Reports of Sections and Societies[1]

Section on Mathematics (A)

Section A conducted a symposium on Mathematics in Applied Science in two sessions on the morning and afternoon of Saturday, December 30. The following papers were presented and excited a good deal of discussion: "Operations Research and Mathematicians," by Philip M. Morse, Massachusetts Institute of Technology; "Finite Difference Methods in the Theory of Structures," by Oscar Hoffman, Case Institute of Technology; "Deformations and Stresses in Bourdon Tubes," by Robert A. Clark, Case Institute of Technology; "Numerical Solution for Nonlinear Elliptic Partial Differential Equations," by L. Richard Turner, NACA Lewis Flight Propulsion Laboratory; "Noncalculational Mathematics in Engineering," by Brockway McMillan, Bell Telephone Laboratories; "On the Use of Mappings in Designing Cascades for Compressible Flows," by George R. Costello, NACA Lewis Flight Propulsion Laboratory; and "Theory of Geodesics Applied to Electromagnetic Propagation Between Curved Plates," by Kaiser Kunz, Case Institute of Technology. The sessions were attended by 40 persons. Robert F. Rinehart and Sidney W. McCuskey presided at the morning and afternoon meetings, respectively.

Section A also cosponsored the Symposium on Mathematical Biology and Biometry of the Biometric Society, Eastern North American Region. Several of these sessions had a high degree of mathematical content.

R. W. BRINK, *Secretary*

Section on Physics (B)

For the past two years Section B has been exploring the possibilities as to the kind of program best suited to physics at the annual meetings. The idea of a group of invited symposia, one strictly in the field of physics and others in borderline or related scientific fields, seems to be a happy solution, encouraging the interest of research people in related sciences and not duplicating the content or purpose of the meetings of the American Physical Society and its affiliates.

This year two of the symposia on borderline subjects were arranged through the generous efforts of cooperating sections in the other sciences. Despite the modest attendance at the Cleveland meetings, the section symposia were well attended. One gains the general impression that there is considerable enthusiasm about such symposia among those who have attended them. The fact is, however, that very few physicists have been on hand for these meetings either year. One reason, of course, is that the programs have not been prepared sufficiently far in advance to receive adequate publicity. Physicists are not in the habit of attending the AAAS meetings and consequently are not aware of the nature of these programs. We feel sure that, had more physicists attended, they would have found the addresses of great interest and their time well spent.

Because of the short time and the necessity of completing the programs by telephone, the secretary made a serious error in regard to the Geophysics Symposium in that only a preliminary plan appeared in the announcements. The secretary particularly wants to call attention to the content of this program and to express his deep appreciation to Dr. Merritt and his committee for arranging a session that received so much enthusiastic mention by those in attendance. It included: "The Origin of the Earth," by Harold Urey; "Radioactivity and the Origin of Continents," by P. M. Hurley; and "Metallogenesis in the Light of Radioactive Investigations," by G. W. Bain. I am sure that, if more people had been aware of the nature of the program, our hall would have been far from adequate.

An excellent symposium was also arranged in the field of astrophysics by Dr. Edmondson. This program, taken in conjunction with the subject matter of the geophysics program and the excellent review of "Fifty Years of Quantum Theory," by Drs. Darrow and Condon, gave a beautiful picture of the present concepts concerning stars and our earth and moon.

For next year the idea has been suggested that there be just two symposia and a dinner meeting all on the same day. It is thought that this plan would attract physicists from some distance and encourage a discussion at the dinner meeting concerning the purpose and content of Section B programs.

FREDERICK S. BRACKETT, *Secretary*

Oak Ridge Institute of Nuclear Studies (B2)
Oak Ridge National Laboratory (B3)

The one-day program on atomic energy given at the Cleveland meeting was the first to be sponsored by the Oak Ridge Institute of Nuclear Studies as an associated society of the AAAS. The institute joined with the Oak Ridge National Laboratory in presenting it. It is hoped that a second can be sponsored at the 1951 meeting on the medical aspects of atomic energy.

The program was held on December 28 in the Cleveland Public Auditorium. About 150 persons attended in the morning, and approximately 350 in the afternoon.

The morning session consisted of three talks on various aspects of atomic energy. Eugene P. Wigner opened the program by pointing out that the atomic energy project has reversed the usual order in that a technology has made significant contributions to the sciences. In discussing the impact of atomic energy on the sciences, he reported that the contributions traceable to it are characterized not so much by their spectacular nature as by their great variety and the number of sciences they cover. The most profound effects are in the provision of new research tools—notably radioisotopes—the enrichment of the field of nuclear physics itself, the stimulation of interest and the raising of problems in related fields, and the changes brought about in the thinking of scientists on fundamental questions of science.

Henry D. Smyth next discussed the critical situation in which this country finds itself and then outlined the means through which he felt scientific manpower could best be mobilized. This is through the creation of a Scientific Service Corps under a Scientific Manpower Board responsible to the President, and the establishment of a Student Scientific Corps to provide for the training of new scientists during the 20-year period of international tension and crisis that he foresees.

While stressing the interrelationship of the sciences, John A. Swartout, Assistant Research Director, Oak

[1] Key symbols correspond to those in the General Program.

Ridge National Laboratory, outlined in detail the contributions of the chemist to the atomic energy program. At the beginning of the atomic energy project, uranium and plutonium were among the least known of the elements; today they are among the most thoroughly known chemically. In a single sentence he summed up the great task of the chemists in 1942: ". . . the problem was, in brief, the separation of an element which had never been seen and whose chemistry was practically unknown from a manyfold greater amount of uranium, whose chemistry was also incompletely known, and from the elements produced by the fission of uranium, the identity and number of which were but partially known." After describing the striking manner in which these problems were solved, he went on to identify a new group of problems that now face the chemist in the successful design of efficient reactors for power purposes—namely, radiation chemistry, "hot-atom" chemistry, and high-temperature chemistry.

The afternoon program consisted of a seminar on "Ten Years of Atomic Energy—A Review of Progress." Walter H. Zinn reviewed the history of reactors to the present time and outlined the problems involved in their future development. Miles C. Leverett handled the role of military developments, C. G. Suits sketched the possibilities of power production, and Philip Sporn discussed the means through which private industry could best participate in the atomic energy program. Alvin M. Weinberg served as moderator.

Mr. Sporn pointed out that industrial participation is slight at this time, largely because of striking advances made in the generation of electric power by conventional means. The newest steam plants have a conversion ratio of 38 per cent thermal efficiency compared to 13–15 per cent a few years ago. He noted also that atomic energy is a new fuel instead of a new kind of power. Dr. Suits pointed out that, in the conversion of atomic energy to power, we are "paying a high price for the elementary state of our knowledge of reactor technology." He developed the interesting approach to the economic aspects of atomic power by computing the capital investment in a power reactor which could be made under various operation assumptions, if power is to be produced at the same cost per KWH as is available from a conventional steam plant with an investment in the boiler component of $18,400,000. Over the range of his assumptions the same power output could be obtained at the same cost with a nuclear boiler plant capital investment as high as $65,000,000 in the most favorable case.

Dr. Leverett pointed out that the military is furnishing almost the entire motivation for the atomic energy program at this time and noted that this had frequently been the case with many technical developments in the past. An analogy was drawn in this respect to the Diesel engine, for which the very large initial development costs were born by the Navy in its search for a satisfactory submarine power plant.

The Oak Ridge Institute of Nuclear Studies also provided several exhibits from the American Museum of Atomic Energy for the Science Exposition which was an integral part of the AAAS meeting.

WILLIAM G. POLLARD, *Secretary* and *Executive Director*
Oak Ridge Institute of Nuclear Studies

Section on Chemistry (C)

Papers at the general chemistry session covered such topics as "Seven Echoes from History," "Free Radical Aromatic Substitution," "The Structure of Heparins," "The Chemist Helps the Dentist," "National Cooperative Undergraduate Chemical Research," "Some Reactions of Ketene and Diketene," "Quantitative Studies on Urinary Thiosulfate Excretion by Human Beings," and "Human Health in Relation to Inorganic Bioelements."

The papers presented at the AAAS steroid symposium, arranged by Hal G. Johnson, of Monsanto Chemical Company, reviewed the whole picture of hormones, not only from a clinical and pharmacological point of view, but also from a chemical viewpoint. Dr. Kirk reviewed the steroid hormones and present knowledge as it relates to aging, and the new science of gerontology. Dr. Tishler summarized the progress made with cortisone but also disclosed that Merck is now in a position to synthesize adequate quantities of Compound F for more thorough evaluation in the field. In the discussion, it was emphasized that, although Compound F may be more difficult and costly to make, it may well be used in the future with Compound E in the treatment of arthritis.

