

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.

EDITORIAL COMMITTEE: S. NEWCOMB, Mathematics; R. S. WOODWARD, Mechanics; E. C. PICKERING Astronomy; T. C. MENDENHALL, Physics; IRA REMSEN, Chemistry; CHARLES D. WALCOTT, Geology; W. M. DAVIS, Physiography; HENRY F. OSBORN, Paleontology; W. K. BROOKS, C. HART MERRIAM, Zoology; S. H. SCUDDER, Entomology; C. E. BESSEY, N. L. BRITTON, Botany; C. S. MINOT, Embryology, Histology; H. P. BOWDITCH, Physiology; WILLIAM H. WELCH, Pathology; J. McKEEN CATTELL, Psychology.

FRIDAY, DECEMBER 4, 1903.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

CONTENTS:

| | |
|---|-----|
| <i>The American Association for the Advancement of Science</i> | 705 |
| <i>The Typical College Courses dealing with the Professional and Theoretical Phases of Electrical Engineering</i> : PROFESSOR DUGALD C. JACKSON | 710 |
| <i>The British Association for the Advancement of Science—Section of Anthropology</i> : DR. GEORGE GRANT MACCURDY..... | 716 |
| <i>Societies and Academies:—</i> | |
| <i>Biological Society of Washington</i> : F. A. LUCAS. <i>The Philosophical Society of Washington</i> : CHARLES K. WEAD. <i>The New York Academy of Sciences, Section of Anthropology and Psychology</i> : PROFESSOR J. E. LOUGH. <i>Section of Astronomy, Physics and Chemistry</i> : DR. S. A. MITCHELL. <i>Clemson College Science Club</i> : F. S. SHIVER.... | 722 |
| <i>Discussion and Correspondence:—</i> | |
| <i>Visual Phenomenon</i> : DR. PERSIFOR FRAZER. | 729 |
| <i>Shorter Articles:—</i> | |
| <i>A Fruiting Stage of Rhizoctonia Solani</i> : F. M. ROLFS. <i>Results of the Resurvey of Long Island</i> : M. L. FULLER, A. C. VEATCH. | 729 |
| <i>Current Notes on Meteorology:—</i> | |
| <i>Blood Counts at High Altitudes; West India Hurricanes; Cloud Observations at Simla</i> : PROFESSOR R. DEC. WARD..... | 731 |
| <i>Sanitation and the Panama Canal</i> | 732 |
| <i>Resolutions of the Faculty of Cornell University on the Death of Professor Robert H. Thurston</i> | 732 |
| <i>Scientific Notes and News</i> | 733 |
| <i>University and Educational News</i> | 736 |

The fifty-third annual meeting of the American Association for the Advancement of Science, and the second of the convocation week meetings, will be held in St. Louis, Mo., on December 28, 1903, to January 2, 1904.

A meeting of the executive committee of the council (consisting of the general secretary, the secretary of the council, the permanent secretary, and the secretaries of all of the sections), will be held at the office of the permanent secretary, in the Southern Hotel, Broadway and Walnut Sts., at noon on Saturday, December 26.

The opening session of the association will be held at 10 o'clock A.M., on Monday, December 28, in the auditorium of the Central High School building.

A railway rate for one and one third on the certificate plan has been granted by several railways, and it is expected that this rate will be granted by all the railways of the country.

The headquarters of the association will be at the Southern Hotel, and the Planters Hotel will be selected as headquarters for some of the affiliated societies.

For further matters relating to the local arrangements, transportation and hotel and boarding-house accommodations, address the local secretary, Professor A. S.

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.

Langsdorf, Washington University, St. Louis, Mo.

For information relating to the presentation of papers, members should address the secretaries of the respective sections. Titles and abstracts of papers should be sent promptly to the secretaries, or to the permanent secretary. Blank forms upon which abstracts may be filled out will be forwarded. The post-office addresses of the several secretaries are given in the list of officers following this general announcement.

Nominations to membership and letters relating to the general business of the association should be sent to the permanent secretary at the address given herewith. It is strongly urged that each member reading this announcement should at least make an effort to secure the nomination of some desirable new member.

Members paying their dues before December 20 will receive their tickets by mail at once, and will thus save time in registering on their arrival at St. Louis, provided they bring their tickets with them.

The register for the St. Louis meeting will be open at 10 A.M., on Saturday, December 26, at the general office of the local and permanent secretaries in the Central High School Building.

L. O. HOWARD,

*Permanent Secretary, Cosmos Club,
Washington, D. C.*

Officers for the meeting are as follows:

President: Carroll D. Wright, Commissioner of Labor, Washington, D. C.

