SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

FRIDAY, JANUARY 9, 1903.

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE fifty-second annual meeting of the association, which was held in Washington, D. C., from December 29 to January 3, was noteworthy in many respects as marking the passage to a new order of things in the position and conduct of the association. The total enrollment reached 989, which is second to that of the Boston meeting in 1880, when 997 were enrolled, and to that of the second Philadelphia meeting in 1884, when 1,261 enrollments appear. Of these, however, 303 members of the British Association represent complimentary enrollments. The geographic distribution of the members in attendance was as follows:

District of Columbia, 354; New York, 133; Massachusetts, 82; Pennsylvania, 70; Ohio, 39; Maryland, 38; Illinois, 27; Connecticut, 23; Michigan, 22; New Jersey, 19; Wisconsin, 19; Indiana, 16; Virginia, 14; North Carolina, 13; California, 12;

New Hampshire, 10; Missouri, 8; Canada, 8; Nebraska, 7; Minnesota, 7; Vermont, 6; Rhode Island, 4; Tennessee, 4; Kentucky, 4; Iowa, 4; Florida, 3; Maine, 2; West Virginia, 2; South Carolina, 2; Georgia, 2; Texas, 2; Montana, 2; Colorado, 2; Delaware, 1; Wyoming, 1; Arkansas, 1; Mississippi, 1; Kansas, 1; South Dakota, 1; Alabama, 1; New Mexico, 1.

Foreign attendance: Canada, 8; England, 1; Ceylon, 1; Nicaragua, 1.

In addition to these, 363 members of affiliated societies also registered at the office of the association, so that the total enrollment of scientific men in attendance at the meetings was 1,352, and the total attendance may be conservatively estimated as not less than 1,500.

The membership of the association, which had reached at the Pittsburgh meeting a total of 3,473, was augmented by the election at this meeting of 392 additional persons. One may assert with reasonable confidence that the gathering was the most representative and extensive which has ever been held under the auspices of any purely scientific association in this country and stands in favorable comparison with any similar congress in other lands. This was undoubtedly due in part to the advantages of Washington in accessibility and attractiveness, as well as to the large number of affiliated societies which cooperated in the gathering. One may well affirm that the experiment of changing the time of meeting has proved a distinct success, and this is evident not only in the size of the gathering but in the characteristic features of the series of meetings as well.

In the first place, it was noteworthy that the attendance was composed in great majority of the working scientific men of the country. The meetings of the various sections were well attended and the spirit of the sections was one of work, most gratifying to those who look for renewed scientific interest and activity as a result of the change in policy of the association. It is further noteworthy that the number of affiliated societies has been increased by the addition of many of the permanent scientific organizations of the country. Such an assemblage could not be made without numerous and even serious conflicts, together with the inconvenience and even friction which is attendant upon such relations. While this was noticeable in a few points which may possibly result in the temporary withdrawal of a few organizations, the advance made has been no less permanent than real in character.

To be sure, there are some scientific men who have not yet grasped the meaning of organization in scientific fields, and to whom the temporary inconveniences of an affiliation, the minor details of which have not yet been completed, appear to overshadow the great benefits which must result to science at large from the strength of the ultimate union. Despite this, the broader view has appealed so strongly to the members of most sections that amicable relations have been entered into between these and the national societies of technical character, and there has resulted a great improvement of the program for those in attendance upon the meetings and of effort and influence for the mutual advancement of the organizations. No one can doubt this on examination of the programs of the sections, which manifest an especially high standard in the character of the papers presented. Those in attendance upon future meetings may look with confidence to the presentation only of that which is most valuable to the worker in the field of the section. The marked improvement in the character of the contributions can only be demonstrated by the reports of the secretaries, which will appear subsequently. The more serious

character of the meeting was directly reflected in the marked respect paid to it by the press, and the period during which the influence of the association will be commensurate with the importance of the subjects it represents may be confidently said to have commenced.

Despite occasional criticisms of individuals as to the excessive growth of machinery, the association still needs perfecting in some details of organization in order to handle with expedition and without friction the enormous mass of business incident to the association of such wide scientific interests. Many details might profitably be systematized and removed from the hands of the overburdened secretaries, to be discharged in routine fashion by errand boys or clerks, and once provided for, would be carried out through successive years as a matter of course and without demand upon the time of any officer of the association, whose energy may better be devoted to the performance of the scientific duties connected with his post. Every means possible should be employed to enable officers, as well as members, to lend their energies to those objects for which the association primarily exists, and with the perfection of this machinery will cease of necessity the isolated criticisms which have been made by those of pessimistic habit with regard to the over-organization of the association. The same machinery which was adequate to provide for the needs of an organization of 1,000 members with an annual attendance of 200 will not suffice for an association of four times that size and attendance. The sooner scientific men profit from the experience and practice of successful enterprises in the world of business, the greater will be the success of the forward movement in the world of science.