Dr. Dobriner, of the Sloan-Kettering Institute for Cancer Research, summarized the data on the metabolism of the adrenocortical hormones. His paper indicated that there is a difference in metabolism associated with cancerous and noncancerous patients. The significance of these findings is speculative, but it certainly emphasizes the relationship of hormone metabolism and cancer.

The papers by Drs. Wagner and Heymann related to the chemistry of the steroids, Dr. Wagner's dealing with steroidal sapogenins, and Dr. Heymann's with a new route to 11′ ketosteroids. Dr. Heymann particularly emphasized some new chemical reactions and findings on the intermediates of Compound E. In Dr. Jacobson's paper, the value of adrenal glands in the preparation of corticosterone by perfusion with blood and saline solutions was emphasized as a technique for preparing the necessary chemical intermediates. The discussions were stimulating, as the questions raised were speculative or referred to reasearch work not yet completed.

The program on agricultural chemicals, arranged by Hal G. Johnson and covering the various phases of the work normally associated with preparing, testing, and approving chemicals for use in agriculture, was well balanced. The function of the plant pathologist in field-testing, and the position of the chemist in synthesizing and evaluating chemicals for insecticidal, fungicidal, and herbicidal use, were related by the various speakers.

Mr. Long ably outlined the history of chemical developments in the past 10 years, as a layman and editor sees them. In the discussion the necessity for education of the public and of government to appreciate the problems associated with development of new chemicals for agriculture was stressed. Dr. Wilson emphasized the difficulties associated with the evaluation of new chemicals in field-testing, where it is important to have uniform techniques for such evaluations and, even more important, where the value of equipment is a factor. The mechanical engineering features of utilizing agricultural chemicals were discussed by several of the speakers.

Dr. Tisdale reviewed from a research and development point of view the problems associated with the synthesis and testing of insecticides and fungicides. Dr. Sherwood outlined what has been done with herbicides and what the potentials are in terms of increasing the yield of desired crops by proper use of herbicides. The successful use on sugar cane and pineapple crops was reviewed, and the potential use on grains, especially corn, was emphasized. In the future, chemicals will perhaps be as im-

portant as mechanization has been in the past 30 years.

Mr. Leaper and Dr. McNew reviewed the chemical aspects of different chemicals as related to herbicides and fungicides. Both papers pointed out the value of the chemist in synthesizing new chemicals for agricultural use. The specific problems associated with fruit diseases were reviewed by Mr. Dunegan, and the history and development of parathion were given by Mr. Horsfall. The latter paper stressed the caution and care that industry uses in developing and evaluating new chemicals for the industry.

The symposium on "Recent Advances in the Chemistry of the Antibiotics and Vitamins," arranged by Stanton A. Harris, of Merck & Co., Inc., and H. E. Canter, of the University of Illinois, included papers by:

J. R. Schenck, of Abbott Laboratories, who reported on the isolation and characterization of a new antibiotic —hydroxystreptomycin. The location of the hydroxyl group was determined by degradation studies, which yielded streptidine and N-methyl-L-glucosamine but not maltol. These results, together with the absence of a C-methyl group, establish that the new antibiotic is streptomycin substituted with a hydroxyl group on the methyl group of the streptose portion.

M. L. Wolfrom, of Ohio State University, who gave an excellent review of the stereochemistry of streptomycin, elucidating the configuration of the glycosidic linkages of N-methyl-L-glucosamine to streptose and of streptose to streptidine.

R. L. Peck, of Merck & Co., who described the isolation of crude neomycin and the separation from such material of one of the antibacterial components—neomycin A—in a pure state. Neomycin A is not the major component of crude neomycin.

G. E. Boxer. who described the work leading to a chemical assay method for vitamin B_{12}. The method depends on the liberation by vitamin B_{12} of one mole of cyanide, a reaction which is markedly accelerated by light. The cyanide is then determined by a millimicro method that is sufficiently sensitive to allow the determination of vitamin B_{12} in urine and tissues.

The 117th meeting of the American Association for the Advancement of Science marked the first time that a symposium devoted exclusively to forensic science was presented before the members of the Association. Ralph F. Turner, of the Department of Police Administration, Michigan State College, arranged a panel that included notable authorities from the fields of pathology, toxicology, petrography, and ballistics. The purpose of the panel was to acquaint fellow-scientists with the application of various scientific disciplines to the problems of the administration of justice. Forensic science has enjoyed tremendous advancements during the past decade, and it was felt that the contributions of the workers in this field should be presented before the AAAS in an effort to clarify their position and to point the way for more careful consideration of this segment of applied science. Topics discussed were: "The Electrical Resistance of the Human Body," by A. R. Moritz, of Western Reserve University; "Medico-Legal Investigation of Partially Burned Bodies," by Frank Dutra, of the University of Cincinnati; "Chemistry and Spectroscopy of the Toxic Metals," by Charles Umberger, of the Office of Chief Medical Examiner of New York City; "Petrographic Aspects of Scientific Crime Detection," by Ray Jevons, of the FBI; and "The Identification of Guns Used in the Commission of Crime," by J. H. Mathews, of the University of Wisconsin.

A symposium on Advances in Inorganic Chemistry, arranged by W. Conard Fernelius, of Pennsylvania State College, included papers on "The Newer Refractories," by L. S. Foster, of the Ordnance Department; "The Metallurgy of the Less Familiar Elements," by B. W. Gonser, of Battelle Memorial Institute; "The Chemistry of Hafnium and Zirconium," by E. M. Larsen, of the University of Wisconsin; "Recent Developments in the Field of the Rare Earths," by L. L. Quill, of Michigan State College; "The Use of Magnetic Susceptibility Measurements in Inorganic Chemistry," by P. W. Selwood, of Northwestern University; "The Importance of Trace Elements in Chemistry," by R. Ward, of the University of Connecticut; "The Fundamental Chemistry of Glass," by W. A. Weyl, of Pennsylvania State College; and "Recent Developments in the Field of Coordination Compounds," by W. C. Fernelius and B. E. Douglas, of Pennsylvania State College.

ED. F. DEGERING, *Secretary*

Section on Astronomy (D)

The Section D program consisted of (1) a joint symposium with Section B, (2) two vice-presidential addresses, and (3) ten contributed papers dealing primarily with problems in astrometry and astrophysics.

The symposium dealt with Fifty Years of Quantum Theory in Astrophysics and covered the data on spectra now available to the astrophysicist, applications to stellar spectra, and a discussion of nuclear processes in stellar interiors. The speakers were Charlotte Moore Sitterly (National Bureau of Standards), Guido Münch (University of Chicago), and Goeffrey Keller (Ohio State University and Ohio Wesleyan University).

Edwin F. Carpenter (University of Arizona) was chairman of Section D in 1942, and wartime conditions prevented him from giving his address on schedule. His address, "Associations of Galaxies," presented some very interesting and important conclusions, based largely on photographs taken by him at the Steward Observatory in Tucson.

This year's retiring chairman, Alfred H. Joy (Mount Wilson and Palomar Observatories), gave a very interesting popular lecture on "Stellar Explorations with the Spectrograph."

FRANK K. EDMONDSON, *Secretary*

Section on Geology and Geography (E)

The sessions of Section E were held at the Cleveland Public Auditorium and Hotel Carter, Cleveland, December 27–29. Approximately 150 persons participated, with an average attendance of about 50 at each session. The program included: General Geology, two sessions, 15 papers; Geography, two sessions, 11 papers; Program for Nonprofessionals, two sessions, 10 papers; Soils Symposium with Section O (Agriculture), three sessions, 14 papers; Atomic Energy Program with Section B (Physics), one session, 3 papers; Geography field trip; Section E smoker; and the vice-presidential address by Raymond C. Moore. The General Geology program was organized by Henry F. Doner, the Geography program by Benjamin Moulton, the Program for nonprofessionals by Charles S. Bacon, Jr., and the Soils Symposium by C. E. Millar, Secretary, Section O. Two innovations in the program are noteworthy: the Program for Nonprofessionals, which was intended to bring interested laymen and high-school teachers into contact with professional geological activities, and the Soils Symposium, which

brought together workers in the closely allied fields of soils genesis and Pleistocene geology. A special printed program, including abstracts of papers, was made available through the cooperation of The Geological Society of America.

The regular Section elections and Council actions resulted in the election of the following: *vice president and chairman,* George W. White; *retiring vice-president,* Kenneth K. Landes; *elected section committee,* Norman Newell.

LELAND HORBERG, *Secretary*

National Geographic Society (E2)

Despite iced-over pavements and −2° weather, 1,800 members of the AAAS and guests attended the color-illustrated lecture of Dr. and Mrs. Matthew W. Stirling Wednesday evening, Dec. 27, in the Music Hall of the Cleveland Public Auditorium. The Stirlings, an archaeological team, have headed eleven expeditions to southern Mexico and Central American countries to study pre-Columbian civilizations in this hemisphere, under the joint sponsorship of the National Geographic Society and the Smithsonian Institution. They described their recent expedition to Panama where, for the first time, helicopters were used in archaeological exploration.

