, Ill. (E. P. McClain, Dept. of Meteorology, Univ. of Chicago, Chicago 37)

21–23. American Physical Soc., Division of High-Polymer Physics, 21st, Monterey, Calif. (D. W. McCall, Bell Telephone Laboratories, Murray Hill, N.J.)

21–23. American Power Conf., 23rd annual, Chicago, Ill. (W. C. Astley, Philadelphia Electric Co., 900 Sansom St., Philadelphia 5, Pa.)

21–24. American Assoc. of Anatomists, 74th annual, Chicago, Ill. (O. P. Jones, Dept. of Anatomy, Univ. of Buffalo, Buffalo 14, N.Y.)

21–30. American Chemical Soc., 139th, St. Louis, Mo. (A. T. Winstead, ACS, 1155 16th St., NW, Washington 6)

23–25. American Orthopsychiatric Assoc., 38th annual, New York, N.Y. (M. F. Langer, AOA, 1790 Broadway, New York 19)

23–25. Quantum Electronics, 2nd intern. conf., Berkeley, Calif. (J. R. Singer, Dept. of Electrical Engineering, Univ. of California, Berkeley 4)

23–26. International Assoc. for Dental