gradually taken from the tank side and added to the weight side at a rate which maintains uniform balance. The size of the chain therefore depends on the size and thickness of the float-tank. In our instrument an ordinary roller bicycle chain is just sufficient to compensate.

The recording device consists of two threads so placed as to lift a stylus which records on the drum. One thread (A) is attached to the top of the float-tank and passes over two pulleys, E and R. This thread is kept taut by a small weight (w) of 25 or 50 grams. A second thread (B) is wound around a bobbin on wheel R, passes over pulley F and is attached to a light rod, C. This rod slides easily in a vertical direction and carries the writing stylus. As the float-tank rises, wheel R is turned round and the writing stylus lifted. The ratio of the circumference to the bobbin of pulley R is such that when one liter of air enters the spirometer the writing stylus is lifted one millimeter. The record thus shows not only the rate at which the tank is being filled and the number of expirations, but also the amount in liters of air at any time as represented by the number of millimeters the stylus has risen from the base line.

All the pulleys turn on cone bearings, which reduces the friction to a minimum. The roller chain is well oiled and offers very little resistance. The whole apparatus is so sensitive and so easy to manipulate by students without special training that we recommend it to others for general laboratory use.

J. R. SLONAKER
PHYSIOLOGICAL LABORATORIES,
STANFORD UNIVERSITY

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE BIOLOGICAL SCIENCES

THE AMERICAN SOCIETY OF NATURALISTS

President, William M. Wheeler.

Secretary, A. Franklin Shull, University of Michigan, Ann Arbor, Mich.

(Reports by A. Franklin Shull and Herbert W. Rand)

The sessions of the American Society of Naturalists presented two unified programs. One was in celebration of the one hundredth anniversary of the birth of Francis Galton and Gregor Mendel, two outstanding figures in the development of biology, particularly genetics, in the past sixty years. The speakers on this program were E. M. East, T. H. Morgan, J. Arthur Harris and George H. Shull. The other program of this society was a symposium on geographic distribution of animals.

The annual dinner was one of the most successful and most largely attended the society has ever had. Following the dinner, Professor W. M. Wheeler, of the Bussey Institution of Harvard University, gave his presidential address on "Academic biology." At the close of the address Professor C. H. Eigenmann, of Indiana University, called upon informally, sketched a dream of a recent visit to Hades. He found that scientific men, condemned to this lower region by their mundane brethren of orthodox faith, had introduced an extensive refrigeration system and, by application of their scientific knowledge, had otherwise so improved the old place that living conditions were really better than in the abode of the blessed.

THE ECOLOGICAL SOCIETY OF AMERICA

President, Forrest Shreve.

Secretary, A. O. Weese, James Millikin University, Decatur, Ill.

(Report by A. O. Weese)

The Ecological Society of America held three independent sessions and three joint sessions, including a symposium on "Geographical distribution" with the American Society of Zoologists and the American Society of Naturalists. Joint sessions were held with the American Society of Zoologists and the Botanical Society of America. The Wednesday afternoon session was devoted to a program of papers presented by invitation and covered many of the phases of modern ecology. The following papers were of special importance: "The utilization of energy by plants," by E. N. Transeau; "Insects affecting stored food products as a source of ecological data," by Royal U. Chapman; "The recent ecological history of Glacier Bay, Alaska," by William S. Cooper; and "Maintenance of wild life in our national parks," by C. C. Adams.

The Thursday afternoon session was devoted to the reading of papers on aquatic problems, which were especially well represented in the program for this meeting. Copies of the *Bulletin* of the Ecological Society containing abstracts of papers may be obtained from the secretary.

At the business session the further support of the journal *Ecology* was provided for by an increase of dues to $4. The committee on the preservations of natural conditions reported that the *Naturalists' Guide* was approaching completion and asked for the appointment of a sub-committee to take care of the final phases of publication. Steps were taken leading toward the appointment of a committee to investigate the possibilities in regard to the preservation of the Glacier Bay region, Alaska, the value of which has been made known to the society by the work of Dr. William S. Cooper. The constitution of the proposed union of biological societies was ratified. The following officers were elected: *President,* Charles C. Adams, N. Y. State College of Forestry, Syracuse, N. Y.; *vice-president,* G. A. Pearson, Fort Valley Experiment Station, Flagstaff, Ariz.; *secretary-treasurer,* A. O. Weese, James Millikin University, Decatur, Ill.