Kirtley F. Mather, president of the AAAS, presided and introduced the lecturers. Dr. Stirling, who is director of the Bureau of American Ethnology, Smithsonian Institution, and Mrs. Stirling, left Washington January 2 to return to Panama for further research.

LEONARD C. ROY, *Chief of School Service*

National Speleological Society (E3)

The National Speleological Society is one of the youngest member groups of the AAAS, and the meeting of the Association at Cleveland was the first opportunity the society has had to participate in an annual convention. As described in the General Program:

> The National Speleological Society was founded in 1939, and operates as a nonprofit scientific-educational organization, under a District of Columbia Charter. The Society serves as a central agency for the investigation, collection, compilation, preservation, and publication of scientific, historical, and legendary information relating to caves and limestone areas. It arouses interest in the discovery of new caves, promotes the exploration, mapping, photographing, and study of caves in their geological, mineralogical, hydrological, and biological aspects. It seeks to protect caves and their contents against vandalism, pollution, and unwise exploitation. Total membership, 1050.

Two sessions were held on Thursday, December 28. The attendance at these sessions was about equally divided between members of the society and visitors and friends who had an interest in speleology. A great variety of subjects was covered, and the interest evidenced in, and questions asked about, the papers promoted considerable discussion after the presentation of each one.

James A. Fowler, of the Philadelphia Academy of Natural Sciences, reported on an unusual aggregation of the salamander *Plethodon dixi* as discovered, observed, and studied in Dixie Caverns, Salem. Va. Individuals of this newly described salamander are most abundant during the summer months and scarce during the winter and early spring. These findings contrast with those of Charles E. Mohr, president of the National Speleological Society and director, Audubon Nature Center, Greenwich, Conn., who discussed "A Remarkable Migration of Cave Salamanders." The studies reported by Mohr were conducted in an abandoned mine near Valley Forge, Pa., and showed that the salamanders left the mine during the summer months and in the early fall returned to cover and may be observed in large numbers during the winter.

Joe Morrison, of the National Museum of Natural History, discussed the "Zoogeography of the Cave Snails of Eastern North America." Nancy Rogers, of the Army Medical Service Research and Graduate School, presented some preliminary "Notes on the Habits of the Lump-nosed or Long-eared Bat." Burton Faust, executive vice president of the National Speleological Society, discussed "The Subterranean Accumulation of Salt-Petre," ascribing it to the activities of nonsymbiotic nitrogen-fixing bacteria. G. Alexander Robertson, engineer with the City of Richmond, Va., and chairman of the Photographic Committee of the National Speleological Society, discussed some of the ways in which photography can be of inestimable assistance in the study of speleology. Paul Price, geologist for the State of West Virginia explained how "A State Geologist Looks at Speleology." The study of caves includes stratigraphy, geomorphology, mineralogy, hydrology, and paleontology, all of which must be considered if the state geologist is going to render the people of his state the fullest service.

William Foster, chairman of the Mineralogical and Formations Committee, described and explained the erratic development of helactites, anthodites, nodular outgrowths, etc. William E. Davies, of the U. S. Geological Survey, discussed the "Erosion Levels in the Potomac Drainage System and their Relation to Cavern Development." The recent study of terraces and caverns indicates a close relation between erosion levels and cavern levels in folded limestone areas.

Charles E. Mohr in his presidential address discussed the "Research Possibilities in Speleology." Workers in all fields of science from archaeology to zoology have the opportunity to work in substantially a virgin field. The early history of man, evolution, prehistoric life, ground water movement, mammalogy, mycology, and paleontology lie in the several provinces of speleology.

Condensed from a report by BURTON FAUST, *Executive Vice President*

Section on the Zoological Sciences (F)

Despite lower general registration, meetings sponsored by Section F were well attended. At the business meeting attention was directed to the large number of individuals enrolled in the section—more than 4,000—and the desirability of making the section function as originally constituted—i.e., the interpretation of the zoological sciences and the coordination of activities among all zoological and other biological societies. The question of the advancement and election of members as Fellows of the AAAS was raised, and plans were suggested to bring the list up to date.

The following lectures, symposia, and other sessions were sponsored by Section F:

Business meeting
Symposia:
- Implications of Nuclear Phenomena—Section B (Physics)
- Radiobiology—Sections F, Nm
- Genetics and Behavior—Sections F, I (Psychology)

Zoologists' Dinner
- Vice-presidential address

Biologists' Smoker

The programs presented were most interesting and stimulating. The Biologists' Smoker was especially good not only because of the prearranged plans but also because the room facilities in the Cleveland Public Auditorium were practically ideal.

J. H. BODINE, *Secretary*

American Society of Parasitologists (F1)

The society's technical programs occupied three crowded days, in the course of which more than 120 papers were presented or read by title. Special features included a commemoration of the society's 25th anniversary, and W. H. Wright's presidential address on "Medical Parasitology in a Changing World." At the annual business meeting of the society it was voted to meet in Chicago, November 15–17, with the American Society of Tropical Medicine, the American Academy of Tropical Medicine, and the National Malaria Society. The following officers were elected: *president,* Benjamin Schwartz, Zoological Division, U. S. Bureau of Animal Industry, Washington, D. C.; *vice president,* Eloise B. Cram, Laboratory of Tropical Diseases, National Institutes of Health, Bethesda, Md.; *treasurer,* Robert M. Stabler, Colorado College, Colorado Springs.

H. W. BROWN, *Secretary*

American Society of Protozoologists (F2)

The American Society of Protozoologists held its first annual meeting with a program of members' papers on December 27 and 28. Of the 34 papers whose titles and abstracts appeared in the printed program, 27 were presented in person and 7 by title. Free-living protozoa were the subject of 20 of the papers, parasitic protozoa of 14. A major present-day trend in protozoologist research was indicated by the fact that the scope of 15 of the papers was concerned with some aspect of cellular physiology, 10 of these in turn with nutritional requirements or effect of antibiotics. Evidence that the contractile vacuole of a suctorian (*Tokophrya infusionum*) functioned during feeding to lower the internal pressure so as to draw the protoplasm of the prey through the predatory tentacles was presented by Maria A. Rudzinska and Robert Chambers. Notable in the field of morphology was Harold E. Finley's report on the finer details of thin sections of a ciliate, *Spirostomum ambiguum,* as revealed by the electron microscope.

D. H. Wenrich, the speaker at the annual luncheon on December 29, reported on matters of protozoological interest at the Fifth International Congress of Microbiology held at Rio de Janeiro. Sixty persons attended this luncheon, although 50 was the maximum at any of the other sessions. Forty-five new members were voted into the society. Plans for a journal were presented by S. H. Hutner.

R. P. Hall was reelected president for another year, Gordon H. Ball was elected vice president, and L. E. Noland to the vacancy on the Executive Committee. The Executive Committee voted to meet in Philadelphia in 1951 with the AAAS.

ELERY R. BECKER, *Secretary-Tresurer*

American Society of Zoologists (F3)

The Society held its forty-seventh annual meeting in Cleveland, December 27–30, with the AAAS. The Hotel Hollenden served as headquarters, where most papers and symposia were presented. The papers, in general, were good, and the symposia were excellent. About 400 zoologists attended the meeting, although the attendance was only two thirds as large as at New York City last year. The banquet at which Dr. Domm delivered his address on "Sex Differentiation: Genes or Hormones" was one of the high-lights of the meeting.

Officers elected to the Executive Committee for 1951 are: president, Douglas M. Whitaker, Stanford University; vice president, Lincoln V. Domm, The University of Chicago; treasurer, Harry A. Charipper, New York University.

The Executive Committee voted to hold the 1951 annual meeting of the Society in Philadelphia in December with the AAAS. It is expected that the annual meeting in 1952 will be held on the campus of Cornell University in September with the AIBS.

The proceedings of the Cleveland meeting, together with the revised list of members, will be published in the March issue of *The Anatomical Record.*

WALTER N. HESS, *Secretary*

The Society of Systematic Zoology (F4)

The third annual meeting of the society was highlighted by the symposium and the use of the society's headquarters as a meeting place for zoologists. More than 100 zoologists attended the symposium, and at least 200 examined the books on display in the headquarters lounge.

The subject of the symposium was The Role of Systematics in Modern Zoology. The speakers were Alexander Petrunkevitch, of Yale; Waldo L. Schmitt, of the U. S. National Museum; and Lee R. Dice, of the University of Michigan.

At the meeting of the council an extensive and far-reaching program was adopted. A new journal of principles and problems of systematics, to be called "Systematic Zoology," was definitely planned for 1952. The exhibition of books of interest to zoologists in a central lounge at the annual meeting was thought valuable enough to be repeated annually and also extended to other meetings of zoologists throughout the year. The preparation of a book on the fundamentals of systematics was approved. Sessions for presentation of papers by members at the next annual meeting was planned; and active committee programs were initiated or continued to aid the *Zoological Record,* obtain preparation of useful handbooks, determine the members' views on various problems of nomenclature, prepare for the bicentennial of Linnaeus' 10th edition of the *Systema Naturae,* and so forth.

