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SOME FEATURES OF THE CHICAGO MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND OF THE ASSOCIATED SOCIETIES, DECEMBER 27, 1920, TO JANUARY 1, 1921

THE Chicago meeting will be the seventy-third meeting of the association. It will be one of the larger and more comprehensive meetings, which are scheduled to be held every fourth year. It promises to be a greater meeting than any earlier one. Every American interested in science or education should attend if possible and should do all in his power to insure the success of the meeting for every branch of scientific and educational work.

Dr. L. O. Howard, Chief of the Bureau of Entomology, of the United States Department of Agriculture, is president-elect and will preside at the Chicago meeting. He has been permanent secretary of the association for twenty-two years, during which the membership of the organization has increased from 1,729 to nearly 12,000. The meetings held during his secretaryship have been increasingly successful and influential.

The address of the retiring president, to be given at the opening general session on the evening of December 27, will be by Dr. Simon Flexner, Director of the Rockefeller Institute for Medical Research.

There will be two other general sessions at the Chicago meeting planned to be of interest not only to all scientific workers and all members of the association but also to the general public. One of these general-interest sessions will be devoted to an illustrated lecture on High-Power Fluorescence and Phosphorescence, by Professor Robert W. Wood, of the physics department of the Johns Hopkins University. The other of these sessions will

be devoted to an illustrated lecture on The Volcanic Region of Katmai, Alaska, by Dr. Robert E. Griggs, of the Katmai Expeditions, National Geographic Society.

Thirty-seven associated societies, many of which are affiliated with the association, will meet with it at Chicago, and their sessions will generally be open to members of the association and the public. The retiring presidents of many of these societies will read presidential addresses. Also, each of the sections of the association, representing different fields of science, will hold its annual session, and the retiring vice-presidents for the sections will each present an address on some broad aspect of his own field. Also, many invitation papers will be read before the sections.

The geographical location of Chicago assures a large attendance and an exceptionally good representation of all branches of scientific endeavor. There have been two meetings of the American Association held at Chicago, one in August, 1868 (with an attendance of 259 and a total membership of 686), and the other at the end of 1907 (with an attendance of 725 and a total membership of 5,114).

For the advancement of science, for the progress of real education, and for the increase of knowledge and of the appreciation of knowledge—which is wisdom—among the people of America, it is especially desirable that this Chicago meeting should be well attended. This meeting will be the first of the larger four-year meetings since the close of the recent war and it will be the most centrally located of the four-year meetings for the next twelve years.¹ The war resulted in an increased appreciation of scientific and educational endeavor and it is of prime importance for the immediate future of American civilization that public interest in the work of the association be encouraged in all possible ways and with the least possible delay. A large and enthusiastic meeting of the association and of the societies associated with it

¹ The 1924-25 meeting will occur at Washington and that for 1928-29 will occur at New York; the 1932-33 meeting will be again at Chicago.

will aid much in this direction, especially at the present time and at such a favorable location as Chicago.

It is therefore hoped that each member of the association and of the associated societies will make special effort to be present at Chicago, considering the matter not only from the ordinary personal standpoint but also with respect to its broader aspects that bear upon the most important features of the public welfare. To the individual, the question as to whether or not he will decide to attend the Chicago meeting is not only one regarding the assured benefit he will personally receive by attending; it also involves even the more important question of how much his presence would aid in making the meeting a success and in thus furthering the growth of well-founded civilization.

The local committee for the Chicago meeting has arranged for the association headquarters to be at the Congress Hotel and has cooperated with the secretaries of associated societies planning to meet with the association, so that headquarters hotels have been designated for these societies. Information regarding seventeen Chicago hotels is given in the announcement. The registration room (in the Reynolds Club, the University of Chicago, 57th St. and University Ave.) will be in telephonic connection with the hotels. Information regarding these, and also about other hotels and rooms in the vicinity of the university, may be had at the information desk in the registration room.

The general sessions of the association, and the sessions of the various sections and associated societies, will occur mainly in the buildings of the University of Chicago, under the auspices of which this meeting is to be held. Specific information regarding the meeting-places of the sections and societies will be given in the General program of the meeting, which will be available on the morning of December 27. Guide-signs and placards will be in evidence where needed, and inquiries may be made at the information desk in the registration room. The three general sessions of the association (evenings of

December 27, 28 and 29) will be held in Mandel Hall, entrance under the Tower, on 57th St. just west of University Ave.

There will be three general sessions of the association at Chicago, as follows:

1. Monday, December 27, 8 P.M., Mandel Hall, the University of Chicago. Opening addresses, followed by the address of the retiring president of the association, Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, New York City. Dr. Flexner will speak on "Twenty-five years of bacteriological research. A fragment of medical science." The presentation of Dr. Flexner's address will be followed by a general reception, to which are invited all members and friends of the American Association and of the associated societies, and all persons interested in science and education.

2. Tuesday, December 28, 8:15 P.M., Mandel Hall. Dr. Robert W. Wood, professor of physics in the Johns Hopkins University, will give a lecture, with demonstrations, on "High power phosphorescence and fluorescence." This lecture will involve recent important developments in the physics of light, presented in such a way as to be readily understood by every one. The experimental demonstrations will be especially interesting.

3. Wednesday, December 29, 8:15 P.M., Mandel Hall. Dr. Robert E. Griggs, of the Katmai Expeditions, National Geographical Society, will give an illustrated lecture on "The volcanic region of Katmai, Alaska." The illustrations will be by stereopticon slides and motion pictures and will be of fascinating interest.

The Wild-Flower Preservation Society will hold a reception to visiting scientists on Tuesday, December 28, at 8 P.M., in the Chicago Art Institute (Michigan Avenue near the Van Buren Street station of the Illinois Central Railway). Visitors will have opportunity to inspect an exhibit of flower portraits, special preparations, etc., which will then be installed in the Art Institute. Mrs. Charles L. Hutchinson is president of the society and Mrs. Charles Scribner Eaton is secretary.

The session programs of the associated societies and of the sections of the association (these programs being in the hands of the society and section secretaries) will be announced in the general program of the meeting, which will be available at the registration room (Reynolds Club, University Avenue and 57th Street) at 9 A.M. on Monday, December 27. Members of the association not attending the meeting, who desire to receive copies of the general program, will be supplied from the permanent secretary's Washington office after January 5, 1921 (as long as copies are available), if they make this request in a letter to the permanent secretary. The session programs, together with abstracts of papers, will be published in *SCIENCE*, the official publication of the association, during the early part of the new year.

Many joint meetings, dinners, smokers, etc., will be held at Chicago during the meeting, by the several associated societies and the sections of the association. These will be announced in the general program.

One of the important features of the association meetings has long been the opportunity offered for personal contacts among scientific and educational workers and their friends, but it is frequently somewhat difficult for one to find out whether a certain person is present or not and where he is staying if present. An attempt will be made at the Chicago meeting to remove the difficulty just mentioned, by maintaining a continuously corrected directory of all registrants. This directory will be conveniently placed in the registration room and may be readily consulted at any time. It will consist of a series of slips posted in a suitable place, arranged in a single alphabet by surnames. Each slip will show the name of the registrant, his home address and the name of the hotel, etc., where he is stopping for the meeting. Only a few minutes will elapse between the presentation of the registration card at the desk and the appearance of the corresponding slip in the visible directory. It is hoped that this arrangement will prove a source of satisfaction to those in attendance.

By a statement in the By-Laws of the association (Art. X., Sec. 1), "only members who have paid their dues shall enjoy the privileges of the meetings." The three general sessions will be the only occasions for any restriction of admission at the Chicago meeting. Members in good standing and associates for the meeting will enjoy all the privileges, including the general sessions. As set forth in the preceding section of this announcement, registered members and associates are to have the privilege of introducing guests for the general sessions. Members of associated societies who are not members or associates of the association are guests of the association for the three general sessions, but they do not have the privilege of introducing guests.

Students actually in attendance at the University of Chicago are to be guests of the association, in the same way as are members of associated societies. Others may receive the privilege of the general sessions by applying in the registration room, but it is hoped that the cooperative nature of the association will lead most persons of this group to become either members or associates. It is to be remembered that the work of the association requires funds and that the only available source of funds for this work is the dues paid by members and associates. The association does not wish to restrict the benefits of its meetings, but it must emphasize the fact that these are possible only through the loyal cooperative support of those who are interested in scientific advance and in the spread of knowledge.

Delegates to the Chicago meeting from scientific and educational institutions should promptly register as such. They will receive all the privileges of the meeting, as in the case of registered members and associates, except that of voting.

No special program of entertainment for visiting women is planned for the Chicago meeting. The local committee announces, however, that Ida Noyes Hall will be open to visiting women throughout the meeting, including the use of the dining and club facilities of this hall, which is perhaps the finest club for women that has ever been built. Vis-

iting women will wish to inspect Ida Noyes Hall and its various arrangements. The building cost nearly half a million dollars. It will serve as a meeting-place and resting place for women during the meeting, better than has ever been enjoyed at any previous meeting of the association.

Dining-room service will be maintained throughout the meeting, at the University of Chicago Commons and at Ida Noyes Hall.

Persons attending the Chicago meeting may have mail, etc., addressed to them in the care of the American Association for the Advancement of Science, Registration Office, Reynolds Club, the University of Chicago, Chicago, Ill. They should call at the registration room daily, to inspect the personal bulletin, which will be conveniently located for quick inspection. If a person's name appears on this bulletin, it means that he should enquire at the proper desk for mail, etc. At the close of the meeting, or upon leaving, those in attendance are urged to leave a forwarding address for mail, etc. If this is not done, letters, etc., that are not delivered must be taken to Washington and resent from there, to the addresses shown in the files of the permanent secretary's office.

It has been impossible to secure any reduction in railroad rates for those attending the Chicago meeting. This matter is receiving serious attention and it is hoped that arrangements may be made by which reduced rates may be granted to the association for future years.

Members of the association and of associated societies who present papers at the Chicago meeting should come provided with abstracts of their papers, clearly and popularly presented, for the use of the Chicago press. All such material is to be given out through the publicity office of the local committee which will be in charge of Mr. Gilbert A. Bliss, of the local committee. It is hoped that all those in attendance will take an interest in this aspect of the meeting and that they will cooperate with Mr. Bliss, to the end that a suitable publicity may be obtained. This is a very

important feature in the work for which the association exists.

Those in attendance at the meeting may obtain information of all sorts by applying at the information desk in the registration room. Before the meeting, information may be obtained from the secretaries of the sections or of the associated societies (regarding programs, etc.), from the chairman of the local committee, Professor J. Paul Goode, of the University of Chicago regarding local arrangements, or from the permanent secretary's office in Washington regarding general association affairs.

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A MORE NEARLY RATIONAL SYSTEM OF UNITS

SYSTEMS of units for physical magnitudes are designed to permit arithmetical calculations on the basis of known physical laws, and the test of the efficiency of any system is the extent to which it facilitates such computations. There are two ways, in particular, in which this can be accomplished: first, by relating the units of any one magnitude in a manner consistent with the system of arithmetic in use; with a decimal arithmetic this requires that the ratio of such units be a power of 10, *e. g.*, the erg and the joule; second, by so relating the units of different "dimensions" as to prevent the appearance of arbitrary and irrational factors in the equations expressing the fundamental laws of natural science, *e. g.*, the "gas law" should take the form "pressure = concentration \times temperature" ($P = CT$) rather than "pressure is proportional to concentration \times temperature" ($P = CRT$). The failure of the "English" system of weights and measures to meet these requirements is a matter of common knowledge, but it seems worth while to point out

¹Forty-first Contribution from the Color Laboratory of the Bureau of Chemistry, Washington, D. C.

how little superior in these respects is the present "metric" system.

The common basis of both these systems of physical and chemical units comprises: (1) the decimal arithmetic, (2) the mean solar second and (3) the table of atomic weights based on $O \equiv 16$. It is not intended here to discuss these fundamentals, beyond pointing out that no one of them is entirely rational, and if they are retained it will be only because the difficulties in the way of superseding them outweigh the advantages of a change. The purpose of this paper is an inquiry whether on this common foundation there can be constructed a system of units superior to either of the two now in common use.

1. Two systems of arithmetic with a base other than 10 are suggested by the methods of division of units in the case of "English" weights and measures (*a*) the twelve-system, illustrated by the dozen and gross and by the divisions of the foot and the pound Troy; (*b*) the two-system, illustrated by the divisions of the inch, the gallon and the pound avoirdupois. Both modes of division are used in coinage, though not at all consistently, (*a*) in the case of the shilling of twelve pence, (*b*) in the penny of four farthings and the distinctly non-decimal division of the dollar into quarters (and even into "bits" of $12\frac{1}{2}$ cents). In a recent eulogy of the twelve-system (SCIENCE, N. S., 50, 239-242 (1919)), Dr. William Benjamin Smith says:

"This best of numerical systems is not the ten-system (which is recommended only by the fact that man has ten fingers and ten toes!) but the twelve-system, whose virtues are imbedded in the nature of number itself."

2. The humor of basing a decimal system of weights and measures on a unit of time obtained by dividing the mean solar day successively into 24, 60 and 60 parts, hardly needs emphasis. The mean solar day is the average interval between the passage of the sun across the meridian for any locality. The maximum difference between mean solar time and true solar time is 16 minutes (about November 1 of each year).

3. The change from the $H \equiv 1$ system of atomic weights to the present $O \equiv 16$ was made both because of the uncertainty of the H:O ratio and because the oxygen standard made more of the atomic weights approximate whole numbers. Re-

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