THE AMERICAN MICROSCOPICAL SOCIETY

President, N. A. Cobb.

Secretary, Paul S. Welch, University of Michigan, Ann Arbor, Mich.

(Report by Paul S. Welch)

The American Microscopical Society offered no program of papers, but held a business session only. The meeting included reports of the treasurer, custodian and secretary. The following officers were elected: *President,* Professor Chancey Juday, University of Wisconsin; *first vice-president,* Dr. B. H. Ransom, Bureau of Animal Industry; *second vice-president,* Dr. W. W. Cort, Johns Hopkins University; *secretary,* Professor P. S. Welch, University of Michigan; *treasurer,* Dr. William F. Henderson, University of Pittsburgh; *elective members of the executive committee,* Professor George R. La Rue, University of Michigan, Professor Z. P. Metcalf, N. C. State College of Agriculture and Engineering, and Professor E. M. Gilbert, University of Wisconsin; *Representatives on the A. A. A. S. Council,* Dr. B. H. Ransom, Bureau of Animal Industry, and Professor Paul S. Welch, University of Michigan; *Member of the Spencer-Tolles Fund Committee,* Dr. N. A. Cobb, Bureau of Plant Industry.

JOINT GENETICS SECTION

(The Botanical Society of America and the American Society of Zoologists)

Chairman, H. S. Jennings.

Secretary, L. J. Cole, University of Wisconsin, Madison, Wis.

The geneticists met first for a discussion of the problems connected with fundamental research in the various agricultural institutions. This discussion was led by Professor John W. Gowen, of the University of Maine, and by Dr. E. W. Lindstrom, of Iowa State College.

The formal papers followed in the joint section of plant and animal genetics. A general tendency has been toward the attempt at modification of heredity by various environmental agents. There is indication that the course of hereditary transmission may be modified by such agencies as X-rays, as in the work of Dr. J. W. Mavor, who has been able to modify the distribution of hereditary factors in flies, and of Dr. C. C. Little, who has produced abnormalities in eyes, jaws and legs of mice, some of which are apparently inherited in a Mendelian manner. In the jimson weed, C. Stuart Gager, working in cooperation with A. F. Blakeslee, has brought about an increased number of mutations by the use of radium; and F. B. Hanson reported on the effects of alcohol on rats, with positive results in modification of sex ratio, litter size and body weight.

Hereditary differences in tendency to produce certain types of variation were also reported upon. Dr. Sewall Wright showed a series of head abnormalities in guinea-pigs which occurred in twenty per cent. of the individuals of one line, about two per cent. in another, and not at all in others. Dr. A. A. Banta showed fluctuating variability in head form in water-fleas, Dr. P. W. Whiting reported on his investigations in the analysis of fluctuating variability in wing veins of parasitic wasps.

Papers on the control of sex were reported by Dr. A. A. Banta in water-fleas, and by Dr. Oscar Riddle in pigeons; and Dr. Heman L. Ibsen brought together extensive data on sex-ratio in guinea-pigs. A number of papers dealing with complications in Mendelian heredity were presented. Dr. C. B. Bridges showed the results of transposition of a part of one chromosome on to another, and Dr. A. Weinstein presented the method of measuring interference in linkage relationships. Dr. H. J. Muller described an efficient and practicable means of measuring the rate of mutation which may, with favorable material, make this difficult problem as easy as Mendelian analysis has been in the past.