The 800th member was enrolled at Cleveland. It is confidently expected that 1,000 members will be enrolled by the time of the next annual meeting—which will be at Philadelphia, December 27–29, 1951.

R. E. BLACKWELDER, *Secretary-Treasurer*

American Microscopical Society (FG1)

The sixty-seventh annual meeting of the society was held at Cleveland, in connection with the AAAS convention, December 27–29, 1950. The annual luncheon and business meeting of the Executive Committee convened Wednesday noon, December 27, in Parlor E of the Hotel Hollenden; President Asa C. Chandler presided. Parlor E served as society headquarters throughout the meetings.

On Friday forenoon, a symposium of six excellent papers on *Modern Methods for Microscopy* opened at 9:00 A.M. in Parlor E but was so well attended that it became necessary to move to a larger room. Oscar W.

Richards, who had served during the past year as program chairman, presided at the meeting. Subjects presented by the six authors included polaroid ultraviolet color translation microscopy, reflecting microscopes in infrared spectrometry, biological polarization microscopy, refractive index of protoplasm, fluorescence microscopy, and interference, phase, television, and x-ray methods of microscopy.

The annual business meeting of the society, with the president presiding, opened at 4:00 P.M. Friday, December 29. Many details of society business were transacted. A new printer for the *Transactions*, Spahr & Glenn Company at Columbus, Ohio, was named. The following officers for 1951 were elected: *president*, David C. Chandler, Cornell University; *first vice president*, T. L. Jahn, University of California; *second vice president*, L. O. Nolf, University of Iowa; *elected member of executive committee*, O. W. Richards, American Optical Company. The first three of the new officers serve for one year each; elected members of the Executive Committee, for three years. Dr. Richards' term will be 1951–53. In addition to these officers, the treasurer, custodian, and secretary-editor continue in office through 1951, as do also A. B. Dawson and R. V. Bangham, Elected Executive Committeemen. A. M. Chickering and F. E. Eggleton were reappointed as representatives of the society on the Council of the AAAS for 1951 and 1952.

The society voted to meet in 1951, either with the AIBS at Minneapolis in September or with the AAAS at Philadelphia in December, and instructed the Executive Committee to select between these two, after additional information becomes available.

F. E. EGGLETON, *Secretary*

Biometric Society (FG2)

A marriage between two vast fields of knowledge—mathematics and biology—is the aim of scientists united in the Biometric Society, dedicated, according to its constitution to "the advancement of quantitative biological science through the development of quantitative theories and the application, development, and dissemination of effective mathematical and statistical techniques."

In their session at the annual Christmas meeting jointly with Section A the members of the Biometric Society discussed agricultural experiments and biochemical problems, the propagation of nerve impulses and biological effects of radiation, decompression sickness in high-altitude flying, and the structure of animal societies. Since behavior can be seen both as a biological and as a social problem, the researches of mathematical biologists spill over into what is usually thought of as "social science." There was one paper on the theory of mob behavior and another on how to tell something about the "latent characteristics" of individuals in a sample of population from the way they respond to specific situations or answer specific questions.

There are two different ways of applying mathematics to the study of life processes. One is to use statistical methods for designing experiments and for evaluating experimental data. That is the way of the biometricians proper. The other approach is that of the mathematical biologists, who follow the footsteps of the mathematical physicists. The mathematical biologists usually begin with a "model," an idealized picture of some biological situation (such as a metabolizing cell, a growing population, an evolving nerve net, etc.). By means of mathematical analysis of the physical and chemical processes involved, the biomathematicians deduce the behavior of the model. This leads to the construction of biological theories. The difference between an accumulation of "facts" and a science is somewhat like the difference between a pile of bricks and a house. On the other hand, the difference between "pure theory" and a science is like the difference between a blueprint and a house. For a full-fledged science, both the "blueprint" and the "bricks" are indispensable.

The following papers were presented in the sessions of December 27–29. Herman Branson, of Howard University, discussed metabolizing systems in the light of available data on the behavior of nucleic acids, iodine, etc., with a view of finding turnover times and other properties. J. Z. Hearon, of the University of Chicago, discussed the application of the second law of thermodynamics to spatially nonuniform systems in which irreversible processes are occurring. He also pointed out the relation between dissipation of energy and biochemical irreversibility.

Karl Menger, of the Illinois Institute of Technology, developed a system of statistical geometry in which the exactly specified distances of ordinary geometry are replaced by distances with a "probability spread." He suggested applications to a "physiological geometry of the skin," where only the approximate position of the stimulus is known by the subject.

A. Rapoport and A. Shimbel, of the University of Chicago, developed a theory of random nets and showed its applications to the structure of the central nervous systems and to the spread of epidemics. For example, in a thoroughly mixed large population the fraction of the population succumbing to a contagious disease that confers immunity on the survivor can be expected to be independent of the size of the population.

Paul Lazarsfeld, of Columbia University, dealt with a problem of social science in which the parameters of the "latent classes" into which a population is assumed to be divided are to be computed from data relating to certain responses which various proportions of the population give in different situations. N. Rashevsky, of the University of Chicago, considered the effects of imitative behavior in large social groups, indicating applications of this theory to the study of mob behavior, spread of panics, fads, etc. H. G. Landau, of the University of Chicago, discussed the structure of animal societies as determined by certain dominance relations (such as the so-called peck right observed among chickens).

Leslie F. Nims, of Yale University, presented a study of decompression sickness associated with high-altitude flying in the light of a theory which relates the sickness to bubbles growing in tissues and subjecting neighboring tissues to mechanical stress, as the atmospheric pressure decreases. The mathematical problem is to determine the stresses as a function of time, the partial pressures of the dissolved gases, and the elasticities of the particular tissues.

Boyd Harshbarger, of Virginia Polytechnic Institute, presented a problem in biometrics relating to experiments where a number of varieties, say, of plants, are subjected to a number of treatments. If the number of varieties or treatments is a product of two consecutive integers, formulas are obtained for the making of the experimental design.

H. D. Landahl, of the University of Chicago, discussed theoretical and experimental aspects in the removal of airborne matter by the human respiratory tract. I. Opatowski, of the University of Chicago, presented two papers, one dealing with the calculation of the velocity

of nervous conduction, the other with the dose-frequency curves in radiobiology.

George Sacher, of Argonne National Laboratory, treated the problem of physiological injury in a population of animals subjected to a given treatment. Usually the incidence of injury due to some factor (toxic or radioactive) is thought of as depending partially on the individual's functional response and partially on a random factor. Species comparisons show that interspecies predictions of toxicity require a knowledge of the species parameters of the random process, as well as of the functional response.

A. RAPOPORT

National Association of Biology Teachers (FG 4)

More than 200 members of the National Association of Biology Teachers were present for the six program sessions, annual luncheon, field trip, and the meetings of the Board of Directors.

Highlights of the program were addresses by Clyde A. Erwin, State Superintendent of Public Instruction of North Carolina; May R. Zelle, Division of Biology and Medicine, Atomic Energy Commission; Ernest Neal, Tuskeegee Institute, Alabama; Edgar Martin, of the U. S. Office of Education; and the demonstrations of special techniques by T. Edward Boardman, of the Rochester Museum, and Glenn W. Blaydes, of Ohio State University.

The survey of science teaching reported by Dr. Martin indicated that attendance in biology classes now exceeds that of all other sciences in the high schools of the nation. This was a particular challenge to NABT, since it is the only national organization devoting all of its efforts toward improving biology teaching.

Important new committees were appointed by incoming President Richard L. Weaver, of North Carolina, in the fields of outdoor and conservation education; a liaison committee to work with other educational and scientific groups to develop and improve the teaching and the facilities for biology was also appointed.

A new regional and state organization was developed to assist in the promotion of regional and state programs and membership work.

BETTY LOCKWOOD, *President*

Section on Botanical Sciences (G)

In recent years Section G has kept its program limited to such features as a vice-presidential address and a single symposium of general interest. This year the section organized five sessions, three of which were devoted to symposia and two to contributed papers. The program had a strong ecological flavor, for one of the sessions of 11 contributed papers and the symposia on The Ecological Background of Evolution and The Structure and Analysis of Plant Communities were largely in this field. The Ecological Society of America cosponsored these programs. This year it is expected that the symposia will be concerned with other fields of general interest.

Without making a drive to obtain contributed papers, or in any way competing with society meetings to be held separately from the AAAS, Section G will provide for as many sessions of contributed papers as required at the Philadelphia meeting in 1951. The section will also welcome the cosponsorship of programs by any interested society.