One cannot overestimate the part which is being played in this new movement by the affiliated societies, many of international renown, which have come into relations with the association. Most of these are of technical character and are establishing with the sections desirable relations of an advisory and directive type. This they are well able to do by virtue of the professional character of their membership, and American science may confidently expect great results from the intimate relation in which such societies stand to many of the sections. It is to be sincerely regretted that in one or two cases the spirit of the movement has failed to reach other organizations, where some members have strongly opposed the cultivation of any relations whatever, and it may be given as more than an individual opinion that such men have failed to give thoughtful consideration to the real consequences of the armed neutrality which their position invokes. It may be said with frankness that even before such organizations some matters of the most trivial character are presented, while the section programs have to offer that which would be of broad and genuine interest to the members of the society. Both sides have much to gain, and neither has anything comparable or even considerable to lose by the proposed *entente cordiale*.

It would be improper to pass the subject of these affiliated societies without reverting in a word to one of an entirely different character which has played an important part at Washington. The American Society of Naturalists has performed an invaluable service for those in attendance in its afternoon discussion on the most effective use of endowments for scientific research, which was participated in by six members of broad view and striking individuality, and by its annual dinner, with an address by the president on the characteristics and distribution in different fields of American men of science,

which provoked generous and general discussion of the questions involved.

Important progress was made toward the establishment of a permanent policy in the association by several amendments to the constitution and practices which were put into operation. The members of the sectional committees were elected for terms varying in length from one to five years, thus insuring the continuance of at least four members familiar with committee work from one year to the next; the secretaries of the sections were elected for terms of five years, and the council elected nine fellows at large for varying terms. The continuity this secures in the governing body of the association will add greatly to its efficiency in the advancement of science. The members at large, with their terms of service, are as follows:

J. McK. Cattell, U. S. Grant, William Kent, term ending 1904.

J. M. Coulter, A. A. Noyes, H. F. Osborn, term ending 1905.

Franz Boas, E. L. Nichols, W. F. Wilcox, term ending 1906.

The following resolutions of importance to the policy of the association were discussed and adopted:

Resolved, That any section is hereby authorized to arrange through its sectional committee for an independent summer meeting in any year when the association fails to hold a summer meeting; provided, that the time and place of meeting and the general program be approved by the president and permanent secretary of the association and that a full report of its meeting be sent to the permanent secretary. The expenses of any such meeting to an amount not exceeding fifty dollars will be borne by the association.

Resolved, That Section E is hereby authorized to suspend its scientific program of the reading of papers at any winter meeting when the Geological Society of America meets in conjunction with the association; provided that the Geological Society includes in its program the papers of worthy character offered by members of the section who are not fellows of the society.

Resolved, That each section is recommended to hold during each general meeting at least one afternoon session when a program of general interest shall be presented.

It was recommended that the elections to fellowship be announced to the section from which the member elected had been recommended.

The council voted unanimously to increase the salary of the permanent secretary from $1,250 to $1,500 on account of the greatly increased membership of the association and attendance at the meetings, which have multiplied the duties devolving upon the office.

The amendment to the constitution proposed at the Pittsburgh meeting and printed in full in Science, Volume XVI., page 42, was adopted, and further amendments were presented altering the word 'assessment' to 'dues' in three places.

Resolutions, demonstrating the important part that will hereafter be taken in the association by the newly established section of physiology and experimental medicine, were passed as follows:

Resolved, That the American Association for the Advancement of Science hereby records its sense of the great loss sustained by science in the death of Major Walter Reed, surgeon in the United States Army, and its appreciation of the far-reaching and invaluable services which he has rendered to humanity. By solving the problem of the mode of spread of yellow fever, Major Reed not only made a great contribution to science, but at the same time conferred inestimable benefits upon his country and upon mankind. To have discovered and demonstrated the methods, which have already been successfully tested in Cuba, of eradicating a wide-spread and terrible pestilence, is a benefaction of imperishable renown, of incalculable value in the saving of human lives, of vast importance to commercial interests, and deserving of the highest rewards in the power of his countrymen to bestow. This association earnestly urges upon the attention of Congress the duty of making full provision for the support of his family.