Dr. C. E. Allen described a case of inheritance of a gametophytic character in *Sphærocarpus Donnellii*. This was of special interest, as it represents the first observed case of this type of inheritance. Dr. E. W. Lindstrom discussed two types of endosperm defects in maize. One, in Golden Bantam variety, acts as a simple recessive-defect, while the other in Yellow Flint corn, also recessive, is completely linked in inheritance with albino seedling character. In a second paper Dr. Lindstrom reported work done with Drs. L. J. Cole and C. M. Woodworth on selection for quality of oil in soy beans. High and low selection for drying quality of soy bean oil resulted in a significant separation of the two selection lines. Observations made by Dr. Karl Sax indicate that chromosomal relationships in *durum* and *vulgare* wheats are such that the possibility of ever combining their desirable qualities is very slight. Genetic results dependent upon multiple chromosome complexes in Datura obtained by Dr. A. F. Blakeslee and others were also presented. Dr. G. H. Shull presented evidence for partial linkage in *Œnothera*. This is contrary to the predictions of certain cytologists who had stated previously that crossing-over would not be possible in *Œnothera* on account of absence of synapsis.

THE AMERICAN NATURE-STUDY SOCIETY

President, William G. Vinal.
Secretary, Mrs. Anna B. Comstock.
(Report by Mrs. Anna B. Comstock)

The seventeenth annual meeting proved to be the most extended and in many ways the most successful in the history of the society. The program consisted of nineteen numbers, completely filling the sessions of two days. It was quite remarkable that every one listed on the program was present and gave his or her address at its allotted time, except for a ten-minute talk by Professor Schuyler Mathews, who was ill and unable to attend the meeting.

Thursday morning Professor E. L. Palmer, of Cornell University, gave a vivid and comprehensive talk on the rapidly increasing use of nature-study in the various scouting organizations. Professor Palmer has done much work with the Boy Scouts and has adapted many valuable nature lessons for their use, so he spoke with full knowledge of the subject.

Miss Annie T. Washburn, supervisor of nature-study in the Princeton, N. J., schools, described some projects which she had inaugurated in the schools of Princeton, where many pupils from the rural districts attend. The pupils visited and studied the methods used in a model dairy and also those of a model farm; especially interesting was her account of the beginning and growth of the annual school fair which this year exhibited garden products, flowers, poultry and farm animals; her description of the way the difficulties of housing the exhibits were met and conquered was most inspiring.

Dr. Walter Wilson, of the biological department of Brown University, gave warning of dangers in much of our routine nature-study that pupils were not attracted to science as they should be and would be if the teaching were more vital.

The question, "What do I expect that nature-study should do for my child?" was discussed by a clergyman and a physician. The Rev. G. Manley Townsend, of Medfield, Mass., declared that the supreme thing that he expected of nature-study was that it should enrich and broaden the life of his child and made a stirring appeal for breadth in nature contacts. Dr. Henry P. Lovewell, of Providence, R. I., made a plea for nature-study as a means of improving the health and the practical knowledge of the child as well as of cultivating the senses.

Dr. George W. Field, of Sharon, Mass., gave an extensive discussion of nature-study in its relation to national problems of conservation. Dr. Field spoke from the fullness of his expe-

rience as a member of the Biological Survey in charge of the Federal and Game Reservation and from his experience in Brazil. He outlined the many ways that nature-study may assist in practical conservation and also in moulding public opinion.

Professor Van Evrie Kilpatrick, director of school gardens in New York City, maintained that all of the various organizations of nature-study and gardening be combined and work together under the name of nature education. Anna Botsford Comstock, of Cornell University, supplemented this by explaining the work of certain courses given at Cornell which combined gardening and nature-study.

The Friday morning session began with a most enlightening review of the phases of the growth of nature-study by that veteran in the field, Professor Arthur C. Boyden, principal of the State Normal at Bridgewater, Mass. He traced the zigzag progress of the movement in a masterly manner and gave his very cogent reasons for his confidence in its future use and development.

Mr. Charles M. Lamprey, director of the Model School of the Boston Normal School, gave a most practical talk upon the growing of bulbs both indoors and outdoors. He gave the reasons for growing bulbs in schoolhouse and garden and told the types of bulbs best fitted for this purpose and methods of treatment.

Professor Clarence E. Allen, director of the Country Day School, Newton, Mass., gave an illuminating address on the opportunities the day school offers to interest the sons of wealthy parents in wholesome out-of-door activities that may lead to an interest in the sciences and the problems of conservation and other subjects of public interest.