Attendance at the different sessions of the section ranged up to 125 at the symposium on the ecological background of evolution. It is anticipated that the attendance at the Philadelphia meeting will be larger. Apparently some botanists did not attend the Cleveland meetings because they thought the presentation of papers by botanists had been pretty well cared for at Columbus, and that the section would not "put on" a program. There seemed to be, however, a consensus that the Cleveland meetings were interesting and worth while, and this feeling will probably encourage a larger attendance at Philadelphia. Many of us believe that the volume of American botanical research is sufficient to support two annual meetings of medium or even large size, especially if they are not held in localities that are geographically close.

The programs of Section G were scattered through the period of the meetings with three vacant half-days. This was intentional, the purpose being to make it easier for botanists of wide interests to attend nonbotanical programs of interest to them without serious conflict.

At a Section G business meeting Wednesday evening Vice-President J. S. Karling spoke on "The Future of Section G and Botanical Meetings." This was followed by a general discussion by those in attendance, including officials of the AAAS and the AIBS, with the result that there was a helpful "clearing of the air" and a general feeling that the two organizations will plan for the future with full cooperation.

STANLEY A. CAIN, *Secretary*

Section on Anthropology (H)

One fact concerning the sessions of Section H at the 117th meeting of the Association dominates all others. That is the spectacular recent growth of anthropology and the degree of its integration with other sciences. No meetings of comparable size have been held by Section H since the American Anthropological Association decided to hold its own annual meetings, which have ordinarily fallen on the same dates and apart from those of the AAAS. Despite the valiant efforts of its secretaries, the sessions have been few and the attendance poor. At Boston, in 1946, five papers were presented to an audience of about a dozen people. The gain since then has been steady. At Cleveland, in 1950, with not a single department of anthropology in the city and, to the best of my knowledge, not a single anthropologist resident there, sessions covered three days, December 28–30, with 29 persons participating directly in the program. A core group of at least 40 anthropologists was present, and attendance at some sessions ran well above 100. This increase reflects the gains in personnel, which now permit anthropology to maintain two major meetings at the same time, and the growing interest in cross-disciplinary studies and the cross-fertilization of the sciences.

A further factor, especially emphasized at the 1950 sessions, is the continually closer relationships being set up between scientists and men of practical affairs. Thus, in addition to the cooperation of various universities and of the Society for Research in Child Development and the Society for Applied Anthropology, with both of which joint sessions were held, the section wishes to express its deep appreciation for the cooperation of the Association on American Indian Affairs; the E. D. Chapple Company, New York; the Foreign Service Institute of the Department of State; the Department of the Interior; and the Division of Trusteeship of the United Nations. The full-day symposium on the Administration of Native Peoples, December 29, benefited particularly from this coopera-

tion. The discussion following the symposium was unusually fruitful. Both during the discussion and in several of the papers, the point was strongly made that no relationship between groups of persons can be a healthy one if it insists upon a one-way flow of benefits or influences. Materials presented from studies made among American Indians and in Mexico, Samoa, South Asia, and Africa all illustrated the observable effects of interaction. It is clear that, if we are to take advantage of results from the human sciences, we must allow for considerable give and take in administration, and in the contact between nations.

There is no need to review the Section H program here, since it appears in detail elsewhere, but the tremendous success of the session on Linguistics and Anthropological Theory cannot go unnoticed. It has been the experience of Section H that sessions on theory or on subjects which aim at the assessment of the scientist's role in society are of especial interest to members of the AAAS. This seems peculiarly fitting. It is also, however, an indication to be viewed with considerable satisfaction.

In closing any résumé of the 117th meetings, mention should be made of the fact that Section H sessions ran smoothly, giving proof of the skill with which the Cleveland meetings were organized.

MARIAN W. SMITH, *Secretary*

Section on Psychology (I)

One of the major features of the Section I program consisted of a series of seminars in which the research of psychologists in military agencies, other governmental agencies, and industrial concerns was reported. Reports were given of the type of work conducted, and the kinds of problems encountered in psychological research for the Air Force, the Navy the Army, in various governmental public services, and in private psychological consulting firms. These seminars served to give the audience a good understanding of the structure of psychological research in these various institutions.

The program on The Functions of the Frontal Lobes in Behavior was particularly well attended. This program consisted not only of reports of research from psychologists and neurologists, but it also provoked a considerable amount of discussion between the participants and the audience.

The new section *vice president* is Paul R. Farnsworth, who replaces the retiring vice president, Douglas Fryer.

DELOS D. WICKENS, *Secretary*

The National Academy of Economics and Political Science (K2)

The National Academy of Economics and Political Science met in the Pine Room of the Statler Hotel, Wednesday morning, December 27. The general subject of the meeting was "Industrial Research." Papers were presented by John A. Leermakers on "Basic Research in Industry," by Thomas J. Killian on "Governmental Contracts for Industrial Research," and by John A. Dienner on "Patents and Industrial Research." The presiding officer for the session was Benjamin H. Williams, chairman of the Board of the National Academy and a staff member of the Industrial College of the Armed Forces, who presided in the absence of S. Howard Patterson, professor of economics, University of Pennsylvania.

The session was designed as an attempt to define the relatively new field of industrial research, and to outline the important aspects that relate to it in governmental relations through contracting for research and through patents. Basic research, or the contribution to "pure" science made in product research, was given especial attention, functionally and institutionally. The papers presented at this session of the National Academy will provide, in part, the contents of the June 1951 issue of the quarterly journal *Social Science*.

The next sessions of the National Academy of Economics and Political Science will be held in the early spring of this year on a subject yet to be announced. These sessions will constitute the twenty-eighth regular annual meeting of the Academy, and they will be held at the Brookings Institution, Washington, D. C.

DONALD P. RAY, *Executive Secretary*

Pi Gamma Mu (K3)

A Pi Gamma Mu luncheon was held in the Tavern Room, Hotel Statler, in Cleveland at noon on Wednesday, December 27, in honor of officers and speakers in the session just preceding, of the National Academy of Economics and Political Science, and of officers and speakers on other Section K programs.

The guest list included: E. W. Burgess, Chairman of Section K; Margaret Mead, Chairman of Section H; Raymond L. Taylor, Assistant Administrative Secretary, AAAS; Benjamin H. Williams, chairman of the National Academy of Economics and Political Science; Donald P. Ray, executive secretary of the National Academy of Economics and Political Science; Thomas J. Killian, Office of Naval Research; J. A. Leermakers, assistant director of research, Eastman Kodak Company; John Astor Dienner, of Brown, Jackson, Boettchner, Dienner; James A. Quinn, professor of sociology, University of Cincinnati; Harold M. Mayer, professor of geography, University of Chicago; Derwent Whittlesey, professor of geography, Harvard University; Charles B. Ketcham, president, Mount Union College; Mrs. Charles B. Ketcham; Mrs. Charles J. Bushnell, of Toledo; Elsie B. Stewart, employment interviewer, Ohio Bureau of Unemployment Compensation, Cleveland; Henry M. Muller, professor of sociology, Allegheny College; William W. Martin, national second vice president of Pi Gamma Mu; James J. Hayden, general counsel of Pi Gamma Mu; W. Leon Godshall, chancellor of the Eastern Region of Pi Gamma Mu; Andrew J. Kress, chancellor of the Atlantic Region of Pi Gamma Mu; Edward W. Carter, editor of *Social Science*; and Mrs. Effie B. Urquhart, national executive secretary of Pi Gamma Mu.

William W. Martin welcomed the guests and introduced Charles B. Ketcham, who presided. Dr. Ketcham introduced the guests and asked for brief talks from Drs. Mead, Burgess, and Williams. The talks were followed by informal discussion.

EFFIE B. URQUHART, *National Executive Secretary*

History of Science Society (L1)

The new officers of the History of Science Society, whose elections were announced at the annual business meeting on December 29, are Harcourt Brown, president, of Providence, R. I.; Dorothy Stimson, of Baltimore, Md., and Henry Guerlac, of Ithaca, N. Y., vice presidents; Carl Boyer of Brooklyn, N. Y., I. E. Drabkin of New York City, Max Fisch, of Urbana, Ill., Charles D. O'Malley of Stanford University, Cal., and Marjorie Nicolson of New York City, as members of the council. The presi-

dent and vice presidents will serve through December 1952; the members of the council will serve through December 1953. The council appointed Frederick G. Kilgour, of New Haven, Conn., to serve as secretary-treasurer through December 1952.

At the request of several Connecticut members, the council approved the establishment of a Connecticut Section of the society.

The council accepted an invitation from Brown University to hold its next meeting at Brown in the spring of 1952. The council also expressed the desire to cooperate with the American Association for the Advancement of Science and the American Historical Association in planning history of science programs for their annual meetings in December 1952.

FREDERICK G. KILGOUR, *Secretary-Treasurer*

Philosophy of Science Association (L2)

The joint meetings of Section L and the Philosophy of Science Association were held on December 29 and 30.