Vice-Presidents: (A) *Mathematics and Astronomy*—Otto H. Tittmann, Coast and Geodetic Survey, Washington, D. C. (B) *Physics*—E. H. Hall, Harvard University, Cambridge, Mass. (C) *Chemistry*—W. D. Bancroft, Cornell University, Ithaca, N. Y. (D) *Mechanical Science and Engineering*—C. M. Woodward, Washington University, St. Louis, Mo. (E) *Geology and Geography*—I. C. Russell, University of Michigan, Ann Arbor, Mich. (F) *Zoology*—Edward L. Mark, Harvard

University, Cambridge, Mass. (G) *Botany*—T. H. MacBride, University of Iowa, Iowa City, Iowa. (H) *Anthropology*—M. H. Saville, American Museum of Natural History, New York, N. Y. (I) *Social and Economic Science*—Simeon E. Baldwin, New Haven, Conn. (K) *Physiology and Experimental Medicine*—H. P. Bowditch, Harvard University, Cambridge, Mass.

Permanent Secretary: L. O. Howard, Cosmos Club, Washington, D. C.

General Secretary: Ch. Wardell Stiles, Public Health and Marine Hospital Service, Washington, D. C.

Secretary of the Council: Charles S. Howe, Case School, Cleveland, Ohio.

Secretaries of the Sections: (A) *Mathematics and Astronomy*—L. G. Weld, University of Iowa, Iowa City, Iowa. (B) *Physics*—Dayton C. Miller, Case School, Cleveland, Ohio. (C) *Chemistry*—C. L. Parsons, New Hampshire College, Durham, N. H. (D) *Mechanical Science and Engineering*—Wm. T. Magruder, Ohio State University, Columbus, Ohio. (E) *Geology and Geography*—G. B. Shattuck, Johns Hopkins University, Baltimore, Md. (F) *Zoology*—C. Judson Herrick, Denison University, Granville, Ohio. (G) *Botany*—F. E. Lloyd, Teachers' College, Columbia University, New York, N. Y. (H) *Anthropology*—Geo. H. Pepper, American Museum of Natural History, New York, N. Y. (I) *Social and Economic Science*—J. F. Crowell, Bureau of Statistics, Washington, D. C. (K) *Physiology and Experimental Medicine*—Frederic S. Lee, Columbia University, New York, N. Y.

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

The local committee includes:

Honorary President: David R. Francis.

President: William Trelease.

Vice-Presidents: First Vice-President, C. M. Woodward. Second Vice-President, F. Louis Soldan. Third Vice-President, R. H. Jesse.

Treasurer: William H. Thomson.

Secretary: Alexander S. Langsdorf.

Executive Committee: William Trelease, Chairman; Geo. H. Morgan, Secretary; William H. Thomson, Treasurer; W. S. Chaplin, A. S. Langsdorf, F. E. Nipher, John Schroers, Walter B. Stevens, William Taussig, H. C. Townsend.

PRELIMINARY PROGRAM.

At the first general session, to be held at 10 A.M., the meeting will be called to order

by the retiring president, Dr. Ira Remsen, who will introduce the president-elect, the Hon. Carroll D. Wright, and short addresses of welcome and announcements will be made. The retiring president will give his address at the Odeon in the evening, and in the afternoon the addresses of the retiring vice-presidents will be given, as follows:

At 2:30 P.M.

Vice-president Halsted before the Section of Mathematics and Astronomy.

Vice-president Baskerville before the Section of Chemistry.

Vice-president Davis before the Section of Geology.

Vice-president Dorsey before the Section of Anthropology.

At 4 P.M.

Vice-president Nichols before the Section of Physics.

Vice-president Waldo before the Section of Mechanical Science and Engineering.

Vice-president Hargitt before the Section of Zoology.

Vice-president Coville before the Section of Botany.

Vice-president Newcomb before the Section of Social and Economic Science.

The sections will meet daily immediately after the adjournment of the general session, and from that time until one o'clock, and then after an intermission of one hour for luncheon, from two to five, except on Thursday afternoon which will be devoted to a visit to the exposition grounds. For details the daily programs, to be had of the local secretary and in the section rooms, should be consulted.

Though other evening sessions may be announced later, the local committee now has knowledge of only the following evening events:

Monday Evening.—The retiring president of the association, President Ira Remsen, of the Johns Hopkins University, will deliver his address in the Odeon, at the corner of Grand and Finney Avenues, at eight o'clock. The subject, which will be

of general interest, will be announced later. The public are invited to attend.

Tuesday Evening.—Sections D and F are likely to hold evening sessions.

The American Association and the American Society of Naturalists hope to secure a lecture, complimentary to the citizens of St. Louis, on a subject of general interest and by a speaker of international reputation, in the auditorium of the Central High School, at eight o'clock; if so due announcement will be made.

At nine o'clock the American Society of Naturalists and affiliated societies will hold their annual smoker at the University Club, Grand and Washington Avenues.

Wednesday Evening.—Section D is likely to hold an evening session.