Miss Breta W. Childs, teacher of nature-study in the Normal School at Worcester, Mass., gave a practical and helpful address upon the need for gardening as an intermediate grade subject in city schools. Miss Childs illustrated her argument with her personal experiences, which were most convincing and helpful.

Mr. Charles S. Preble, teacher of nature-study in the Normal School at Farmington, Maine, gave methods for correlating the brook and pond with the aquarium and showed how the study of the one led to the study and understanding of the other. His suggestions were detailed, practical and helpful.

Miss Gertrude B. Goldsmith, teacher of nature-study in the Normal School of Salem, Mass., gave a scholarly and thoughtful address on nature-study as a means of education for leisure.

The Friday afternoon session began with an interesting address by Miss Fannie A. Stebbins, supervisor of nature-study, Springfield, Mass. Miss Stebbins gave a detailed account of the project carried on by her pupils which was termed the Bird Hospital. The most interesting patient in this hospital was a lamed heron; the children in feeding and caring for their patient made field studies of insects, toads and frogs, fishes and many other creatures and learned much of their habits and environment; they also became acquainted with the game laws and staunchly defended them. Miss Stebbins showed conclusively that if one phase of nature be well studied, it leads to other phases.

Miss Pearl McCoy, teacher of nature-study at the Bridgewater, Mass., Normal School, gave a clear-cut and wise talk upon the proper correlation of nature-study with English composition. She stressed the oral exercises and the child's interest in telling about his pets or his observations of birds and animals in the field.

Dr. Marion D. Weston, of the Rhode Island College of Education, discussed the value of nature hobbies to people in general, and gave many practical suggestions as to methods of interesting people in special lines of plant or animal study, all based upon her own experience in the Rhode Island Field Naturalists' Club.

Mrs. Helen H. Neal, who is a director of nature lore in the Gulick camps, spoke with great earnestness of the importance and methods of interesting young children in nature.

The session ended with an illustrated lecture on John Burroughs by Dr. G. Clyde Fisher, of the American Museum of Natural History. Dr. Fisher had the privilege of a long and intimate association with Burroughs and has used his skill as a photographer with great success. The slides were made from Dr. Fisher's negatives and colored by an artist and are as vivid in portraying scenes in the life and surroundings of the great naturalist as

they are intrinsically beautiful. Dr. Fisher's talk was full of interesting personal recollections of Mr. Burroughs and a fitting accompaniment for the pictures. It is most fortunate that through the devotion of Dr. Fisher we have this living monument to the life of the one whom all of us love through his books.

On Thursday evening more than fifty members of the society gathered at the Bellevue to take part in the dinner given in honor of their long-time secretary, Mrs. Anna B. Comstock. Dr. Clarence Weed, principal of the State Normal at Lowell, Mass., was a most happy toastmaster, and Dr. L. O. Howard, U. S. entomologist, and Dr. Vernon L. Kellogg, head of the National Research Council, were the chief speakers. The following also spoke: Dr. W. G. Vinal, Dr. G. W. Field, Dr. Maurice Bigelow, Dr. E. L. Palmer, Dr. G. C. Fisher, Miss Theodosia Hadley and Professor J. L. Randall.

Professor William G. Vinal, of the Rhode Island College of Education, was reelected president for the coming year and Mrs. Comstock was elected secretary editor.

SECTION K—SOCIAL AND ECONOMIC SCIENCES

Vice-president and Chairman, Henry S. Graves.

Retiring Vice-president, James Mavor.

Secretary, Frederick L. Hoffman, Babson Institute, Wellesley Hills, Mass.

(Report by F. L. Hoffman)

The program of the Section of Social and Economic Sciences was thoroughly representative of the subject matter under consideration, "The more effective conservation of our natural resources."

The introductory address by the retiring vice-president, Professor James Mavor, of the University of Toronto, was a very thoughtful contribution on the question, "Certain economic reactions of the war." The paper considered the growth and movements of population, the development of transportation, movements of prices and currency statements, wages and conditions of labor, movements of capital, public opinion regarding the limits of the functions of the state, etc.