Resolved, That the President designate a committee of nine members of this Association, with power to increase its number, which shall be authorized and requested to devise and carry out a

plan, or aid in similar efforts elsewhere instituted, by which a suitable and permanent memorial of this great benefactor of his race may be secured. This committee shall be authorized to prepare and publish a statement of the services of the late Major Reed in discovering the mode by which yellow fever may be exterminated.

The members appointed by President Remsen to serve as such committee are: Dr. D. C. Gilman, Dr. A. Graham Bell, General George M. Sternberg, Mayor Seth Low, Hon. Abram S. Hewitt, President J. G. Schurman, Dr. S. E. Chaillé, Dr. W. H. Welch, Dr. Charles S. Minot.

The second resolution was as follows:

Inasmuch as the construction of the isthmian canal is through a region in which without energetic sanitary control there is sure to be enormous loss of human life from preventable diseases, particularly from pernicious malaria and yellow fever, as well as great waste of energy and of money from disabilities caused by such diseases, and

Inasmuch as the measures for the restraint of these diseases, which have already achieved even their extermination in Cuba under American administration, require expert knowledge based upon practical familiarity with tropical diseases, experience in the application of these measures, and large authority in their administration,

RESOLVED, That the American Association for the Advancement of Science begs most respectfully and earnestly to call to the attention of the President of the United States the importance of appointing as a member of the Isthmian Canal Commission a medical man possessed of the qualifications indicated. The association is convinced that the mere employment of such a sanitary expert by the commission will not be likely to secure the desired results.

RESOLVED, That the permanent secretary of the association transmit a copy of these resolution to the President of the United States.

Section F recommended to the council the following resolution, which was adopted:

The American Association for the Advancement of Science heartily endorses the plan of converting the Donnelson estate, which has recently become the property of the State of Indiana, into a State Reserve, and urges upon the legislature of Indiana the advisability of setting aside a part of it for an experimental farm for the investigation of cave animals and plants by American naturalists.

The grants recommended by the council and announced to the general session were as follows:

To the committee on the atomic weight of thorium, $50.

To the committee on anthropometry, $50.

To the Concilium Bibliographicum, $100.

In addition to these it was announced that the Botanical Society of America had made the following grants in aid of research:

To Dr. J. C. Arthur, $90, to be used in the prosecution of his investigations of the plant rusts.

To Dr. Arthur Hollick, $150, to be used in the prosecution of a study of the fossil flora of the Atlantic coastal plain.

To Dr. D. S. Johnson, $200, to enable him to obtain material from tropical America and carry forward his studies of the endosperm and seed in the Piperaceae and Chloranthaceae.

The reports of the committees on the teaching of anthropology, on indexing chemical literature and on the atomic weight of thorium were duly received and will be printed subsequently. Other reports were submitted and adopted, as follows:

COMMITTEE ON ANTHROPOMETRY.

This committee begs to report that anthropometric researches have been continued at Columbia University under the direction of its New York members and with the cooperation of Professor Farrand, Professor Thorndike, Dr. Wissler, Mr. Bair, Mr. Davis and Mr. Miner. Tests have been made on the freshmen entering the college, calculations have been carried out on measurements of school children, and new determinations of the mental traits of school children have been made and correlated. The chairman of the committee has carried forward an extensive anthropometric study of American men of science, the preliminary results of which formed the subject of his address as president of the American Society of Naturalists. An anthropometric laboratory has been arranged at the present meeting of the association, with the $50 appropriated at the Pittsburgh meeting for the purpose, and tests of the physical and mental traits of members are being made. We ask that this committee be continued and that a

further appropriation of $50 be made in order that a similar laboratory may be arranged at the next meeting of the association.

J. McK. Cattell,
W J McGee,
Franz Boas.

Washington, D. C., December 30, 1902.

Council, American Association for the Advancement of Science. · *Gentlemen:* In behalf of the committee on cave investigation, I beg leave to submit the following report of work in hand and contemplated.

The most important single item of interest is the discovery that there are two instead of one species of *Typhlichthys* south of the Ohio River. I secured the second species at Horse Cave, Kentucky, in numbers and under conditions that practically insure the securing of a complete series of individuals illustrating the life history from the egg to old age.

A colony of *Amblyopsis* has been successfully transplanted to a cave within five miles of my laboratory, where they are breeding.

A preliminary examination of the eyes of the Cuban blind fish shows that the amount of ontogenetic degeneration is very great, and that the variability of this useless organ is all and much more than the cessation of natural selection would lead one to expect.

With an assistant I have undertaken a series of measurements of the physical conditions of Mammoth Cave, chiefly of the air currents at the entrance and in different galleries of the cave, and the temperature in a series of places.

