SPECIAL ISSUE CONTAINING THE REPORTS OF THE CINCINNATI MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE EDITED BY BURTON E. LIVINGSTON, PERMANENT SECRETARY

SCIENCE

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE PERMANENT SECRETARY'S REPORT ON THE CINCINNATI MEETING

GENERAL FEATURES

THE seventy-fifth anniversary of the founding of the American Association for the Advancement of Science was celebrated in the very successful seventy-eighth meeting of the association and associated societies, which occurred at Cincinnati during convocation week, from December 27 to January 2. That was the third meeting to be held at Cincinnati. It was the annual meeting for the association year 1924, which had begun October 1, 1923.

The third Cincinnati meeting was in every way successful. In some respects it greatly excelled all earlier meetings of the association. In number of persons registered as in attendance it almost equalled the Boston meeting of the previous year and it did not fall far short of the last Chicago meeting, held in December, 1920, the largest on record. The registration figures for the annual meetings of the four years just ended (1921–1924) are given below, for the sake of comparison and convenient record.

2413, Chicago, December 27, 1920, to January 1, 1921
1832, Toronto, December 27 to December 31, 1921.
2339, Boston, December 26 to December 30, 1922.
2211, Cincinnati, December 27, 1923, to January 2, 1924.

The registration record for Cincinnati was probably not nearly complete, but it was apparently more nearly complete than that for any other recent meeting. Registration by regions is shown below:

The United States

Alabama	16	Maine	5
Arizona	2	Maryland	34
Arkansas	6	Massachusetts	57
California	17	Michigan	88
Colorado	11	Minnesota	39
Connecticut	23	Mississippi	11
Delaware	4	Missouri	47
District of Columbia	97	Montana	3
Florida	6	Nebraska	10
Georgia	9	New Hampshire	12
Illinois	163	New Jersey	40
Indiana	123	New York	172
Iowa	58	North Carolina	12
Kansas	31	North Dakota	8
Kentucky	118	Ohio	626
Louisiana	7	(Cincinnati 323)	

The United States—(Continued)

Oklahoma	10	Utah	3
Oregon	2	Vermont	2
Pennsylvania	112	Virginia	26
Rhode Island	9	Washington	2
South Carolina	3	West Virginia	27
South Dakota	6	Wisconsin	57
Tennessee	30	Wyoming	5
Texas	16		

Other Countries

Canada	32	Holland	1
China	4	Japan	3
England	1	Porto Rico	1
Hawaii	3	Russia	1

Many of the societies that met with the association at Cincinnati were unable to prolong their meetings so as to include the very desirable feature of having the Sunday of convocation week for conferences and social intercourse. One of the least satisfactory features of the winter meetings in general is their frequently crowded character, and it is hoped that American scientists may gradually come to realize the importance of extending the meetings over longer periods than has hitherto been customary, thus to secure more time for discussion and personal intercourse among those in attendance. As American workers and institutions gradually become accustomed to the idea of convocation week and the general plan adopted by the association for the winter meetings,[1] and as they come to appreciate the advantages of having more time in the meeting periods that is not actually occupied by the reading of program papers, it may be that the unsatisfactory and very exhausting congestion that characterized the first three days of the Cincinnati meeting may be obviated.

At Cincinnati more than four fifths of the sessions were held in the first three days of the meeting, Thursday, Friday and Saturday, while less than one fifth of them occurred in the last three days, Monday, Tuesday and Wednesday. In order to avoid the occurrence of a Sunday in their meeting periods many societies began their sessions on Thursday, before the formal opening of the convention. There were two sessions on the Wednesday preceding the meeting, 29 on Thursday, 57 on Friday, 44 on Saturday, 21 on Monday, nine on Tuesday and four on Wednesday. The congestion during the first three days placed a very great burden on the registration staff; over 1,200 persons were registered within the first five hours on Thursday. But the work of registration was handled with great smoothness and despatch, owing to the excellent organization of the registration office, which was again in charge of Mr. Sam Woodley, executive assistant, of the Washington office.

All the 15 sections of the association were well represented in the programs and 34 societies and other organizations were also represented. Of the latter 26 are officially associated with the association, 18 of these being affiliated. Altogether, 166 scientific sessions were held, as well as a large number of business sessions, committee meetings, dinners, smokers, etc. The total number of papers and addresses at Cincinnati was about 1,140.

This meeting was held on invitation of the University of Cincinnati and of the Cincinnati Chamber of Commerce, and practically all sessions occurred either in the university buildings or in the Hughes High School near by. A few sessions were held elsewhere in the city. The registration room, the council room, etc., were in the Women's Building, which is exceptionally well suited for such purposes. Especially fine were the arrangements of the registration room. The university buildings and the Hughes High School are not far apart, and the Cincinnati meeting will be remembered as an exceptionally convenient one in this respect. Excellent luncheon facilities were provided in the cafeterias of the university and of the Hughes High School. The fine hospitality of the University of Cincinnati and of the Cincinnati people, which made this meeting such a pronounced success, will not soon be forgotten by those who were fortunate enough to be able to attend.

The hotel accommodations at Cincinnati were very excellent and satisfactory indeed and provision was made by which visitors might readily secure inexpensive lodgings for the period of the meeting in private houses of the city. The hotel headquarters of the association were at the Hotel Sinton, which placed complimentary rooms at the disposal of the general officers. The association is deeply grateful to the manager, Mr. John L. Horgan, for these courtesies, which were a very considerable contribution toward the success of the meeting.