The Friday afternoon meeting was concerned with the philosophical problems in connection with the second law of thermodynamics (in particular, with the end of the universe), as well as the problems of covariance and timeless laws. The Friday evening session consisted of a discussion of methodology in psychoanalysis and the, as yet, unanswered questions which psychoanalytical method faces. The Saturday morning session consisted of a discussion of a method of study of national character and the crucial problems of prediction and understanding involved in this very difficult phase of research. The Saturday afternoon session was a discussion of the nature of law in the sciences and the problem of the isomorphism of language and reality. Philipp Frank was elected to an additional three-year period on the Governing Committee of the Philosophy of Science Association. The meeting nominated Henry Margenau as president of the association.

C. WEST CHURCHMAN, *Secretary*

Section on Engineering (M)

During the past year Section M has continued its policy of encouraging the various affiliated engineering societies and the local enginering group to take an active part in the program at the annual meeting. In January 1950 the several affiliated societies and the local engineering group in Cleveland were invited to take part in developing our program. The American Society of Mechanical Engineers has under consideration a plan of joint cooperation at our annual meetings, and, in return, Section M would cosponsor a group of sessions at the annual meetings of the ASME. We hope this plan of cooperation will spread to the other affiliated societies.

At the annual meeting of the ASME in New York, November 27–December 2, 1950, Section M cosponsored eight sessions of the Applied Mechanics group of the ASME. These sessions were highly successful and drew a large attendance.

At the annual meeting of the AAAS in Cleveland, December 26–30, the following organizations joined with Section M in developing our program.

The Cleveland Engineering Society
The Cleveland Section of the American Society of Mechanical Engineers
The Case Institute of Technology
Section K of the AAAS
The Scientific Research Society of America

The general topic of the Section M program was "Partnership of Science and Engineering in Research." Eight sessions were arranged, and a total of 18 papers was presented by well-qualified experts in their fields. Three of the speakers made front page news in the local press. Section M extends its thanks to the various speakers who presented papers at the meeting. The section is also greatly indebted to the following individuals who developed the program and presided at the various sessions.

K. W. Miller, Armour Research Foundation, Illinois Institute of Technology, who served as general chairman of the Friday symposium

Irving P. Orens, Newark College of Engineering, Newark, N. J., who developed the Friday morning and afternoon programs on Nuclear Engineering, and presided at these sessions. Dr. Orens is also a member of the Executive Committee of Section M

D. B. Prentice and *G. A. Stetson*, of the Scientific Research Society of America

John W. Greve, associate editor of *Machine Design*, and his associates of the Cleveland Engineering Society

Elmer Hutchisson, Dean, Case Institute of Technology

Roger W. Bolz, associate editor of *Machine Design*, and his associates in the Cleveland Section of the American Society of Mechanical Engineers

G. Edward Pendray, Pendray and Company, New York, a member of the executive committee of Section M who organized the program in Social Physics

Duane Roller, of Wabash College, who presided at the Social Physics Session

The annual meeting of the Executive Committee of Section M and of the representatives of the affiliated societies, scheduled for Tuesday afternoon, December 26, at Cleveland, was adjourned for lack of a quorum. The following are the officers and Executive Committee of the section for 1951: *vice president and chairman*, Boris A. Bakhmeteff, New York City; *retiring vice president*, Morrough P. O'Brien, Berkeley, Cal.; *secretary*, Frank D. Carvin (1952), Chicago, Ill.; *executive committee*, John I. Yellott (1951), Baltimore, Md., Irving P. Orens (1952), Newark, N. J., G. Edward Pendray (1953), New York City, and Henry B. Allen (1954), Philadelphia, Pa.

The Section M Committee also includes representatives of the 17 affiliated and associated engineering societies.

The annual meeting of the association for 1951 will be held in Philadelphia, Pa., during the week of December 26. The tentative program plan for Section M should include the following:

1. A continuation of the sessions on Nuclear Engineering under the direction of Irving P. Orens, of the Newark College of Engineering
2. A continuation of the sessions on Social Physics in cooperation with Section K and under the direction of G. Edward Pendray of New York
3. A committee representing the various engineering colleges in the Philadelphia area should develop several sessions
4. The various engineering societies and organizations in the Philadelphia area will be invited to cosponsor several sessions

The secretary will welcome additional suggestions as to program material for this meeting. Representatives of the various affiliated societies are requested to secure the cooperation of their societies in developing our program and in obtaining publicity through their society publications.

FRANK D. CARVIN, *Secretary*

Section on Medical Sciences, Medicine (Nm)

The program of Section Nm was devoted to a symposium of 23 papers on the biological effects of radiation. The first two of the four sessions were prepared under the joint sponsorship of Section F and the American Society of Zoologists, and were composed of papers on the effects of ionizing radiation on plant growth, bacterial mutation, certain chemical compounds, and on genetic patterns in plants and mammals, as well as studies of the factors influencing the sensitivity of living cells to radiation. The third and fourth sessions included discussions of the effects of x-rays and radioactive isotopes on various mammalian organ systems, and of measures found to offer protection against radiation injury.

Although attendance at the sessions was below expectations, the papers were all excellent and were discussed extensively. The chairman of the section, Joseph Hinsey, of Cornell University Medical College, presented an address on the problems of medical education in a period of national emergency. His discussion of this serious problem deserves wide circulation and will, we hope, be published in an early issue of SCIENCE. The secretary, on behalf of the Section Committee, wishes to express his sincere appreciation to the contributors, program chairmen, and numerous advisors whose cheerful cooperation made the symposium possible.

G. K. MOE, *Secretary*

Subsection on Dentistry (Nd)

This year Subsection Nd (dentistry) devoted the entire session to a presentation of the researches in the field of dentistry that are being carried on by various governmental agencies. On Friday evening the National Institutes of Health were represented by H. Trendlay Dean, director of dental research, who outlined the various activities of the Institutes related to dentistry. These included the following:

1. Studies of the effect of addition of sodium fluoride to communal drinking waters for the control of dental caries. The reports of these studies are very encouraging.
2. Studies of the epidemiology of periodontal disease.
3. Studies of oral bacteriology, including the metabolism of bacteria, their relation to sugars, calcium salts, and yeast, classification of types of oral *L. acidophilus* and other organisms. He stated that oral penicillin had been used in 160 children, and that caries was significantly decreased but the *L. acidophilus* counts had not been reduced.
4. Studies of fluorine in the urine in relation to dental caries. It was found that fluorine content of the tooth is an inhibitant of dental erosion.
5. A study of the relationship of oral spirochetes to gingivitis. By tissue sections it was found that spirochetes invade the soft tissues, and this process is associated with the presence of hyaluronic acid.

As a part of Friday evening's program R. Leas, chairman of the Committee on Civilian Defense in the Cleveland Academy of Medicine, discussed the role of dentistry in atomic warfare.

Saturday morning the Navy was represented by C. A. Schlack, who reported a wide range of studies being conducted under his direction. Among these are: (1) studies of growth processes in the dentin by animal experimentations; (2) studies of altitude pain in teeth; (3) studies of jaws from Bikini for evidence of radiation changes; (4) studies of air-, water- and food-borne infections and the antiseptic processes of the saliva. He also reported that 22 studies, supported by the Navy, are now in progress in various universities. These are in the biologic, metallurgic, and technical fields.

The Veterans Administration was represented by H. T. Bartlestone, who reported experimentations on the permeability of human enamel by means of I^{131}. He showed passage of the solution centripetally through the enamel when applied to the surface of a tooth, as demonstrated by Geiger counter readings over the thyroid gland. He also showed radioautographic evidence of the penetration of the enamel, dentin, the periodontal membrane, the alveolar bone, and the gingivae.

Saturday afternoon the Armed Forces Institute was represented by J. L. Bernier, who presented statistical analyses of epithelial malignancies. These were based on 1,400 cases of lip, oral, and pharyngeal lesions, with special reference to their location, etiologic factors, and hereditary history. This study is in progress, and no conclusions were drawn.

The Army Medical Research Center was represented by G. W. Burnett, who gave his findings in a study of the proteolytic organisms found in the deeper layers of dental caries lesions. He isolated several filamentous organisms and evaluated their action on the dentin.

The Air Force was represented by H. B. Palmer, who reported a comprehensive study of the solubility of teeth in acids produced by *L. acidophilus*. He found marked differences in the solubility of enamels in different individuals and in the same individual. He found no relationship between enamel solubility and susceptibility to dental caries. He reported evidence that the upper teeth are more prone to caries than the lower, and that there is a slight difference between the right and left sides of the mouth.

R. W. BUNTING, *Secretary*

Subsection on Pharmacy (Np)

The subsection held four sessions during the Cleveland meeting. The first two were devoted to papers reporting original research; the last two consisted of a Hospital Pharmacy Seminar.