The colony of *Amblyopsis* planted in an outdoor pool has come to grief. It demonstrated beyond a doubt that the cave vertebrates can be colonized in open pools, and this should be done at once.

There is a balance of about $45 on hand out of the $75 appropriated at the last meeting.

Respectfully submitted,
C. H. Eigenmann.

COMMITTEE ON VARIATION.

The most important events relating to the study of variation that have occurred during the past two years have been the establishment of the journal *Biometrika*, the foundation in America of a Society of Plant and Animal Breeding, the completion of the first volume of De Vries' 'Mutationsteorie,' and the rediscovery of Mendel's Law of Hybridity. Especially the latter two events have awakened a strong tendency toward the experimental study of evolution.

During the last four months the recorder has visited many of the experimental evolutionists of Europe. While the total work on this subject in Europe is of the greatest importance, it is carried on under conditions that greatly hamper the work and make it impossible to start experiments that require to be carried on for a long period of years. Everywhere the hope was expressed that in America a permanent station for experimental evolution would be founded, and it was believed that the Carnegie Institution would be the proper organization to initiate and maintain such a station.

Chas. B. Davenport,
Recorder.

Owing to the fact that the meeting began before the close of the fiscal year, the financial reports from the permanent secretary and the treasurer were presented informally, and the formal reports were postponed until the April meeting of the council.

In the sessions of the council and of the association the usual order of procedure was followed. Events of more general interest in these as well as during the days of the meeting may be chronicled as follows:

The first general session of the association was held on Monday, December 29, 1902, at 10 A.M., in St. Matthews Church. It was called to order by the retiring President, Professor Asaph Hall, U.S.N., who introduced the President-elect, Dr. Ira Remsen. Cordial addresses of welcome were delivered by Dr. Charles D. Walcott, in behalf of the Washington Academy of Sciences and other scientific societies; the Hon. Henry B. F. Macfarland, on behalf of the District of Columbia; Hon. David J. Hill, on behalf of the National Government; and Dr. Charles W. Needham, President of Columbian University, on behalf of the educational institutions of Washington. To these President Remsen responded.

At one o'clock P.M. on Monday the local committee invited visiting scientific people to a luncheon at the Arlington, and on the same afternoon the address of the vice-

presidents, now in course of publication in SCIENCE, were given as follows:

At 2:30 P.M.:

Vice-President Hough before the Section of Mathematics and Astronomy on the third floor of the Columbian University, main building.

Vice-President Franklin before the Section of Physics on the second floor of the Columbian University Law School (Lecture Hall A). Subject: 'Limitations of Quantitative Physics.'

Vice-President Weber before the Section of Chemistry on the second floor of the Columbian University Medical School. Subject: 'Incomplete Observations.'

Vice-President Culin before the Section of Anthropology on the first floor of the Columbian University Law School. Subject: 'New World Contributions to Old World Culture.'

Vice-President Welch before the Section of Physiology and Experimental Medicine in the main lecture room, first floor, main building of the Columbian University.

At 4 P.M.:

Vice-President Flather before the Section of Mechanical Science and Engineering on the second floor of the Columbian University Law School (Lecture Hall B). Subject: 'Modern Tendencies in the Utilization of Power.'

Vice-President Nutting before the Section of Zoology on the second floor of the Columbian University Medical School. Subject: 'Some of the Perplexities of a Systematist.'

Vice-President Campbell before the Section of Botany on the first floor of the Columbian University Medical School. Subject: 'The Origin of Terrestrial Plants.'

Vice-President Wright before the Section of Social and Economic Science in the main lecture room, first floor, main building of Columbian University. Subject: 'The Psychology of the Labor Question.'

At this hour also was delivered the address of the president of the Astronomical and Astrophysical Society of America, Professor Simon Newcomb.

The annual address of the retiring president, Professor Asaph Hall, U.S.N., read on Monday evening, was published in the last issue of SCIENCE. At its close Past-President C. S. Minot spoke of the new movement on which the association has entered.

On Tuesday evening the address of the president of the American Chemical Society, Dr. Ira Remsen, was given and followed by the annual dinner of the society.

At the same time Dr. C. Hart Merriam delivered the public lecture of the American Society of Naturalists on 'Protective and Directive Coloration of Animals with Especial Reference to Birds and Mammals,' which was followed by the smoker of the American Society of Naturalists and its affiliated societies. At the same time the Botanical Society of Washington received visiting botanists. The Sigma Xi Scientific Society also met the same evening.