The retiring president of the American Chemical Society, Dr. John H. Long, will deliver his address in Room 102, at 7:30 o'clock. His subject is 'Some Problems in Fermentation.'

The annual election of the American Society of Naturalists will be held at the Mercantile Club, Seventh and Locust Streets, at 6:45. At seven o'clock, in the same place, will be given the annual dinner of the society, followed by the address of the retiring president, Professor William Trelease. Members of this society and of the societies affiliating with it are requested to register for the dinner as soon as possible after reaching the city, at the desk of the local secretary, who will receive payment for and issue tickets—to be taken up at the dinner.

Thursday Evening.—The regular meeting of the general committee of the association, consisting of the council and one member from each section, will be held at the hotel office of the permanent secretary, at the Southern Hotel, at eight o'clock, to elect officers and decide upon the time and place of the next meeting.

The annual banquet of the Sigma Xi

Honorary Scientific Society will be given at the Mercantile Club, Seventh and Locust Streets, at seven o'clock. The banquet will be followed by an address by President David Starr Jordan, of the Leland Stanford Junior University. Members are requested to register and procure tickets for the banquet, at the desk of the local secretary, as soon as possible after arriving in St. Louis.

Friday Evening.—The fourteenth banquet to the Trustees of the Missouri Botanical Garden and their guests, provided for in the will of the founder of the garden, will be given at an hour and place to be announced later.

ENTERTAINMENTS.

In providing entertainment for their scientific guests, the local committee has tried to avoid interference with the regular sessions of the association and affiliated societies, and the season of the year at which the meeting is held and the need of a prompt return to their university duties felt by most of their guests have prevented the committee from planning for excursions such as they would have found pleasure in providing under other circumstances. They take pleasure, however, in announcing the following features, which will be more fully detailed in the daily programs.

By invitation of the officers of the Louisiana Purchase Exposition, members of the association and affiliated societies will, on one of the days of their meeting, proceed in specially provided cars to the World's Fair grounds, immediately after the noon adjournment. On the grounds, they will be tendered a buffet luncheon by the officers of the exposition, after which, in parties of suitable size, they will be taken through the buildings and shown the progress of installation of the exhibits under the personal charge of the chiefs of

departments, under whom the installation is being made.

The chemists are invited to visit the great breweries, either in a body or as individuals, and promised every courtesy in inspecting these and other features of interest to them.

The geologists will receive every possible courtesy from the managers of the smelting and similar establishments of the city which they may find it possible to visit, and it is probable that those who care to do so will have the privilege of visiting the great lead mines of southeastern Missouri, if they can spare a day for this purpose.

The engineers will be enabled to visit the historical Eads Bridge over the Mississippi River, the pumping plant and settling basins furnishing the city water supply, and other points of interest to them, as well as the engineering features of the exposition, of which a special study will be made.

The botanists are invited to visit the Missouri Botanical Garden, either in a body or individually, and are promised every aid that can make their visit pleasurable or profitable.

In addition to the address by the president of the American Association, to be given in the Odeon on Monday evening, it is expected that one other public lecture, complimentary to the citizens of St. Louis will be delivered on another evening by a speaker of international reputation on a subject of both scientific and general interest.

The entertainment committee proposes to furnish luncheon in the high school building, so that members may meet together and without being under the necessity of leaving the building for this purpose. It is expected that courtesies will be extended by a local ladies' club to ladies in attendance at the meetings, and the city clubs, the trustees of the Missouri Botanical Garden, the Academy of Science, and other

local organizations will do what is in their power to make the week a pleasant one to those who attend the meetings.

AFFILIATED SOCIETIES.

The following societies have indicated their intention to meet in St. Louis, in convocation week, in affiliation with the American Association for the Advancement of Science or with the American Society of Naturalists. For further details, the daily programs should be consulted.

The American Anthropological Association will meet in affiliation with Section H. President, W. J. McGee; Secretary, George A. Dorsey, Field Columbian Museum, Chicago, Ill.

The American Chemical Society will meet on Monday and Tuesday. Hotel headquarters will be at the Southern. Meetings will be held in affiliation with Section C. The address of the retiring president, Dr. John H. Long, on 'Some Problems in Fermentation,' will be given in Room 102 of the high school, on Wednesday evening, at 7:30. President, John H. Long; Secretary, Wm. A. Noyes, Johns Hopkins University, Baltimore, Md.

The American Mathematical Society—Chicago Section will meet on Thursday and Friday in affiliation with Section A of the Association. Titles and abstracts of papers should be in the hands of the secretary not later than Saturday, December 12. Secretary, Thomas F. Holgate, Northwestern University, Evanston, Ill.

The American Microscopical Society will meet, probably on Tuesday. A stereopticon will be provided for the use of members. President, T. J. Burrill; Secretary, H. B. Ward, Lincoln, Nebraska.