R. F. Prindle, of Strong, Cobb & Company, Inc., Cleveland, presented data showing the stability of various vitamins in a variety of pharmaceutical products. The behavior of vitamin A, thiamine, ascorbic acid, calcium pantothenate, and niacin and niacin amide was described. Stability studies on tablets, liquids, hard and soft capsules at room temperature and under accelerated storage conditions, and the effect of common excipients such as mineral salts, liver preparations, and coating materials were reviewed.

L. Maresh and R. F. Prindle described a rapid, accurate, and specific colorimetric method for the determination of ferrous and ferric gluconate. A method based on the color developed by the addition of α,α'-dipyridyl was found to be applicable to a wide variety of pharmaceutical preparations, and evidence was presented showing the stability of ferrous gluconate in both tablets and liquids under accelerated and room temperature storage conditions.

F. Skelton and G. A. Grant, of Ayerst, McKenna and Harrison, Ltd., Montreal, showed that some alkyl sugar derivatives have interesting diuretic properties that make them of potential usefulness as therapeutic agents.

R. A. Ravich and E. Revici, from the Institute of Applied Biology, Brooklyn, described the effect of *n*-butanol in sodium salt solutions upon shock and survival of mice exposed to severe extensive thermal burns. They presented

evidence that *n*-butanol has definite value as a therapeutic agent, and since improved burn therapy may be important in the event of atomic warfare, their findings take on unusual importance.

P. M. Scott, L. D. Edwards, and J. E. Christian studied the penetration of certain sodium alkyl sulfates and sodium sulfate through rat and mouse skin. Each of these sulfates was labeled with S 35, and it was found that the short-chained alkyl sulfates penetrated at a greater rate than the long-chained sulfates, and that sodium sulfate penetrated at a rate dependent upon the concentration of the applied material. Massage increased this rate of penetration. Furthermore, there was occasionally evidence from radioautographs of skin sections that penetration of the skin was by way of the hair canals and follicles.

J. E. Christian, J. J. Pinajian, and W. E. Wright, of Purdue University School of Pharmacy, described an isotope dilution procedure of analysis involving direct and inverse isotope dilution. The method is stated to have many possible applications to analytical problems that cannot be solved in any other manner and to problems that are difficult by usual procedures. The method should find extensive applications in many fields of analytical chemistry, including pharmaceutical analytical chemistry.

A. R. Biamonte and G. H. Schneller, of the American Cyanamid Company, Calco Chemical Division, Bound Brook, N. J., reported their study of the stability of folic acid in solutions of the B complex vitamins. The stability of folic acid was studied at pH values between 3 and 7 in liquid media containing individually and conjointly thiamine hydrochloride, riboflavin, nicotinamide, pyridoxine, and pantothenyl alcohol. At the lower pH levels where water or sucrose syrup was used as a vehicle, the folic acid was largely undissolved, whereas at the higher pH levels, the folic acid was completely dissolved. In a mixture of propylene glycol and water, the folic acid was completely dissolved throughout the entire pH range. In general, riboflavin and thiamine caused considerable decomposition of folic acid in solution. Specimens at the lower pH levels exhibited a stability that might be practical for pharmaceutical compounding purposes. Nicotinamide, pyridoxine, and pantothenyl alcohol did not materially affect the stability of folic acid in solution. The decomposition of folic acid in the presence of riboflavin and thiamine involves cleavage at the methylene linkage, liberating para amino benzoyl glutamic acid. This is analogous to the reaction that takes place upon the acid reduction of folic acid used in the chemical determination of this substance.

S. D. Bailey, P. A. Geary, and A. E. DeWald, of the Research Division, Smith, Kline and French Laboratories, Philadelphia, gave the results of ultraviolet, infrared, and polarographic studies on three principles isolated from Ammi Visnaga. They found that infrared absorption provides a method for estimating each principle in fractions containing khellin, visnagin, and khellol-glucoside. W. C. Ellenbogen, E. S. Rump, P. A. Geary, and M. Burke found that they could obtain reproducible results using ultraviolet and polarographic methods for determining khellin and visnagin, and showed that the ultraviolet analysis method was the preferred one.

M. G. Girbino, of Strong, Cobb Company, Inc., reviewed analytical problems in pharmaceutical work and pointed out the difficulty of applying the usual methods, since substances that interfere with the determination of the individual components are often present. Reviewed were modifications of known methods or development of new ones, in order to determine within reasonable tolerances the active constituent or constituents of various products.

G. C. Walker, H. G. DeKay, and C. L. Porter, of Purdue University, studied the antifungal properties of some antihistamines, finding that with the isolated mycelial disk technique antihistamines showed no fungicidal activity toward *T. mentagrophytes.* The agar cup plate method of fungistatic testing, however, showed all the antihistamines tested possess definite inhibitory activity against *T. mentagrophytes.* Antergan and Phenergan appeared to be the most active of the compounds tested in a nonionic ointment base.

M. R. Loran and E. P. Guth, of Ohio State University, developed a five-phase diagram drawn of the ternary system castor oil, 95% alcohol, and water, and determined the various ratios at which solutions of these three components can be prepared. They illustrated the practical use of the phase rule in pharmacy in the preparation of solutions of two immiscible liquids, utilizing a third liquid that is miscible with both.

The Hospital Pharmacy Seminar on Friday morning was presided over by Mrs. Evelyn Gray Scott, of St. Luke's Hospital, Cleveland. U. S. Army moving pictures were shown depicting the medical effects of the atomic bomb and medical services in atomic disaster. These pictures were followed by a panel discussion on "The Responsibilities of the Pharmacist in Civilian Defense."

The afternoon session on Friday was devoted to the Hospital Pharmacy Seminar, with Don E. Francke, of the University Hospital, Ann Arbor, Mich., presiding. G. F. Archambault, of the U. S. Public Health Service, discussed "The Importance of Amber Glass for Prescription Containers;" B. E. Conley, of the American Medical Association Laboratories, described "Recent Developments in Pesticides;" J. J. Pinajian, of Purdue University School of Pharmacy, explained the factors necessary in establishing a laboratory for radioactive materials in the hospital pharmacy; and V. L. Conley, of the American Medical Association Laboratories, spoke on the "Pharmaceutical Aspects of Sun Screen Compounds."

In general the Hospital Pharmacy seminars were stimulating and well attended by a representative group of hospital pharmacists from the Cleveland area.

GLENN L. JENKINS, *Secretary*

Alpha Epsilon Delta (N4)

Problems of premedical education and ways of assuring an adequate continuing supply of medical and premedical students during the present national emergency were discussed at the session of Alpha Epsilon Delta, national premedical honor society, held at the Hotel Hollenden, Cleveland, December 28, during the meetings of the AAAS. About 60 persons were in attendance. Stockton Kimball, dean of the School of Medicine, University of Buffalo, chairman of the Joint Committee of the American Medical Association and the Association of American Medical Colleges on Medical Education in Time of National Emergency, and chairman of the Healing Arts Advisory Committee of the Selective Service, discussed the plans and counterplans affecting medical and college education which are currently under consideration. A plan was submitted by the Joint Committee to NSRB on November 1, which included proposals for the continued education of an adequate number of premedical and medical students. This report has been published as a supplement of the November 1950 issue of the *Journal*

of the Association of American Medical Colleges. A somewhat similar proposal has been made by the Office of Education of the Federal Security Agency. Both these proposals run counter to the program of universal military service advocated by President Conant of Harvard. In discussing these plans, Dean Kimball pointed out that "medical schools cannot continue the uninterrupted training of doctors if their preparation in college is seriously interrupted." The problems of insuring the continuous and adequate education of physicians during the emergency must be solved satisfactorily very soon, said Dean Kimball, "so that this country can discover how to maintain its might and its mind as well."

In summarizing the results achieved at the First National Conference on Premedical Education, H. E. Setterfield, national president of Alpha Epsilon Delta, reported that no attempts are being made to work out a standard curriculum for premedical education, nor should standard requirements or admission procedures be set up for individual medical schools. There is general agreement that students should have a strong, sound liberal education within the traditional concept of the liberal arts college, including an amount of science at least equal to the minimum required for admission to any medical school. It should offer more than that, as education of the student for living, with the development of a high order of intelligence, is the goal to be achieved instead of merely training persons for medical school. Meetings of medical and premedical educators should be encouraged so that each would come to have a better understanding and appreciation of mutual problems and, together, work out and develop a better program of medical education.

It was announced at the meeting that Alpha Epsilon Delta will hold a celebration of its twenty-fifth Anniversary at the University of Alabama, March 21–24, 1951, which will include the Fourth Regional Conference on Premedical Education, organized in cooperation with the University of Alabama. Medical and premedical educators and students from colleges and universities in the southeastern states are invited to attend and participate in the conference.

Those in attendance at the Cleveland meeting urged the society to arrange a formal program during the AAAS meeting at Philadelphia in December 1951.