Regarding state functions, Professor Mavor said in conclusion that "not all, but nearly all of these emergency functions have since been removed from the state, in spite of a certain amount of protest on the part of those who adhered to the policy of collectivism. The practical experience of the exercise of a policy of nationalization and national control seems to have been, on the whole, adverse to that policy." And finally that "while the war has thus exercised an influence in numerous economic fields, and while in some of these the influence has been important, it is essential to attribute to the war and to the peace which followed, only those reactions which clearly can be traced to them."

The second paper, which attracted nation-wide attention, was on "The conservation of human energy," by Dr. Thomas S. Baker, acting president of the Carnegie Institute of Technology. One particular phase, which was much appreciated, was the statement that "optimism is an essential in the conservation of our present stock of human energy, if by this we mean the power that has produced and is keeping alive our present civilization."

The morning session of December 27 concluded with two strong papers on "The conservation of labor power through insurance," by Mr. W. F. Chamberlain, of Hartford, and on "The conservation of health," by Dr. Eugene R. Kelley, state health commissioner of Massachusetts.

Wednesday afternoon session, held jointly with the Section of Agriculture, brought forth a very stimulating address on "The conservation of the qualities of the rural population," by Dr. Kenyon L. Butterfield, president of the Massachusetts Agricultural College; and one on "Home economics," by Dr. C. F. Langworthy and Dr. Helen W. Atwater, of the States Relation Service, Washington, D. C. Dr. Butterfield summarized his conclusions in the statement that "education and organization should seek not alone the special group interests of farmers, but should quite as consciously endeavor to mobilize rural opinion and activities on behalf of the common needs of humanity."

The Thursday morning session was held jointly with the New England Forestry Congress and the Society of American Foresters at the State House. The papers in this session included an address on "The forests of the world," by Mr. Raphael Zon, of the U. S. Forest Service; an address on the "Economic

aspects of our timber supply," by Colonel W. B. Greeley, chief forester, U. S. Department of Agriculture; a very impressive address on "Forest research and the forestry movement," by Professor R. T. Fisher, head of the Division of Forestry, Harvard University. The session also included a brief address on "State policy in forestry," by Mr. W. A. L. Bazeley, state conservation commissioner of Massachusetts. Mr. Bazeley drew particular attention to the neglect of municipalities to practice rational methods of policy, while he said that rural towns that have the largest forest area are generally the poorest and least responsive to new ideas.

The Thursday afternoon session included five papers: "The conservation of capital," by Mr. H. T. Newcomb; "The conservation of America's economic independence," by Dr. Frederick L. Hoffman; "The element of time in industrial management," by Dr. F. S. Gilbreth; "Early and economic aspects of heart disease," by Dr. Robert H. Halsey, and "Invention conservation," by Mr. James G. Dudley. The address by Mr. Newcomb was a carefully reasoned argument, suggestive of thoughtful future consideration, including much valuable material, presented with admirable clearness. He concludes with the suggestion that "what is necessary for the conservation of capital and the maintenance of civilization is renewed confidence in fundamental principles of politics and economics, and to return to the simpler methods under which this nation obtained its principal growth, and became capable of the commanding position in the world's industry and affairs."

The Friday morning session was introduced by an address by Dr. John T. Black, now conservation commissioner of the Ætna Life Insurance Company, on "Conservation and industrial waste," followed by a paper on "The federal water power policy and its results," by Mr. O. C. Merrill, secretary of the Federal Water Power Commission. In summarizing his observations, Mr. Merrill said: "Results already accomplished afford convincing evidence that grants of special privileges are not necessary, in order to secure the development of all the electric energy that the market can absorb." He strongly opposed essential modifications of the Act of 1920 and said: "Having spent many years in developing a federal water power policy, it would be most unwise even if the act were not successful, to permit the law or the policy to be materially modified, except after fair trial and convincing evidence of the desirability of change."

General Harry Taylor, in charge of government flood control work, contributed a timely address on "Problems of flood control," summarizing the results of a wide experience applied to the solution of one of our most important present day problems. He endorsed the levee system, as having proven successful, under most trying conditions, pointing out at the present time there are nearly 1,800 miles of effective levees between Rock Island, Illinois, and the mouth of Mississippi, protecting nearly 30,000 square miles, or perhaps the most fertile area in this country. He made the concrete suggestion that in locating levees care should be exercised not to place them so near the banks of the river as to unduly crowd the stream and reduce the cross sectional area sufficiently to prevent the escape of flood waters, without causing their rise to a height that would overtop the levees. Finally, he said: "It is rarely the case that a flood control problem is not of more than local importance."

At the concluding session Friday afternoon, Dr. George F. Kunz read a most interesting address on "Our scenic resources and their practical uses," followed by a strong plea by Mr. Robert Sterling Yard on "Our national park policy in its economic aspects."

The final paper on the program was an address on "The conservation of our whale fisheries," by Dr. John Franklin Crowell, vice-president-elect of the Section of Social and Economic Sciences. Dr. Crowell raised the question as to whether whaling was a vanishing industry, discussed its world-wide extent and importance, followed by observations on changes and methods in new fields, with remarks on the principal areas of the whaling industry, and an extended discussion of the world's most prolific whaling grounds in the Antarctic Ocean.

The sessions were not as well attended as the importance of the papers would have suggested, but every effort will be made to secure for all the various papers the required and suitable publicity.

The sessions were presided over throughout by Professor Henry S. Graves, Yale University, vice-president and chairman for the section. It was tentatively agreed that next year's program should follow similar lines, but present the social and economic progress of the United States since the close of the World War.

THE METRIC ASSOCIATION

President, George F. Kunz.

Secretary, Howard Richards, 156 Fifth Avenue, New York, N. Y.

(Report by Howard Richards)

The annual meeting of the American Metric Association was held according to schedule in the Massachusetts Institute of Technology on December 30, 1922.

The speakers were also entirely from the industries and included such men as B. L. Newkirk, of the General Electric Company; A. E. Marsh, of the Waltham Watch Company, Theodore H. Miller, of the De Laval Separator Company, and Walter Wood, of R. C. Wood and Company, the well-known manufacturers of pipe and other steel products. The Army was represented by Major L. A. Nickerson, Ordnance Department, U. S. A., and the Navy by Captain Eliot Snow.

The practical use of the metric system, legal for all transactions since 1866, was emphasized. By motion of Dr. Arthur E. Kennelly, the Metric League, in connection with the Metric Association, was organized. There are no dues connected with this league, membership being open to all those who sign and send to the association the following statement: "It is my purpose to use metric weights and measures whenever feasible."

Owing to increase in membership both in the United States and Canada, and the undertaking of more comprehensive work, the name of the association was shortened to Metric Association.

Among the resolutions passed were those endorsing the Britten-Ladd bill, and expressing appreciation for the increased number of associations and firms cooperating in the metric movement.

The following were elected officers for 1923: *President,* George F. Kunz; *treasurer,* Frederic L. Roberts; *secretary,* Howard Richards. Communications should be addressed to Metric Association, 156 Fifth Avenue, New York.

SECTION L—HISTORICAL AND PHILOLOGICAL SCIENCES

Chairman of the Interim Committee on the History of Science, William A. Locy.

Secretary of the Interim Committee, Frederick E. Brasch, 6963 Morton Place, Rogers Park, Chicago, Ill.

(Report by Frederick E. Brasch)

The third meeting of those interested in the history of science movement was held in the buildings of the Massachusetts Institute of Technology, Cambridge, Mass., December 27 and 28, 1922.

This meeting was the most gratifying and successful one thus far held. It was largely due to the unusual character of the symposium held jointly with the scholars interested in the history of science within the American Historical Association.

The single session of the History of Science section was composed of a miscellaneous program. Owing to the illness of Dr. William A. Locy, chairman of the section, Dr. H. W. Tyler, of the Massachusetts Institute of Technology, presided and acted as chairman *pro tem.*

Each of the papers presented at this session carried with it, besides the interesting and strong discussion, a conviction that the history of science movement has come to be an integral part of the scientific life of to-day. There were three historical-technical papers and two general history of science papers. The two latter papers emphasized the value, methods and needs of history of science instruction in our university curriculum. Dr. George Sarton, of Harvard University, and Dr. H. W. Tyler spoke from actual experience as teachers.