On Wednesday afternoon at 3 o'clock the annual discussion of the American Society of Naturalists was held. The subject was 'How can Endowments be used most Effectively for Scientific Research?' and the speakers were Professors T. C. Chamberlin, William H. Welch, Franz Boas, William M. Wheeler, Conway Macmillan and Hugo Münsterberg.

On Wednesday afternoon at 4 o'clock a public lecture was given under the auspices of the A. A. A. S. and the National Geographic Society on 'Volcanoes of the West Indies,' by Professor I. C. Russell.

Mrs. Chas. D. Walcott gave a tea on Wednesday afternoon at 5 o'clock to visiting ladies of the association, and to the members of the Geological Society of America.

On Wednesday evening the annual dinner of the American Society of Naturalists was held, and the dinner was followed by the address of the president, Professor J. McK. Cattell.

The annual dinner of the Geological Society of America and a smoker tendered by the Chemical Society of Washington were also held.

On Thursday evening, through the courtesy of the board of regents and the secretary of the Smithsonian Institution, the U. S. National Museum was open from

8:30 to 11 P.M., to afford a convenient opportunity for viewing the collections.

On Friday afternoon at 4 o'clock an illustrated public lecture complimentary to the citizens of Washington was given at the Lafayette Opera House, by Professor John Hays Hammond, on 'King Solomon's Mines, or the Mines of Ophir.'

On Friday evening the trustees of the Corcoran Art Gallery and the local committee tendered a reception to the visiting members of the association and the affiliated societies at the Corcoran Art Gallery, from 8:30 to 11 o'clock. On Friday evening also was held the dinner of the American Alpine Club.

On Saturday morning at 10 o'clock the President of the United States received the members of the A. A. A. S. and affiliated societies at the White House.

Resolutions of thanks for courtesies extended were offered by Ex-President Minot and unanimously adopted at the closing general session. The institutions and individuals to whom the association was especially indebted include: Columbian University, Cosmos Club, Local Committee and its secretary (Dr. Benjamin), St. Matthew's Church, Georgetown University, Caroll Institute, Press of Washington, Trustees of Corcoran Art Gallery, the President of the United States, secretary of the Smithsonian Institution, acting director of the U. S. National Museum, director of the Naval Observatory, U. S. commissioner of Fish and Fisheries.

At the meeting of the general committee on Thursday evening it was decided to hold the next meeting of the association in St. Louis during convocation week, 1903–4, and to recommend Philadelphia as the place of the following meeting. The following were elected officers for the St. Louis meeting:

President—Carroll D. Wright, Washington.

Vice-Presidents—Section A, Mathematics and Astronomy, O. H. Tittmann, Washington; B, Physics, E. H. Hall, Harvard University; C, Chemistry, W. D. Bancroft, Cornell University; D, Mechanical Science and Engineering, C. M. Woodward, Washington University; E, Geology and Geography, I. C. Russell, University of Michigan; F, Zoology, E. L. Mark, Harvard University; G, Botany, T. H. Macbride, University of Iowa; H, Anthropology, M. H. Saville, American Museum of Natural History; I, Social and Economic Science, S. E. Baldwin, New Haven; K, Physiology and Experimental Medicine, H. P. Bowditch, Harvard University.

Permanent Secretary—L. O. Howard, Cosmos Club, Washington.

General Secretary—Chas. W. Stiles.

Secretary of the Council—Chas. S. Howe, Case School.

Secretaries of the Sections.—Section A, Mathematics and Astronomy, L. G. Weld, University of Iowa; B, Physics, D. C. Miller, Case School; C, Chemistry, A. H. Gill, Massachusetts Institute of Technology; D, Mechanical Science and Engineering (none proposed); E, Geology, G. B. Shattuck, Baltimore; F, Zoology, C. Judson Herrick, Denison University; G, Botany, F. E. Lloyd, Teachers College, Columbia University; H, Anthropology, R. B. Dixon, Harvard University; I, Social and Economic Science, J. F. Crowell, Washington; K, Physiology and Experimental Medicine, F. S. Lee, Columbia University.

Treasurer.—R. S. Woodward, Columbia University, New York, N. Y.

Henry B. Ward,
General Secretary.
The University of Nebraska.

*MODERN TENDENCIES IN THE UTILIZATION OF POWER.**

It has been stated that to the construction and perfection of her machinery, more than to any other cause, may be ascribed the present commercial supremacy of the United States.

Be that as it may, the economical production of her manufactures and the convenient adaptations of time and labor

* Address of the chairman of Section D, Engineering and Mechanical Science, and vice-president of the American Association for the Advancement of Science. Read at the Washington meeting, December 29, 1902.