An excellent schedule showing by days and periods all section and society session rooms for the meeting was prepared by Professor E. D. Gilman, chairman of the subcommittee on meeting places, and blue-print reproductions of this were posted in all session rooms and at other convenient points about the buildings. It was thus very easy to determine just where any given organization was holding a session at any given period. Such schedules have been prepared for earlier meetings, but they have not been reproduced and posted in many places. This feature of the Cincinnati meeting constitutes a marked step in advance.

The lanterns used at the sessions were supplied gratis by the well-known manufacturers, the Bausch and Lomb Optical Company, of Rochester, N. Y. They were of the incandescent-lamp form and their operation was beyond criticism. The association and the societies are particularly grateful to the company for the loan of these valuable instruments.

The unusually excellent preliminary arrangements

[1] See SCIENCE, Vol. LVII, No. 1465, January 26, 1923, page 106.

were made, as usual, by a local committee. The membership of the local committee for the third Cincinnati meeting was as follows: L. T. More, committee chairman; E. D. Gilman, committee secretary; Daniel Laurence, committee treasurer; A. E. Anderson, Rudolph Balke, Miss Bertha Baur, W. H. Bucher, G. P. Carrel, R. J. Condon, Mrs. H. K. Dunham, J. T. Faig, N. M. Fenneman, H. S. Fry, G. H. Gest, F. C. Hicks, D. C. Keller, J. U. Lloyd, C. N. Moore, R. E. Oesper, Thomas Quinlan, Miss J. P. Simrall, R. B. Smith, Alfred Springer, A. F. Stanley, C. P. Taft, George Warrington. Eight subcommittees of the local committee had charge of special aspects of the preliminary work. These subcommittees were as follows: *Hospitality,* George Warrington, Mrs. H. K. Dunham, Miss J. P. Simrall; *Dinners and Smokers,* H. S. Fry; *Hotels and Transportation,* Thomas Quinlan; *Meeting Places,* E. D. Gilman, L. T. More; *Exhibits,* R. E. Oesper; *General Program,* N. M. Fenneman; *Publicity,* C. N. Moore, W. H. Bucher, A. F. Stanley; *Registration,* E. D. Gilman.

The local committee named a local representative for each section of the association, whose duty it was, in consultation with the local committee and its subcommittees, to supervise the arrangement of facilities for the sessions of the section, including the societies of the section. This was a new feature of the organization of the preliminary work and it proved unusually satisfactory. A few organizations had their own local representatives, as has been usual at previous meetings, but the outcome showed clearly that the new plan is a distinct improvement. The preliminary work is at best very complicated and difficult, and an efficient organization is, of course, far more desirable than a large one.

The local representatives for the sections at Cincinnati were as follows: *Section A (Mathematics),* Louis Brand; *Section B (Physics),* S. J. M. Allen; *Section C (Chemistry),* H. S. Fry; *Section D (Astronomy),* E. I. Yowell; *Section E (Geology and Geography),* O. C. von Schlichten; *Section F (Zoological Sciences),* H. McE. Knower; *Section G (Botanical Sciences),* H. M. Benedict; *Section H (Anthropology),* H. McE. Knower; *Section I (Psychology),* B. B. Breese; *Section K (Social and Economic Sciences),* E. E. Eubank; *Section L (Historical and Philological Sciences),* C. M. Lotspeich; *Section M (Engineering),* R. S. Tour; *Section N (Medical Sciences),* Henry Page; *Section O (Agriculture),* Wendell Paddock; *Section Q (Education),* L. A. Pechstein.

During the spring and fall the local committee, the subcommittees and the local representatives were necessarily very busy and the press of exacting work increased to a climax when the meeting opened and the executive staff of the association took charge. But the work of the local committee and its subcommittees continued strenuous throughout the period of meeting and many days afterward. It is never possible to express the indebtedness of the association to these local workers who carry out the preliminary work, which is even more arduous and exacting than it is inconspicuous to the ordinary member in attendance. The better are the arrangements the less they are apt to be noticed. Because the preliminary arrangements were this year more thoroughly and efficiently made than heretofore, the association is even more grateful than usual to this local committee and its helpers. To the committee and subcommittee members, to the local representatives for the sections, to the many clerks and assistants and messengers who took part in making the Cincinnati meeting a success, the permanent secretary here expresses the cordial thanks of the association and of all who attended the great, complex, busy convention.

Also, to the University of Cincinnati, the Cincinnati School Board and the Cincinnati Chamber of Commerce are due the sincere thanks of the association and the societies that met with it at the seventy-fifth anniversary. And the members of the staff of the university in general are not to be forgotten, for these gave up their rooms and offices for the period of the meeting. To all these and also to those who generously provided the funds needed for the meeting, the hearty and appreciative thanks of the association and the societies are here emphatically expressed. It is a pleasure for the permanent secretary to place here on special record the invaluable services rendered by Dean L. T. More and Professor E. D. Gilman.

Posters announcing the Cincinnati meeting were printed and distributed from the Washington office about December first to educational and scientific institutions throughout the country, for placing on their bulletin boards, some local member of the Association being asked to attend to the proper placing of the posters in every case.

The general secretary and the permanent secretary visited Cincinnati at the end of November, to help the local committee in the later stages of the general preparations. The preliminary announcement of the meeting was published December 4 and copies were mailed not only to all whose names occurred on the roll of the Association at that time, but also to all others who were members of societies meeting with the Association at Cincinnati, so far as the societies were able to supply their membership lists to the Washington office for this purpose. The announcement is larger than any previous publication of its kind, containing 85 pages. A preliminary account of the session programs occupies 16 pages. This feature

was first introduced last year and it was greatly improved and enlarged this year. Such an account is made possible only by the cordial cooperation of the section and society secretaries, on whom the permanent secretary must depend for the material there used. Material for much of the rest of the announcement was supplied by the local committee at Cincinnati.

A second edition of the preliminary announcement was issued just before the meeting, with a few additions, corrections and improvements, and copies of this were given to all registrants. About 26,000 announcements, of both first and second editions, were distributed this year.

The general program of the third Cincinnati meeting, a book of 182 pages, with red paper cover bearing black lettering, was ready for distribution at the opening of the registration room on Thursday morning, December 27. In general style it resembles the general programs of recent meetings but shows marked improvements. In these respects as well as in size it easily surpasses all earlier programs published by the Association. The summary by days follows the plan introduced last year, but this year it is printed on tinted paper and is placed at the end of the book. This valuable feature enables each person to determine almost at a glance which of the many simultaneous sessions he may wish to attend. On cover page three of the program is a chart of the grounds of the University of Cincinnati, showing the location of buildings, walks, etc.

Three small supplements to the general program were issued, on Thursday, Friday and Saturday, respectively. These present such program material as arrived too late to be included in the program itself. They furnished opportunity for making needed corrections as well as additions. In a few cases program manuscripts were received in time for printing in the general program but too late to allow inquiry or investigation regarding words that were not clearly legible in the manuscript as sent in by the society secretary. Some of the errors that were inevitably introduced in the program itself on this account were subsequently corrected by notes in the supplements. It should be strongly and repeatedly emphasized that all manuscripts sent in for the general program ought to be very carefully edited by the secretaries who send them. Especially for manuscripts received during the last week before actual press work begins, it is not possible for the editor to give any time to the serious study of more or less illegible copy.

The general program was edited this year by Dr. Sam F. Trelease, ably assisted by Mrs. Trelease. Certain features were checked in proof by the local committee, especially the building names and room numbers. Dr. and Mrs. Trelease went to Cincinnati a week before the meeting began and devoted all that week, as well as much time prior to that, to the arduous and exacting work of seeing to the printing of the book. All who attended the meeting will have agreed in congratulating Dr. Trelease on the production of a very nearly perfect book under very trying circumstances. The permanent secretary here expresses the thanks of the Association and societies to the editor for the very important part he thus played in making the meeting a success. Composition and press work for the book, which are unusually fine in every way, are by the Mountel Press Company, of Cincinnati.

The general program appears to be largely replacing the society programs as far as use during the meetings is concerned. As was suggested in the report of the Boston meeting, it would constitute a great financial saving to American science if separately printed programs of sections and societies might be discontinued. With still further improvements in the general program—some of which are already planned for the Washington meeting next year—this end may eventually be attained. If program manuscripts might be received somewhat earlier than now occurs, the general program might be completed early enough so that preprints from it could be supplied to the societies before the meeting, with a great saving in expense.

This year the program manuscripts received late in the period for editing were not so numerous as heretofore. There is a notable improvement in this respect. Practically all the Cincinnati programs were received in time to be included in the book. It is to be hoped that the societies and sections that are habitually late in completing their programs will be able to arrange to close them earlier for future years. Some societies are regularly able to send in their completed programs as early as November. If all might be in by November first, it seems likely that the programs themselves would be of a still higher grade and it is certain that the general program for the annual meeting would be more easily and more perfectly produced.

Copies of the Cincinnati general program will be sent to all members who request them and remit six cents for postage to the Washington office.

The official badge for the meeting was a celluloid button about two centimeters in diameter, a black-bordered, gilt circle with the legend: A. A. A. S., 75th Anniversary, Cincinnati, 1924, Dec. 27–Jan. 2.

THE EXHIBITION OF APPARATUS, PRODUCTS, BOOKS, ETC.

(Report by the assistant secretary, Charles A. Shull)

During the seventy-five years since the founding of the American Association for the Advancement of Science, wonderful progress has been made in developing means of investigation and of recording the

results of research. This development was epitomized in the spendid exhibition which was opened on the morning of Friday, December 28th, in Cunningham Hall, in close proximity to the rooms used by the various sections of the association and the societies.

The association appreciates deeply the excellent service rendered by Dr. Ralph E. Oesper, chairman of the local subcommittee on the exhibition, without whose efforts success would have been impossible. It also desires to express its sincere appreciation of the fine spirit of cooperation shown by members of the National Research Council, secretaries of the sections and societies, and members of the association council, who contributed excellent suggestions for enhancing the value of the exhibition to visiting scientists. Especially it extends its thanks to the large group of exhibitors who availed themselves of the opportunities and privileges afforded them by the exhibition, and who responded so generously to the invitations sent out.

The exhibition included a wide range of apparatus and materials, embracing many intricate electrical instruments for the control and automatic recording of the results of experimentation. The latest potentiometers, electrometric titration apparatus, electrical conductivity outfits, galvanometers, rheostats, etc., were displayed; a large assortment of medical instruments and research accessories were on exhibit, as were also some very fine binocular and high power microscopes, with dark field illuminators of most recent types. These were demonstrated by attendants who were experts in the handling of apparatus. A very interesting exhibit was a small nitrogen fixation plant in operation. Wax models and beautiful mounted specimens of biological subjects were to be seen, one of the rare exhibits being a whole mount of Peripatus. There were the latest models of balances, both torsion and swing, with clever devices to facilitate accuracy and speed in weighing.

One of the chemical exhibits consisted of more than a thousand kinds of chemicals, stains and dyes useful in biological research, histology, cytology and colorimetric determinations of many kinds. Cases suitable for the storage of apparatus and chemicals, and for the filing of reprints and manuscripts were exhibited. Some very fine specimens of lithographic reproduction were shown, illustrating scientific and commercial uses of lithography. Books and periodicals were to be seen, which illustrated the last word in the art of presentation and preservation of knowledge in printed form.

It is impossible to present here anything but an inadequate summary of the exhibition, but it presented a good cross section of the rapid development of research apparatus in America, and the very high standards which have been attained by American manufacturers since the war. The necessity for importing apparatus from abroad is rapidly disappearing.

In addition to the general exhibition, many societies had special exhibits in connection with their session rooms, which were of great interest and value to the special groups.

The Benjamin Collection of portraits and autograph letters of all the past presidents of the Association, recently acquired by the Association and on display for the first time, proved to be a very attractive feature. They were hung on the walls of the rest room in the Women's Building and attracted widespread interest.

Special mention is accorded to the exhibition of the Bausch and Lomb Optical Company, who had twenty projection lanterns in operation in as many session rooms where projection was needed. These lanterns were generously loaned to the Association for use during the meeting, and gave admirable service. This valuable contribution to the success of the meeting is greatly appreciated.

One gratifying feature of the annual exhibition is the growing interest of visiting societies and the general public. The attendance increases each year, and in time these exhibitions will, it is hoped, be an exceedingly valuable means of disseminating knowledge of research methods and apparatus, not only among scientists but among the general public as well. It represents an educational project which deserves to be fostered by the entire Association.

It is the desire of the Association to make the exhibition larger and more attractive and valuable every year, without in any way detracting interest from the scientific programs. By cooperative effort it will be possible to give these annual exhibitions of the Association the importance and prominence that they should have. The spirit of cooperation which marked the development of the exhibition at Cincinnati, carried forward into the future, will insure the success of all future exhibitions, and make of them events which will excite keen anticipation on the part of all who are interested in keeping abreast of the advancement of science in America.

SOCIAL AND ENTERTAINMENT FEATURES AT CINCINNATI

On Thursday evening, immediately following the address of the retiring president, a general reception was given by the University of Cincinnati and the Cincinnati Chamber of Commerce to the members of the Association and to all in attendance. This occurred in the Ball Room of the Hotel Sinton and was very well attended. Refreshments were served.

Afternoon tea was served on Thursday, Friday, Saturday and Monday in the drawing rooms of the

Women's Building at the university, by the faculty women.

A very unusual and memorable feature of the seventy-fifth anniversary was the complimentary concert given to members of the Association and societies by the Cincinnati Symphony Orchestra on Sunday afternoon, December 30. This was very well attended and was thoroughly enjoyed and appreciated. The program consisted of selections written for Shakespeare's plays by well-known composers: Wetzler for "As You Like It," Tchaikowsky for "Romeo and Juliet," Korngold for "Much Ado About Nothing," and Mendelssohn for "A Midsummer Night's Dream." The permanent secretary here records the appreciative and cordial thanks of the Association to the Board of Directors of the Cincinnati Symphony Orchestra, to Mr. Fritz Reiner, conductor, and to the members of the orchestra.

The Cincinnati Women's Club extended the privileges of its drawing room to those in attendance at the meeting.

The Cincinnati Art Museum was open to those in attendance at the meeting and its galleries in Eden Park were visited by many.

The well-known Rookwood Pottery opened its collections, studios and shops to all who wished to attend on Friday or Monday afternoon. There was exhibited a valuable collection of famous porcelains and many interesting processes.

The Cincinnati Zoological Association invited those who attended the meeting to view its collection of living animals and many took advantage of this courtesy.

The Cincinnati Society of Natural History and the Cuvier Press Club invited visiting scientists to visit their fine collections of birds, fossils and minerals.

DINNERS AND BANQUETS

The dinners of the meeting were generally very well attended and very enjoyable. They are listed below.

Wednesday evening, December 26:
Dinner of the National Council of Geography Teachers.
Thursday evening, December 27:
Dinner of the American Nature-Study Society.
Friday evening, December 28:
Dinner for mathematicians and astronomers.
Dinner of the American Physical Society.
Dinner for chemists.
Zoologists' dinner.
Dinner for all botanists.
Crop-Protection-Institute supper.
Dinner of the Metric Association.
Dinner of Section O (Agriculture).
Dinner of the Society for Horticultural Science.
Sigma Xi dinner.
Saturday evening, December 29:
Plant pathologists' dinner.
Dinner of the American Society of Naturalists.
Dinner of Section H (Anthropology).
Monday evening, December 31:
Plant-Disease-Survey supper.
Dinner of the Ecological Society of America.
Tuesday evening, January 1:
Entomologists' dinner.
Dinner of the American Students Health Association.

PUBLICITY ARRANGEMENTS AT THE CINCINNATI MEETING

The publicity arrangements at the meeting were in charge of the subcommittee on publicity, which included C. N. Moore as chairman, W. H. Bucher and A. F. Stanley. These members and their assistants devoted very much time to the publicity work, both before and during the meeting, and the association owes it to them that the seventy-fifth anniversary attained by far the most extensive and satisfactory attention from the daily press that has ever been enjoyed for any of the association meetings. The permanent secretary here expresses the sincere thanks of the association to Professor Moore and those who shared with him the arduous labors of the publicity service.

The publicity committee was again helped by Science Service, as in previous years. That organization was represented at Cincinnati by its director, Dr. Edwin E. Slosson, and by its managing editor, Mr. Watson Davis. As advance program material came in at the Washington office, the permanent secretary sent a request to each person who was to give a paper, asking him to supply Science Service as soon as possible with a copy of his paper or an abstract. About 275 speakers responded and their manuscripts began to arrive early in December. This material was forwarded to the publicity committee at Cincinnati, beginning early in December.

Science Service sent to 60 newspaper subscribers 63 different articles of from 50 to 1,500 words, and seven photographs. It is estimated that the papers thus served have a circulation of over 3,000,000. Science Service also supplied 13 large newspapers with daily telegraphic stories by Edwin E. Slosson. The representatives of Science Service also cooperated with the local committee on publicity and with the correspondents of papers and press associations that covered the meeting.

Early in the fall Dr. Moore and his committee established two principles upon which to operate: (1) The material released by the publicity service was to be at all times dignified in tone and quite consistent with the high mission of science and the prestige of the association. Every effort was to be made to put the releases into form that would be intelligible to the general public, but there was to be no sensationalism

for the sake of a little additional space. This principle was fully justified by the outcome, for the newspapers devoted more space to news of the meeting than ever before, and the material printed was almost wholly of a type that represented the true spirit of science. (2) On the other hand, it was decided to compensate for what might seem a degree of severity by the introduction of a considerable amount of personal information, with photographs of prominent scientists as far as was possible. This additional material was very largely used by the newspapers and many more photographs were published than at any earlier meeting. It required much work to secure and prepare for release the biographical material and photographs, and the association is grateful to the Cincinnati committee for introducing this valuable feature.

Abstracts of papers to be presented were used—as far as they could be secured—for the preparation of accounts that were released, on mimeographed sheets, on the days when the corresponding papers were presented. These releases had to be prepared beforehand, and the association is particularly grateful to those of the program speakers who sent in their papers or abstracts early. It would help very much if, for future meetings, every one planning to present a paper might send an account of it to the publicity subcommittee as early as November 1. The Cincinnati publicity service prepared in all 117 press releases, which were extensively used by local and out-of-town papers and the press associations. Each of the local papers devoted two or three pages to the meeting during the most active days and much of this material was secured from the releases just mentioned.

Advance publicity material began to appear in the local newspapers on Sunday, November 25, and it appeared in increasing amounts up to the opening of the meeting. There is no doubt that this served very considerably to stimulate public interest in the convention and resulted in the newspapers devoting more attention to the actual covering of the meeting than would otherwise have been the case. As a result of the early and continued work on the part of the publicity subcommittee, six out-of-town newspapers and two press associations sent representatives to cover the convention. Each of the local papers sent several reporters. A novel feature of this meeting was the use of radio in disseminating science news. Three scientists kindly consented to deliver brief, semi-popular addresses for broadcasting from one of the Cincinnati stations.

The publicity service for the Cincinnati meeting has set a very high standard indeed for the guidance of future committees on publicity.

THE PRIZE

For the first time in the history of the Association a prize was awarded for a paper presented at the seventy-fifth anniversary meeting. To mark the anniversary, a member of the Association gave the sum of one thousand dollars "to be awarded as a prize to some person presenting at the third Cincinnati meeting a notable contribution to the advancement of science." All papers presented on the programs of the meeting were eligible for consideration, whether or not the authors were members of the Association. The secretary of each section and society meeting at Cincinnati was asked to consult others and submit titles of papers presented in the sessions of his organization, for consideration in the making of the award. These suggestions were carefully investigated by a special committee named by the council, which worked throughout the meeting.

The award was made to Dr. L. E. Dickson, professor of mathematics in the University of Chicago, for his paper on "Algebras and their arithmetics" (presented at the Friday afternoon session of Section A with the Chicago Section of the American Mathematical Society and the Mathematical Association of America), together with his papers on "The theory of numbers and generalized quaternions" and on "Quadratic fields in which factorization is always unique," both presented at the Saturday afternoon session of the Chicago Section of the American Mathematical Society. Professor Dickson devised a new theory by which he was able to determine what should be the subject-matter of arithmetics and algebras, after which he found it possible to construct a highly developed science of arithmetics. The result is a rich array of fundamental results which mark great steps forward in the classic theory of algebraic numbers and in the development of Hurwitz's integral quaternions. Professor Dickson has been able to unify and greatly enlarge the whole subject of the theories of algebras. He has made a very notable contribution to the advancement of science and he has the great distinction of being the winner of the first prize ever offered by the American Association for the Advancement of Science.

THE CINCINNATI GENERAL SESSIONS

There were four general sessions of the association at Cincinnati. The meeting was formally opened on the evening of Thursday, December 27th, in Emery Auditorium. Dean Louis T. More, chairman of the local committee on arrangements, presided at the opening session and introduced President F. C. Hicks, of the University of Cincinnati, and Mayor George P. Carrel, of Cincinnati, each of whom spoke a few well-

chosen words of welcome. Then President Charles D. Walcott was introduced and responded for the association. He introduced the main speaker of the evening, Retiring President J. Playfair McMurrich, eminent biologist of the University of Toronto. Aside from Dr. McMurrich's very inspiring and scholarly address, this session was unusually interesting because a slight amendment to the constitution of the association was adopted by unanimous vote, and because the University of Cincinnati conferred upon Dr. McMurrich the degree of LL.D. *honoris causa*. The recipient of the degree had been at one time a professor in the University of Cincinnati, and the conferring of the degree was specially appropriate on this occasion. Dr. McMurrich's address has been published in SCIENCE for December 28.

The opening session was followed by a general reception in the ball room of the Hotel Sinton, given by the Cincinnati Chamber of Commerce and the University of Cincinnati to the president and the retiring president of the association. The reception was exceptionally well attended. Refreshments were served.

The second general session of the meeting was held in the auditorium of the Hughes High School on the evening of Friday, December 28th. This session was under the joint auspices of the Society of Sigma Xi and the American Association, the president of the society, Dr. Henry B. Ward, presiding. The address of the evening was the second annual Sigma Xi lecture, given by the well-known electrical engineer and physicist, Dr. Willis Rodney Whitney, director of the research laboratory of the General Electric Company, Schenectady. Dr. Whitney spoke on "The vacuum, there's something in it."

He began with some striking remarks about recent scientific progress, emphasizing how very recent indeed is all that we call science. In the Middle Ages western civilization was almost wholly engaged in acquiring salvation or "safety first," rather than knowledge and understanding; to-day scientists are seeking truth and they think of "safety first" last. If the life period of mankind is represented by the life period of an individual fifty years old, it emerges that the fifty-year-old man thus thought of did not learn to scratch the simplest records on stone until his forty-ninth year. For him printing has existed only three months. The automobile was actually first devised on this particular fiftieth birthday. The speaker pointed out that there is now available for human work power equivalent to a hundred manpower for every man in the United States. But guidance of power application is man work; there are no automatic mentalities. Man is the only animal that can do this. Turning to his special topic, Dr. Whitney mentioned many examples, showing how our common life depends on vacua, from those of vacuum lamps to those of thermos bottles. Less familiar to people in general are the uses of vacua in the detailed study of chemical elements and in that of atomic structure. The photo-electric cell was demonstrated and discussed and an electric apparatus strikingly simulating some of the characters of the animal eye and nervous system was shown. Numerous experiments were performed during the lecture, some of them very spectacular and all of them clearly explained. An enthusiastic audience filled the large auditorium of the Hughes High School, in which special electric apparatus had been installed for Dr. Whitney's experiments.

The third general session was held under the joint auspices of the American Association and the Cincinnati Garden Club, in the auditorium of the Cincinnati Women's Club, on Saturday afternoon, December 29th. Dr. George T. Moore, director of the Missouri Botanical Garden, St. Louis, introduced Mrs. Charles D. Walcott, who contributed a unique and specially interesting feature of the meeting when she showed selections from her fine collection of lantern slides, hand-colored by herself and made from her own photographs of wild flowers of the Canadian Rockies. The audience packed the hall. Had there been nothing but the truly remarkable pictures of the flowers in their natural setting, all who came would have been more than repaid for the effort required to break away from the super-saturated scientific atmosphere which enveloped the meeting as a whole, but the showing of the slides was accompanied by informal remarks from Mrs. Walcott, which added greatly to the enjoyment of the afternoon. Mrs. Walcott has devoted many years to the preparation of these pictures. Accompanying Dr. Walcott on his numerous geological expeditions into the Canadian Rockies, Mrs. Walcott has had unusual opportunities for getting into regions seldom if ever visited by botanists. Her love for the flowers, coupled with her great artistic ability for discovering and depicting the beautiful, has resulted in a combination rarely equaled. All who were fortunate enough to be present owe a debt of gratitude to Mrs. Walcott for the charming way in which she presented the subject, as well as for her magnificent reproductions of wild life in the Rockies. It is to be hoped that some more permanent record of her achievement may be in prospect, since the value of her pictures both to botanists and nature lovers can not be overestimated. (*Report by George T. Moore.*)

The fourth general session was devoted to the intimate history of the Association, with special reference to the celebration of the seventy-fifth anniversary. President Walcott presided. Dr. Herman L. Fairchild, emeritus professor of geology in the University of Rochester, and long a member of the com-

mittee on policy and the executive committee of the Association, read an interesting and suggestive paper on the development of the present organization from the beginnings made seventy-five years ago. He showed how the association has grown from period to period, modifying itself to suit a changing environment. A bright future for the organization was foreseen by Dr. Fairchild.

Following Dr. Fairchild's paper, Dr. T. C. Mendenhall, president of the Association at Toronto in 1889, read a fine letter from Dr. Edward S. Morse, the past president of longest standing—he was president at Buffalo in 1886—and then Dr. Mendenhall spoke in his characteristic way of some of his own recollections of the earlier days of the organization. Dr. T. C. Chamberlin, president at Baltimore in 1908, then spoke of some of his experiences and of the advance of science during the life of the Association. Dr. L. O. Howard, for many years permanent secretary and president at Chicago in 1920, made some interesting and amusing remarks and Dr. J. Playfair McMurrich, the present retiring president, closed the session with some very good advice for the Association drawn from a study of the past and a look into the future.

THE SECRETARIES' CONFERENCE

The members of the executive committee and the section secretaries assembled for a conference at the Hotel Sinton after the close of the complimentary concert on Sunday afternoon. They dined together at 7:00 and continued the conference through the evening. Matters relating to the general work of the association were informally discussed and each section secretary spoke on the work and problems of his section. These secretaries' conferences were begun at Toronto and are developing into an important feature of the meetings. As the association improves its efficiency and increases its activities, which depend so largely on close cooperation among the secretaries and the members of the executive committee, these conferences promise to become still more helpful.

LEGISLATIVE AND EXECUTIVE PROCEEDINGS AT CINCINNATI

The Executive Committee of the Council met in the Hotel Sinton on the evening of Wednesday, December 26th, and in the forenoon of Thursday, December 27th. The Council met in the library of the Women's Building, University of Cincinnati, on the afternoon of Thursday, December 27th, and at nine in the forenoon of Friday and Saturday, December 28th and 29th. The Executive Committee met in the forenoon of Sunday, December 30th, and again for a brief session in the evening of the same day. The following paragraphs give a summary of the business transacted:

(1) Minutes of earlier meetings of the Council and Executive Committee were approved.

(2) The audited report of the treasurer's office for 1923 was accepted and ordered to be printed in SCIENCE.

(3) The audited financial report of the permanent secretary's office for 1923 was accepted and ordered printed in SCIENCE.

(4) The permanent secretary's budget for 1924 was approved.

(5) The following three members were elected to emeritus life membership under the provisions of the Jane M. Smith Fund: J. C. Arthur, 915 Columbia St., Lafayette, Ind.; George Dimmock, 531 Berkshire Ave., Springfield, Mass.; Alpheus B. Hervey, Bath, Maine.

(6) An appropriation of $4,000 for grants, to be allotted by the Committee on Grants for the year 1924, was approved.

(7) It was voted that the permanent secretary should give from his funds the sum of $60.00 to the American Institute of Sacred Literature, in continuation of the assistance given the institute last year.

(8) It was voted to appropriate the sum of $200 from the permanent secretary's funds for 1924, to aid in the support of the Annual Tables of Physical, Chemical and Technological Constants.

(9) It was voted that philologists named by the special committee on philological sciences in the Association be allowed to become members of the Association without the payment of entrance fees if they do so during the calendar year 1924. The same privilege of entering the Association during 1924 without paying entrance fees is open to all members of affiliated societies, as previously decided upon.

(10) The Council voted to present to the General Session, Thursday evening, December 27, a recommendation that the Constitution of the Association be amended so as to provide that members of the Executive Committee who are not otherwise members of the Council be *ex-officio* members of the Council.

(11) By a unanimous vote at the General Session on Thursday evening, December 27, Article 4 of the Constitution of the Association was amended by adding a clause at the end of the sentence that defines the Executive Committee. The amended sentence now reads: *There shall be an Executive Committee of the Council, consisting of the president, the permanent secretary, the general secretary, and eight members elected by the Council, two annually for term of four years, who shall be* ex-officio *members of the Council if they are not otherwise members.*

(12) The permanent secretary was named secretary of the Committee on Grants, without implying membership in that Committee.

(13) Two members of Section Q (Educational) were elected to fellowship in the Association.

(14) The Council named a committee of five to make an interpretation of the constitution with reference to

eligibility to fellowship in the Association. This committee consisted of: W. F. G. Swann, *chairman*, W. D. Harkins, R. B. Wylie, A. J. Goldfarb, W. J. Humphreys.

(15) A number of nominations for fellowship were presented to the Council, after approval by the section secretaries in the regular way, but action on these was postponed till the report of the committee named in paragraph 14 might be received and considered.

(16) On invitation of the Union of Biological Societies, Dr. Herbert Osborn, of Ohio State University, was named to represent the Association in the joint committee on publications thus far made up of representatives of the Union and the National Research Council.

(17) The Council approved the appointment of Otis W. Caldwell as organizing chairman of a committee to study and report on the part to be played by science in school curricula with social objectives, the work of the committee to be aided by the Commonwealth Fund of New York City.

(18) It was voted that it is desirable that the Association name one or more delegates to represent it at each meeting of the affiliated academies.

(19) The present arrangements of affiliation for state academies were considered by the Executive Committee and the question as to whether any change is desirable was referred to a committee consisting of the permanent secretary and the general secretary.

(20) It was voted that the Association reaffirms the position shown by its action at the last Toronto meeting, with regard to the question of auxiliary language.

(21) It was voted by the Executive Committee that a note be published in SCIENCE presenting the matters considered in the report of the committee of delegates from the American Association to the Liverpool meeting of the British Association.

(22) A committee consisting of Dr. J. McK. Cattell, Dr. D. T. MacDougal, and Dr. B. E. Livingston was named to consider the general problem of publicity service for the Association meetings, to make recommendations to the Executive Committee at its spring meeting.

(23) The following five members were named to constitute the committee of award for the Cincinnati prize: N. M. Fenneman, *chairman*, Henry Crew, George T. Moore, George H. Parker, E. W. Washburn. The committee on award was asked to consider the papers recommended to its attention by the section and society secretaries, as well as any other papers that might seem worthy, to decide on the award and to report to the Executive Committee as soon as possible. (The award was announced to the press on Thursday morning, January 3. The prize was awarded to Professor L. E. Dickson, of the University of Chicago, for his paper on "Algebras and their arithmetics," together with his two other papers on "The theory of numbers and generalized quaternions." and on "Quadratic fields in which factorization is always unique.")

(24) It was voted to comply with a request of the American Peace Award that the Association aid in the referendum on the winning method.

(25) A vote of thanks was extended to the British Association for the Advancement of Science for its invitation to members of the American Association to participate in the approaching Toronto meeting.

(26) The Council voted not to hold any summer meeting in 1924, but to aid the British Association in every possible way, to make the Toronto meeting of the British Association a great success.

(27) By the unanimous vote of the Council, Dr. J. McKeen Cattell was elected president of the Association for the calendar year 1924.

(28) Other officers were duly elected by the Council, as shown in the following section.

(29) Dr. Vernon Kellogg was elected to be chairman of the local committee on arrangements for the next annual meeting, at Washington, D. C.

(30) The Council extended votes of thanks to the local committee for the Cincinnati meeting and to the institutions and organizations that had taken part in providing the excellent arrangements and facilities of the meeting.

(31) The Council gave a vote of thanks to Dr. Charles D. Walcott for the tact and efficiency with which he had acted as chairman of the Council during the Cincinnati sessions.

THE COUNCIL ROLL AT CINCINNATI

The affairs of the Association are wholly in the charge of the council, which consists of the president, the vice-presidents, the treasurer, the secretaries, the council representatives of the affiliated societies and academies and eight members elected by the council itself. The list of council members for the seventy-eighth meeting is shown below, arranged alphabetically. Each member's name is followed by an italic phrase, showing his status in the council. Past presidents and the presidents of the divisions and local branch are officially invited to attend council sessions. Members of the executive committee who are not otherwise council members are now *ex-officio* members. The attendance at the three Cincinnati sessions is shown by the numerals that precede the members' names, the three numerals corresponding to the three sessions, respectively, on Thursday, Friday and Saturday, December 27, 28 and 29. Thus, the numerals 2 and 3 before a name indicate that the member whose name is so marked was present at the Friday and Saturday sessions but was absent from the Thursday session.

Every council member receives an official notice calling his attention to his responsibility, just before each annual meeting, with the urgent request that he attend the council sessions and take part in the direction of the affairs of the Association. It is greatly to be deplored that not more of the members seem to realize the importance of their responsibilities to the cause for which the Association stands, that not more of them make it a point to attend the council sessions. This year a larger number of absentees sent letters explaining their absence than has hitherto occurred,

but there is verge for great improvement still. If representatives of affiliated societies might arrange beforehand for their places in the council to be taken by suitable substitutes who could be present, the efficiency of the council might be much enhanced. Of the 128 members whose names were on the council roll, 51 were present at the first session, 30 at the second, and 40 at the third. The section committees and the societies should take thought in this regard; the democratic nature of the Association can not be well upheld unless the attendance of council members can somehow be generally secured. The council holds sessions only at the annual meetings of the Association and the attendance at these sessions should be as full as possible. The question may be asked whether those who absent themselves without arranging for substitutes are wholly fair to those who attend and to their constituents.

MEMBERS AND INVITED GUESTS OF THE COUNCIL FOR THE THIRD CINCINNATI MEETING, WITH NOTES AS TO THEIR STATUS AND RECORDS OF THEIR ATTENDANCE

(Names marked with an asterisk are those of guests.)

1, 3 Alexander, William H., *Rep. Ohio Acad.*
1 Allen, C. M., *Rep. Bot. Soc. Amer.*
1, 2 Barr, A. S., *Secretary of Section Q.*
1 Bear, F. E., *Rep. Amer. Soc. Agron.*
Berkey, Charles P., *Rep. Geol. Soc. Amer.*
Bowman, Isaiah, *Rep. Amer. Geographical Soc. of New York.*
1, 2, 3 Brasch, Frederick E., *Secretary of Section L.*
Brown, P. E., *Secretary of Section O.*
1, 3 Cairns, W. D., *Rep. Math. Assoc. Amer.*
1 Cajori, Florian, *Vice-President for Section L.*
* Campbell, W. W., *Past President* (1915).
Case, E. C., *Rep. Michigan Acad.*
Cattell, J. McKeen, *Elected Member.*
Chamberlain, C. J., *Vice-President for Section G.*
* Chamberlin, T. C., *Past President* (1908).
1, 2, 3 Clinton, G. P., *Rep. Amer. Phytopathol. Soc.*
3 Cockerell, T. D. A., *Rep. Entomol. Soc. Amer.*
1, 2 Coker, Robert E., *Rep. Ecol. Soc. Amer.*
Collins, G. N., *Rep. Amer. Genetic Assoc.*
1, 2, 3 Cottrell, F. G., *Elected Member.*
Coulter, J. M., *Rep. Amer. Assoc. Univ. Professors and Past President* (1918).
1 Cowles, H. C., *Elected Member.*
Crampton, H. E., *Rep. Amer. Soc. Zool.*
Crowell, John F., *Vice-President for Section K.*
Curtis, Heber D., *Vice-President for Section D.*
1, 3 Dellinger, O. P., *Rep. Kansas Acad.*
Dodge, Raymond, *Vice-President for Section I and Rep. Amer. Psychol. Assoc.*
1 Dodge, Richard E., *Assoc. Amer. Geographers.*
Douglass, A. E., *Elected Member.*
* Eliot, Charles W., *Past President* (1914).
Ellery, Edward, *Rep. Sigma Xi.*
1 Faig, John T., *Vice-President for Section M.*
1, 2, 3 Fairchild, H. L., *Elected Member.*
1 Fenneman, N. M., *Vice-President for Section E.*
1 Fewkes, J. Walter, *Rep. Amer. Anthropol. Soc.*
Flexner, Simon, *Exec. Comm. and Past President* (1919).
1, 3 Focke, T. M., *Rep. Math. Assoc. Amer.*
Franklin, Edward C., *Amer. Chem. Soc.*
Freeman, Frank N., *Secretary of Section I.*
Gage, Simon H., *Rep. Amer. Assoc. Anatomists.*
Gerould, John H., *Rep. Amer. Soc. Nat.*
Gibson, Arthur, *Rep. Entomol. Soc. Amer.*
1, 2, 3 Goldfarb, A. J., *Secretary of Section N.*
1, 2 Hancock, Harris, *Vice-President for Section A and Rep. Amer. Assoc. Univ. Professors.*
1, 3 Harkins, W. D., *Secretary of Section C.*
Harris, J. Arthur, *Rep. Amer. Soc. Nat.*
1, 2, 3 Headlee, T. J., *Rep. Amer. Assoc. Economic Entomol.*
Hedrick, Wm. A., *Rep. Amer. Fed. Teachers of Math. and Nat. Sci.*
Hektoen, Ludwig, *Rep. Soc. Amer. Bacteriologists.*
1, 2 Hoffman, Frederick L., *Secretary of Section K.*
Holmes, Henry W., *Vice-President for Section Q.*
Hooton, E. A., *Vice-President for Section H.*
Horn, Ernest, *Rep. National Soc. for Study of Education.*
1, 2, 3 Howard, L. O., *Rep. Amer. Assoc. Economic Entomol. and Past President* (1920).
Howitt, J. E., *Rep. Canadian Soc. Technical Agric.*
Humphreys, Alex. C., *Rep. Amer. Soc. Mech. Engineers.*
1, 2, 3 Humphreys, W. J., *Rep, Amer, Meteorol. Soc.*
Huntington, Ellsworth, *Rep. Assoc. Amer. Geographers.*
1, 2, 3 Jackson, