on Thursday, January 1st. These meetings celebrated the quarter-century anniversary of the founding of the fraternity, the eighteenth anniversary of its first national convention and the fourth anniversary of its affiliation with the American Association for the Advancement of Science. One hundred and fifty active and alumni members registered at the Gamma Alpha booth in the registration room at the New Willard Hotel, all the chapters being represented. The council meeting and the convention were presided over by President Gilbert, and Dr. J. Brian Eby, of Washington, was toastmaster at the banquet.

A charter was presented to the Washington Alumni Gamma Alphans, which organized the sixteenth chapter of the fraternity, to be known as the Washington Alumni Chapter.

The national officers of the fraternity for 1925 are: *President,* A. H. Wright (Cornell University); *vice-president and secretary,* J. E. Ackert (Manhattan, Kansas); *treasurer,* W. B. Burnett (Mellon Institute); *recorder,* C. C. Murdock (Cornell University); *editor,* nomination assigned to the Illinois chapter; *representatives in the council of the American Association for the Advancement of Science,* H. L. Rietz (University of Iowa) and Alvah Peterson (Rutgers College). The 1925 council meeting and convention of Gamma Alpha will be held in Kansas City, contemporaneous with the meetings of the American Association for the Advancement of Science.

### THE SIGMA DELTA EPSILON GRADUATE WOMEN'S SCIENTIFIC FRATERNITY

*President,* Adele L. Grant.

*Secretary,* Evelyn I. Fernald, Rockford College, Rockford, Ill.

(*Report by Evelyn I. Fernald*)

Two new chapters were announced: Gamma, at the University of Illinois, and Delta, at the University of Missouri. The national officers elected for the coming year are as follows: *President,* Eloise Gerry (University of Wisconsin); *first vice-president,* Adelaide Spohn (Cornell University); *second vice-president,* Mary G. Haseman (University of Illinois); *secretary,* Edna M. Feltges (University of Wisconsin); *treasurer,* Grace H. Griswold (Cornell University).

Wednesday morning, after the breakfast held for all women interested in science, Mrs. Charles D. Walcott, of Washington, D. C., gave a very interesting and finely illustrated account of her expeditions in the western mountains. She showed a large number of wonderfully beautiful paintings and photographs. Forty-nine women were present.

## THE WASHINGTON EXHIBITIONS

(*By Charles A. Shull, Manager of the Exhibition*)

The exhibition held in connection with the fifth Washington meeting of the American Association for the Advancement of Science and Associated Societies was by far the largest and finest in the history of the association, and was in every way a worthy accompaniment to the largest meeting of scientists in the history of the world. Under the skilful direction of the chairman of the local committee on exhibits, Mr. W. J. Showalter, of the National Geographic Society, whose efficient and genial service to the association and to the exhibitors is deeply appreciated, the arrangements were carried out in such a way as to make the general exhibition almost ideal from the standpoint of a scientific and educational as well as from that of a commercial enterprise.

Local conditions made it impossible to stage the entire exhibition in a single locality, and many different buildings held exhibits of great interest to visiting scientists. The main exhibition was placed in the Gymnasium Building of George Washington University; but exhibits were also to be found in the corridors of Central High School and at the Hygienic Laboratory, the Carnegie Institution Building, the New National Museum, the National Geographic Society headquarters, the National Academy of Sciences Building, the U. S. Department of Agriculture, the U. S. Weather Bureau, the Bureau of Standards and the Naval Observatory. The American Association for the Advancement of Science is very grateful to these institutions for their cordial cooperation, particularly to the George Washington University for the use of its gymnasium. It extends its thanks to those who made it possible to use the building for exhibition purposes and to all cooperating institutions.

The exhibits themselves may be grouped according to their locations, as in the following summary:

### EXHIBITS MAINLY IN THE GENERAL EXHIBITION

*The Bausch and Lomb Optical Co., The Spencer Lens Co.* and *The Scientific Cinema and Supply Co.* furnished projection apparatus and screens for the lecture rooms. In this very fine service to the association and the scientists they were joined by the *Trans-Lux Daylight Picture Screen Co.,* of New York City, who not only exhibited their opaque projector in the general exhibition, but also provided daylight screens for many of the lecture rooms where lanterns were required. This splendid service on the part of these four companies went far toward making the presentation of data more successful than ever before, and was an important contribution to the meeting as

a whole. On behalf of all the many societies benefited by the service, the association expresses to these firms its hearty thanks.

The displays of optical instruments and other instruments of precision were unusually fine in this exhibition. Special mention is to be made of the great courtesy shown by *The E. Leitz Co.*, of New York City, and the *Bausch and Lomb Optical Co.*, of Rochester, N. Y., who furnished unusually fine microscope equipment for individual investigators exhibiting cytological material. This special service by these two firms is deeply appreciated by the association and by the individual investigators who were thus favored.

*The E. Leitz Co.* had on exhibition a magnificent array of instruments, including biological and petrographic microscopes, binoculars, stereomagnifiers, photomicrographic apparatus, camera attachments, lamps and Edinger drawing and projection apparatus. *The Bausch and Lomb Optical Co.*, in addition to loaning many lanterns for use in the session rooms, exhibited microscopes, projection apparatus and photomicrographic equipment. *The Spencer Lens Co.*, of Buffalo, N. Y., exhibited microtomes, microscopes and other optical instruments, such as cameras, spectroscopes, delineascopes, lamps, etc. *The Palo Co.*, of New York City, showed beautiful models of Busch microscopes, binocular telescopes, photographic cameras and the Ives tint photometer. They also had specimens of the Meker furnaces on display. *The R. Y. Ferner Co.*, Washington, D. C., representatives of the *Société Genevoise*, made a specialty of their Kremp microscopes, and a new mechanical microscope stage with uniaxial control. *The Leeds and Northrup Co.*, Philadelphia, showed examples of their precision apparatus, high sensitivity galvanometers and potentiometers, a thermostat with precision of 0.005° C. and a light recorder in operation. This recorder, by means of a photoelectric cell, measures the total light intensity and records it on a revolving drum automatically. This instrument should be valuable in measuring the light values of plant and animal habitats. *The Cambridge Instrument Co.*, of Ossining-on-Hudson, N. Y., showed many instruments of precision, voltmeters and flux meters, vernier and slide potentiometers, the Callandar-Griffiths model measuring-microscope, extensometers and stress recorders, electrometers, alpha-ray-track apparatus, a new Universal microtome, string galvanometers and recording clinical thermometer. *James G. Biddle*, Philadelphia, had on display rheostats, tachometers and other speed indicators, meg-ohmmeter, precision ammeters and voltmeters, a new model A potentiometer, dial pattern resistance boxes and Wheatstone bridges, "Point-o-Lite" lamps, meg-insulation testers and a new pattern of Langmuir pump. *The Keuffel and Esser Co.*, of Hoboken, N. J., showed a direct reading spectrophotometer, or color analyzer, and cases of slide rules, drawing instruments in all stages of the manufacturing process, chronometers and surveying instruments.

The importance of the chemical industries in promoting research was evidenced by a number of excellent displays of chemicals. *The Eastman Kodak Co.*, Rochester, N. Y., displayed a group of their organic chemicals, and in addition had in operation the Cine Kodak and Kodascope, suitable for the display of motion pictures in the home, a group of colored films and the well-known Wratten gelatin light filters, of mono- and ortho-chromatic series. *The Mallinckrodt Chemical Co.*, of St. Louis, showed a selection of their fine line of chemicals, particularly a new analytical grade of high purity. *Coleman and Bell*, of Norwood, Ohio, exhibited their laboratory reagents, both inorganic and organic, particularly their excellent biological stains, solutions, chemical indicators and test papers. *The LaMotte Chemical Products Co.*, of Baltimore, made a specialty of hydrogen-ion-determination facilities. The new LaMotte Hydrogen-ion Testing Set was on display, along with their color standards. *The National Aniline and Chemical Co.*, of New York City, displayed biological dyes, stains, indicators and other reagents for laboratory purposes. *The Graham Chemical Co.*, of Washington, D. C., showed methods and apparatus and buffer and indicator chemicals for hydrogen-ion determination, and had hydrogen-ion and oxidation-reduction electrodes in operation.

Chemical resistant wares were represented by an unusually fine display of "vitreosil" ware (fused silica) by the *Thermal Syndicate, Ltd.*, of Brooklyn, N. Y. Beakers, evaporating dishes, crucibles, etc., made of this very insoluble material, and a vitreosil still suitable for the preparation of conductivity water were on their tables. Some very fine specimens of optical fused quartz were shown. *The R. P. Cargille Co.*, of New York City, had their "Impervite" porcelain on display, and handed out samples to those interested. They also showed a micrometer for measuring the inside diameter of tubes and a fine sample of colloidal gold sol made by the Bredig process.

Two society groups merged their exhibitions with the general exhibition, and a number of firms responded to requests for special exhibits of interest to these societies. Thus the *Mathematical Section of the Association and its affiliated societies* arranged a special exhibition for mathematicians, including in it the various publications of the societies. Several computing machine companies contributed to this society exhibition. *The Monroe Calculating Machine Co.*, the *Ralph C. Coxhead Corp.* and the *Millionaire Computing Machine Co.*, all of New York City, were located

close together, so that comparisons could be readily made. The *Coxhead Corp.* handle the Mercedes-Euklid machine, and they had three types on exhibit, the hand machine, the semiautomatic electric and the new fully automatic electric. *The International Business Machines Corp.,* of Washington, D. C., also showed an electric accounting machine and an electric sorting machine.

Through the courtesy of Major General Taylor, chief of the Engineering Corps of the U. S. Army; Major General Mason M. Patrick, chief of the Air Service, U. S. Army, and Dr. E. Lester Jones, director of the U. S. Coast and Geodetic Survey, these organizations contributed to the exhibition for the mathematical societies and to the rest of the general exhibition. *The Engineering Corps* exhibited models of locks and dams and weirs used in controlling inland waterways, also the development of sea-coast harbors. The *Army Air Service* showed mapping cameras, aerial maps and the general aerial activities of the service. There were also some fine topographic representations of relief. *The Coast and Geodetic Survey* showed the theodolite, zenith telescope, Ferrell Tide-predicting machine, automatic tide gauge, radio longitude apparatus and a model of a triangulation tower. These exhibits added much to the interest of mathematicians in the entire exhibition.

*The Association of Official Seed Analysts* had also collaborated with several firms in securing apparatus of interest to their members. *The District of Columbia Paper Manufacturing Co.* displayed paper, driers for herbarium specimens, seed-germination blotters, etc., and the *Heywood Manufacturing Co.,* of Minneapolis, sent samples of jute and kraft envelopes, suitable for seed handling. *The Porter Safety Seal Co.,* of Chicago, sent one of their sealing machines, with seals for sealing bags of seeds. *The W. S. Tyler Co.,* of Cleveland, exhibited the "Ro-Tap" testing sieve shaker, and many varieties of screens suitable for sorting seeds.

Publishers of books were well represented. The following firms displayed fine assortments of their publications: the Williams and Wilkins Co., of Baltimore; E. P. Dutton and Co., the D. Van Nostrand Co., the Macmillan Co., D. Appleton and Co., John Wiley and Sons and Ginn and Co., all of New York; Lea and Febiger, and P. Blakiston's Son and Co., of Philadelphia; the World Book Co., of Yonkers, N. Y.; the University of Chicago Press, of Chicago; the Yale University Press, of New Haven, and the University of California Press, of Berkeley. The G. E. Stechert Co., of New York, exhibited an extensive line of imported German publications. The Grolier Society, of New York, exhibited for the first time their new 15 volume work, the "Book of Popular Science," with 5,000 illustrations, and 20,000 index references. Many of the illustrations decorated the walls of their booth. In addition to the above companies, the National Geographic Society, the National Research Council and Science Service showed their publications in the interests of the advancement of science, and Edwards Brothers, Ann Arbor, had a number of very well-made mimeographed text-books on display. Several companies exhibited lithographic art, notably Gatchel and Manning, of Philadelphia, and the Heliotype Co., of Boston. Mrs. Charles D. Walcott, Washington, D. C., showed sample color-process plates of her paintings of wild flowers, in process of publication. These plates are being made by the Beck Engraving Co., of Philadelphia.

*The General Biological Supply House* showed a fine display of mounted specimens, life-history series, injected specimens, wax models of chick embryos, fertilization and maturation in Ascaris, Jewell models of stem and leaf structure, skulls and skeletons, brain of shark and many other supplies for biological laboratories and students.

A few miscellaneous exhibits should be mentioned. *The Purox Co.,* of Denver, showed the "Purox" all-metal container for storage and transportation of liquid oxygen and other liquefied gases. *The Sterling Watch Co.,* of New York, had the Pastor stop watch on exhibition and sale. *The Eastern Instrument Co.,* of Newark, N. J., exhibited an ingenious air tester by means of which it can easily be determined whether a room is too dry for comfortable living. *Forbes and Myers,* of Worcester, Mass., had on display their "Seventy Six" tool grinder, with the unassembled parts to show how it is constructed. *The W. M. Welch Co.,* of Chicago, showed a chart illustrating the periodic arrangement of the atoms, and *C. Francis Jenkins,* of Washington, D. C., had a most interesting radio-picture transmitter and receiver in operation.

*The Metric Association* occupied a booth in the general exhibition room and exhibited standard metric units, scales on which one could weigh himself in kilos, and literature explaining the aims of the association and the many merits of the metric system of weights and measures.

Several government bureaus, besides the government services already mentioned, contributed to the success of the general exhibition by placing some of their apparatus and exhibits of their special activities on display. The U. S. Weather Bureau contributed meteorological instruments, barographs, hydrographs, etc. The U. S. Bureau of Standards exhibited standard samples, standardized weights, optical glass, an interferometer, etc. The U. S. Forest Service showed forest products, methods of forest protection, range finders, calipers and specimens

showing the influence of turpentining on the growth of pine trees.

The exhibits of several individual exhibitors placed in the general exhibition will be mentioned in the list of individual exhibitors, below.

To all the exhibitors—firms, individuals and organizations—who contributed to the splendid success of the general exhibition, the American Association for the Advancement of Science expresses its appreciation and extends its cordial thanks.

### EXHIBITS MAINLY AT THE CENTRAL HIGH SCHOOL BUILDING

*The Entomological Society of America,* and *the American Association of Economic Entomologists* placed an extensive series of collections, life histories, insect injuries to products, insecticides, dusting and spraying apparatus, etc., in the Armory Annex at the Central High School Building. Many of the items were contributed by individuals. Besides these there were numerous exhibits by individual scientists, as follows:

*A. Brozek,* Prague, Czechoslovakia: Seventy slides showing genetics in Mimulus.

*Lee M. Hutchins,* U. S. Department of Agriculture and the Johns Hopkins University, Laboratory of Plant Physiology: Apparatus for determining the oxygen-supplying power of the soil or other plant or animal environment.

*R. B. Harvey,* University of Minnesota: New method for blanching celery with ethylene, also Yellowstone National Park views, in interest of a proposed Biological Station in the Park.

*Ralph E. Cleland,* Goucher College: Chromosomes of Oenotheras.

*Charles E. Allen,* University of Wisconsin: Chromosomes of Sphaerocarpos.

*A. M. Showalter,* University of Wisconsin: Antherozoids and fertilization in Riccardia.

*W. R. Taylor,* University of Pennsylvania: Chromosomes of Gasteria and Allium, with satellites.

*F. B. Wann,* Cornell University: Pure cultures of Chlorella, Ulothrix, Scenedesmus, liverworts, mosses, ferns and Lemna, on mineral nutrient agar.

*F. E. Lloyd,* McGill University: Transparencies showing sexual reproduction in Spirogyra and color-process photographs of fluorescence of chlorophyll.

*F. M. Shertz,* U. S. Department of Agriculture: Chloroplast pigments, alkali and acid derivatives of chlorophyll, copper and zinc derivatives of chlorophyll, and commercial preparations.

*H. J. Muller,* University of Texas: Moving model of mitosis and segregation.

*C. L. Turner,* Beloit College: Aberrant secondary sexual characters in crayfishes.

*H. V. Neal,* Tufts College: Germ glands of a gynandromorph frog.

*B. H. Grave,* Crawfordsville, Ind.: Rate of growth of sessile animals.

*W. W. Swingle,* Yale University: Sex differentiation in Rana Catesbeiana.

*Ruth Jane Ball,* University of Vermont: New parasites of Bermuda Echinoidea.

*L. C. Dunn,* Connecticut Agricultural College: Bones of rumpless and normal fowls.

*H. S. Jurica,* St. Procopius College: Charts of plant structures.

*Charles T. Knipp,* University of Illinois: A simple alpha-ray-track apparatus, which could be operated by the visitor.

*Alfred C. Hawkins,* University of Rochester: Set of forty oils of known refractive index, suitable for microscopic use.

*J. H. Gerould,* Dartmouth College: Physiology of coloration in butterflies of the genus Colias.

*H. M. Wetherill,* Phoenixville, Pa.: Printing by typen, a device for conveniently lettering labels, etc.

These individual exhibits, mainly in the corridors of the Central High School Building, attracted great attention and the benefit they brought to the advancement of science is incalculable. The personal effort and sacrifice involved in bringing these fine things together were undoubtedly very great, but it was surely worth while in a very deep sense. It is hoped that individual exhibits may assume a still greater prominence at future annual meetings of the association. The loyalty and generosity of these exhibitors is worthy of praise, and we hope that they will feel repaid by the appreciation of those who saw and admired their work and by the knowledge that they helped greatly toward real progress.

### EXHIBITS IN OTHER PLACES

Those who visited the many laboratories and rooms of the U. S. Department of Agriculture, the U. S. Bureau of Standards, the U. S. Naval Observatory and the National Academy of Sciences Building found many special exhibits that had been prepared for the visiting scientists. They can not be described here. Special mention should be made, however, of a very comprehensive exhibition of its recent research activities made available during the meeting by the Carnegie Institution of Washington. This exhibition was installed in the administration building of the institution. It was as interesting and otherwise as valuable in many ways as was any other feature of the Washington exhibitions.

The manager of the exhibition wishes to express his sincere thanks to those who cooperated so cordially to make a success of the exhibition, particularly to the local subcommittee on exhibitions and to the firms,

organizations, institutions and individuals who responded so generously to his invitations to participate. Without such friendly cooperation nothing worth while could have been done. The final result exceeded anything that had been anticipated, and gives reason to hope that the annual exhibition of the American Association for the Advancement of Science and Associated Societies will grow in importance and value with the years.

## THE ORGANIZATION, WORK AND PURPOSES OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

### GENERAL SCOPE

The American Association for the Advancement of Science aims to advance science in the New World in every feasible way. The majority of its members and all the societies now associated with it are of the United States or Canada, but its field is not limited to those two countries and it has members residing in all parts of the world. All who are interested in the progress of knowledge and education are eligible to membership. Its organization presents two aspects:

(1) It constitutes a cooperation of many thousands of individuals for the advancement of science and all that this phrase implies. At the opening of the Washington meeting the membership list included 13,633 names. Its membership represents persons engaged in scientific or educational work or appreciating the value of these lines of activity. The individual members of the association support its project through financial contributions, which may have the form of *sustaining-membership* contributions, *life-membership* contributions, *annual membership* dues, or *associateship* dues. Contributions of the last two forms are used directly to support the work of the association, while only the income from the first two forms of contribution is thus used, these contributions themselves being permanently invested and very carefully guarded.

(2) The association is also a great general organization of eighty-three wholly autonomous and independent *associated* scientific societies and twelve local academies of science and learning. Forty-nine of the larger associated societies and all the associated academies are officially *affiliated* with the association. Affiliated organizations have representation in the association council and in its section committees, thereby taking part in the control of its affairs. Whether affiliated or not, the associated societies have no responsibility for the financial support of the organization, which is borne, as has been said above, solely by the individual members. A list of the associated societies is presented farther on in this issue of SCIENCE.

The association aims to assist, in every feasible way, the work of all men and women of science and that of all scientific and educational organizations, especially those that are associated with it. A large number of the latter regularly meet at the times and places of the association meetings, while many others frequently do so. The facilities of the association, for arranging sessions, etc., are at the disposal of all the societies that meet with it at any of its meetings. Reduced railway rates for the meetings are generally secured. To individual members the organization is valuable in many ways, especially through its publications and through the meetings. The permanent secretary's office is always ready to aid the scientific work of members in every way possible. It is hoped that all members and all associated societies may realize that the American Association for the Advancement of Science is *their* association, and that they will continue to demand of its officers more and better work for the growth of knowledge, for increased popular appreciation of science and the scientific method of thought, and for the improvement of democratic civilization in general. It is also hoped that both the societies and the individual members will enter fully into the spirit of cooperation with the section secretaries, with the permanent secretary's office, and with the other officers and committees of the association, to the end that the services of the association may be still further broadened, its prestige may be still further enhanced, and its power may be still further strengthened, "to give a stronger and more general impulse and more systematic direction to scientific research, and to procure for the labors of scientific men increased facilities and a wider usefulness."

### ORGANIZATION

The direction of the association rests in the council, a democratically constituted body that combines the legislative and executive functions. The council consists of the president, the vice-presidents (at present 15 in number), the treasurer, the general secretary, the permanent secretary, the secretaries of the sections (now 15 in number), the council representatives of the affiliated societies and academies (49 societies and 12 academies, with 102 representatives altogether), and eight elected members. All council members, excepting the representatives of societies and academies, are elected by the council itself, for it nominates and elects the president, the general and permanent secretaries, the treasurer and the eight additional elected members, and it elects the vice-presidents and section secretaries on nominations by