The American Physical Society will meet in affiliation with Section B. President, Arthur G. Webster; Secretary, Ernest Merritt, Cornell University, Ithaca, New York.

The American Psychological Association

will meet on Tuesday and Wednesday. President, W. L. Bryan; Secretary, Livingston Farrand, Columbia University, New York, N. Y.

The American Society of Naturalists will meet on Tuesday and Wednesday. The public discussion, on 'What Academic Degrees should be conferred for Scientific Work,' will be held on Wednesday afternoon, and the annual dinner will be given at the Mercantile Club, on Seventh and Locust Streets, Wednesday evening. Members of this and affiliated societies are requested to register and procure tickets for the dinner at the local secretary's office as early as possible in the week. President, William Trelease; Secretary, Ross G. Harrison, Johns Hopkins Medical School, Baltimore, Maryland.

The American Society of Zoologists—Central Branch will meet in affiliation with Section F. President, J. E. Reighard; Secretary, Frank Smith, University of Illinois, Urbana, Ill.

The Association of Economic Entomologists will meet on Tuesday and Wednesday. President, M. V. Slingerland; Secretary, A. F. Burgess, Columbus, Ohio.

The Association of Plant and Animal Breeders will hold its first meeting on Tuesday, Wednesday and Thursday. Chairman, W. M. Hays, St. Anthony Park, Minn.

The Astronomical and Astrophysical Society of America will meet in affiliation with Section A. President, Simon Newcomb; Secretary, George C. Comstock, University of Wisconsin, Madison, Wis.

The Botanical Club of the Association will probably meet as convenient times.

The Botanical Society of America will meet on Tuesday, Wednesday and Thursday. The address of the retiring president, Dr. B. T. Galloway, will be on 'What the Twentieth Century demands of Botany.' President, Charles Reid Barnes;

Secretary, Daniel T. MacDougal, Botanical Garden, Bronx Park, N. Y.

The Central Botanists' Association will meet in affiliation with Section G. President, Conway MacMillan; Secretary, C. F. Millspaugh, Field Columbian Museum, Chicago, Ill.

The Entomological Club of the Association will meet at convenient times. President, E. A. Schwarz; Secretary, C. L. Marlatt, Department of Agriculture, Washington, D. C.

The Fern Chapter will meet at times to be announced. President, B. D. Gilbert; Secretary, H. D. House, Botanical Garden, Bronx Park, New York, N. Y.

The Geological Society of America will meet on Wednesday at its hotel headquarters, at the Southern. Subsequent sessions may be held in room 210 of the high school. President, S. F. Emmons; Secretary, H. L. Fairchild, Rochester, N. Y.

The Sigma Xi Honorary Scientific Society will meet at a time to be announced later. The annual banquet, to be followed by an address by Dr. David Starr Jordan, will be given at the Mercantile Club, Seventh and Locust Streets, on Thursday evening at seven o'clock. Members are requested to register and procure tickets for the banquet, at the desk of the local secretary, as early as possible in the week. President, S. W. Williston; Secretary, E. S. Crawley, University of Pennsylvania, Philadelphia, Pa.

The Society for Horticultural Science will hold its first regular meeting on Monday and Tuesday. President, L. H. Bailey; Secretary, S. A. Beach, Experiment Station, Geneva, N. Y.

The Society for the Promotion of Agricultural Science will hold its quatercentennial meeting on Monday. President, William Frear; Secretary, F. M. Webster, Urbana, Ill.

All members of affiliated societies who are not members of the American Association for the Advancement of Science are nevertheless requested to register at the desk of the local secretary, so that an approximate record may be made of the total number of scientific men in attendance at the convocation week meetings. Members of the American Society of Naturalists and its affiliated societies, and of the Sigma Xi Honorary Scientific Society are also requested to procure tickets for the annual dinners of these societies from the local secretary as soon as possible after arrival, so that arrangements for the dinners may be perfected.

THE TYPICAL COLLEGE COURSES DEALING
WITH THE PROFESSIONAL AND THEORETICAL PHASES OF ELECTRICAL
ENGINEERING.*

At the Chicago meeting of the American Institute of Electrical Engineers held eleven years ago, I presented a paper relating to the subject now under discussion. The proposed subject then apparently created some consternation amongst the members of the committee on papers, who seemed to fear that it was not of sufficient interest to the society. The old prejudice still held against 'college men' in the minds of so-called 'practical men' who had grown influential in engineering practice without having had experience of college life and training. Happily the foundation for this prejudice has ere this been destroyed through the influence of the industrial results achieved by college men. The old prejudice, so far as it now exists, has more particularly drifted into the way of criticism of the engineering schools rather than their graduates, and the character of the schools and the training they afford are

* Paper read at the joint session of the American Institute of Electrical Engineers and the Society for the Promotion of Engineering Education, held at Niagara Falls on July 3, 1903.