MAURICE L. MOORE, *National Secretary*

The American Dietetic Association (N5)

The importance of nutrition in relation to child health was discussed by two speakers at the American Dietetic Association session on December 29. First to speak on this subject was Joseph A. Johnston, director of pediatrics at Henry Ford Hospital, Detroit, Mich., who reported on a study covering a twenty-year period, conducted to discover ways and means of decreasing the incidence of tuberculosis in children. Dr. Johnston stated that an adequate diet, particularly with good retention of nitrogen and calcium, seemed to indicate protection against the disease and beneficial effects in its treatment.

Pauline Beery Mack, of the School of Chemistry and Physics, Pennsylvania State College, reported on a nutritional study of 2,464 children, which she said showed generally haphazard diets, below nutritional requirements.

Helen A. Hunscher, program committee chairman for the session of the American Dietetic Association, presided at the meeting. The Association's representative on the AAAS Council is Clara Mae Taylor, of Teachers College, Columbia University.

The American Dietetic Association plans to participate in the 1951 convention of the AAAS in Philadelphia.

RUTH M. YAKEL, *Executive Secretary*

Section on Agriculture (O)

In cooperation with Section E, Section O presented a program consisting of three half-day sessions. The central theme was the interrelationship of geology and soil science. Many soil scientists were pleasantly surprised at the attention being given to problems of soil genesis and classification by a number of prominent geologists. In a number of instances geologists and soil scientists are working in close cooperation, but there is need for more cooperative effort in this field. The papers presented evoked considerable discussion, and there were several expressions of a desire for a similar program at some future meeting. The papers were well illustrated with slides and charts.

The programs were quite well attended—60–70 listened to the Thursday afternoon papers, and approximately 40 attended each of the two sessions on Friday. Richard Bradfield, of Cornell University, presided at the Thursday and Friday afternon sessions, and M. M. Leighton, of the Illinois State Geological Survey, served as chairman Friday morning.

V. A. Tiedjens is chairman of Section O for the year 1951. Our program for the Philadelphia meeting is being developed around the general subject of "Soils and Health." The papers will cover plant nutrition, as well as the nutrition of animals, including man. The relationship of soil composition and treatment to plant composition and the health of both plants and animals will be considered. A number of the most prominent workers in the field of plant and animal nutrition have already consented to present papers.

C. E. MILLAR, *Secretary*

Section on Education (Q)

Section Q undertook the most ambitious program it has had for several years. There were eight sessions including the joint session with Section I, at which the vice-presidential addresses of the two sections were given, as well as the symposium arranged for Section Q by the Foundation for Integrated Education. Attendance was larger than it has been in any recent year.

The symposium on integrated education was an especially interesting one and included a statement of the general objectives of integrated education, discussions of the technique in securing the cooperation of faculties, and illustrations of an extended research concerned with the concept of integrated education and the special ways in which integration can be secured among sciences.

Another symposium of Section Q related to visual performance as applied by industrial and educational management. This symposium evaluated visual screening tests and discussed both the medical and technical aspects of visual standards and performance in certain occupations with respect to susceptibility to accident and the like.

Five sessions were given over to the reading of papers. One of these sessions related primarily to philosophical and theoretical aspects of education. Two of them were organized by the officers of the American Educational Research Association, an affiliated society.Papers covering a wide range of topics were presented; for example, methods of teaching science at the kindergarten level were presented, and examples were given of the applications of educational concepts to industrial management. Teach-

ing procedures in colleges and universities and the relationship of intelligence as a factor in learning through the use of audio-visual aids were reported. An especially interesting discussion involved the effect of television on the attainment and personal adjustment of school children. The vice-presidential address by Dr. Johnson was an unusually scholarly presentation of the place of statistical science in educational research.

A proposal for a new section on literature science was received with a great deal of enthusiasm. There was also a symposium on teacher training and teachers' workshops prepared by the Cooperative Committee on the Teaching of Science and Mathematics. In general, it is felt that this was one of the most successful meetings Section Q has had.

D. A. WORCESTER, *Secretary*

AAAS Cooperative Committee on the Teaching of Science and Mathematics (Q1)

The Committee arranged one of the AAAS Symposia dealing with "Teacher Training and Teachers' Workshops," which was presented as part of the joint program of the Science Teaching Societies affiliated with the AAAS.

Francis W. Sears, professor of physics at MIT, told of the summer workshops for secondary school teachers of physics which have been sponsored jointly by the Westinghouse Educational Foundation and the Massachusetts Institute of Technology. Leonard O. Olsen, professor of physics at Case Institute of Technology, told of the joint scholarship program for secondary school teachers of physical science sponsored jointly by the General Electric Corporation and Case in Cleveland, and by General Electric and Union College in Schenectady.

R. S. Poor, chairman of the University Relations Division, Oak Ridge Institute of Nuclear Studies, discussed the in-service training program for college teachers, provided for in the laboratories of the Atomic Energy Commission.

Morris Meister, principal of the Bronx High School of Science in New York City, a long-time member of the Cooperative Committee representing the National Science Teachers Association, has been elected chairman to succeed Karl Lark-Horovitz who resigned the chairmanship as of November 1. Dr. Lark-Horovitz was a charter member of the committee, which was organized in 1941, and had been its chairman for the past six years.

R. W. LEFLER, *Retiring Secretary*

American Nature Study Society (X1)

Use of varied resources for the enrichment of the teaching of nature and science featured the sessions of the American Nature Study Society, meeting jointly with the National Association of Biology Teachers and the National Science Teachers Association. Combined sessions of all three societies were held at the morning meetings, with the individual organizations holding their own afternoon sessions.

Trailside museums, conservation field trips, school gardens, pond exploration, winter outdoor resources, caves, reptiles and amphibians, and photography were among the fields covered by the speakers. Most of the papers were dramatized by being accompanied by excellent colored slides or motion pictures, picturing in a practical way the employment of these fields of interest in nature education.

One especially effective demonstration on the program was by Cleveland schoolchildren under the direction of Mrs. Grace Maddux. The youngsters demonstrated a conservation knowledge that would be the envy of many adults. Other speakers included Harold Wallin, curator of education of the Cleveland Museum of Natural History; Robert R. Finlay, conservation instructor, John Marshall High School, Cleveland; Paul R. Young, school garden supervisor of the Cleveland Board of Education; H. Raymond Gregg, chief naturalist, National Capital Parks; Charlotte Hilton Green, Raleigh, N. C.; Gertrude McWebb, of the Cleveland Heights schools; Charles E. Mohr, director, Audubon Nature Center, Greenwich, Conn.; James A. Fowler, director of education, Philadelphia Academy of Natural Sciences; E. Laurence Palmer, professor of nature and science education, Cornell University; Mrs. Warner Seely, Cleveland Bird Club. At the annual banquet Arthur A. Allen, professor of ornithology, Cornell University, presented the pictorial story of the discovery of the nest of the bristle-thighed curlew. A field trip on Saturday to two sections of the Cleveland Metropolitan Park System drew 84 participants under the leadership of Ellis Persing, Roger Tory Peterson, Harold Wallin, and Joseph Maddox.

Officers elected for 1951 were Ellsworth Jaeger, curator of education, Buffalo Museum of Science, president; Roger Tory Peterson, naturalist, artist, and author, vice president; Edward T. Boardman, Rochester (N. Y.) Museum, secretary; H. Raymond Gregg, treasurer. Elected to the board for two-year terms were Richard L. Weaver of the North Carolina Department of Public Instruction; Charles E. Mohr; Edwin Way Teale, author-naturalist; Eva Gordon, Cornell University; Richard W. Westwood, president of the American Nature Association, editor of *Nature Magazine*, and retiring president of ANSS. W. Hughes Barnes, of Muskingam College, was named chairman of the membership committee; Mr. Westwood, chairman of the conservation committee; Ruth Hopson, of Eugene, Ore., representative of the western branch of ANSS; and E. Laurence Palmer, AAAS representative.

RICHARD L. WEAVER, *Retiring Secretary*

Phi Beta Kappa (X6)

At the December 1950 meeting of the AAAS in Cleveland, Phi Beta Kappa sponsored an address by Detlev W. Bronk, who spoke on "Science and the National Welfare" on Friday evening, December 29, in the Grand Ballroom of the Hotel Statler. The chairman of the Phi Beta Kappa session was Raymond Walters, president of the University of Cincinnati, who introduced Dr. Bronk and gave a short talk on "Science and Humanism." More than 225 delegates to the AAAS sessions, and members of Phi Beta Kappa living in the Cleveland area, attended the meeting. In addition to Drs. Walters and Bronk, guests of honor were Kirtley F. Mather, 1951 president of the association, and Milton F. Brightwell, president of the Cleveland Phi Beta Kappa alumni association.

CARL BILLMAN, *Secretary*