The second session of the history of science meeting was the joint conference. The main concept of this symposium was the "Humanizing of knowledge"—or, better, "Humanizing Science." Dr. James H. Robinson of the Rand School of Social Science acted as chairman, and opened the meeting by calling attention to the great need of a better scientific understanding of life and its environmnt.

Besides the importance of this subject, the continuity of ideas and the coherent manner

in which each of the speakers contributed these ideas were the outstanding features of this session. Dr. G. H. Mead, Dr. L. Thorndike, Dr. Sarton and Mrs. M. Austin each foresee a great need for better and more science education. Dr. L. J. Henderson, of Harvard University, opened the discussion and was followed by other speakers.

As an aftermath of the joint session of the history of science, Dr. D. T. MacDougal called a special conference to be held at 7 P.M. in the Somerset Hotel. After a most delightful complimentary dinner, the group consisting of Mrs. M. Austin, Miss Amy Lowell, Dr. J. H. Robinson, Dr. L. Thorndike, Dr. G. Sarton, Dr. J. C. Merriam, Dr. H. Shapley, Dr. S. Miller, Dr. D. T. MacDougal and the secretary were joined later by other invited guests. The purpose of this conference was to discuss the best means of procedure regarding advancing the idea of humanizing knowledge.

During the sessions of the American Association for the Advancement of Science there was on exhibition a most interesting collection of apparatus, early books of the great science masters of the past, as well as portraits and prints of famous scholars. These were to be found at the Massachusetts Institute of Technology and Harvard University Observatory.

The thanks of the section committee of Section L to those members of the American Historical Association who cooperated so splendidly in working out the problems of the joint conference are here expressed. Special thanks are due to Drs. MacDougal, Robinson and Thorndike.

The newly elected chairman of Section L is Dr. Florian Cajori, the distinguished historian of mathematics and professor of the history of mathematics in the University of California, Berkeley, Calif.

CAMBRIDGE SESSION ON SOME FUNDAMENTAL ASPECTS OF PHILOLOGICAL SCIENCE

(Report by Mark H. Liddell.)

A special session of those members of Section L who are interested in the philological sciences was held on Friday afternoon at the Fogg Museum of Harvard University, as provided for in the general program. At this meeting three papers relating to linguistics were presented and discussed. The first paper dealt with "Some new scientific data for the study of language" and was presented by Professor Mark H. Liddell, of Purdue University, as the outcome of investigations into the physical nature of certain qualitative variations in the vowels of ordinary conversational speech under different conditions of stress or accent. His conclusions were based upon a study of records made by the very sensitive devices for sound measurement recently perfected by the research staff of the American Telephone and Telegraph Company. They showed that normal variations of accent in ordinary conversation so slight as to be incapable of detection by the ear alone were nevertheless definitely measurable in terms of corresponding variations of energy when the components of the sound waves in which they occurred were analyzed by Fourier's theorem. There followed a lively discussion of the ultimate possibility of an absolute system of phonetics based upon purely physical and objective criteria. Professor H. L. Koopman, the librarian of Brown University, then read an interesting paper entitled "The unscrambling of Babel." He illustrated and analyzed language mixtures that had arisen in the commercial intercourse of various peoples—jargons such as the Lingria Franca of the Levant, the Urdu of the Indian Mussulmans, Pidgin English and Chinook. Dr. E. S. Sapir, of the Victorian Museum of Ottawa, added illuminating comments upon the native dialects of the American Indians in relation to the Chinook jargon. In the last paper, "Wellesley experiments in the teaching of language," Dr. Christian A. Ruckmick, of Wellesley, presented comparative data as to the ease with which an enthusiastic group of his students of psychology acquired under identical teaching conditions a quite unfamiliar natural language (Danish) and an artificial language (Esperanto) of which they knew nothing when the experiment was undertaken. The results were somewhat in favor of the latter. The discussion of Dr. Ruckmick's paper turned upon the advantages of an international auxiliary language.

It was evident in this first meeting of those members of the association who are interested in phiological and linguistic science that this new branch of the association's activities is a promising field for development.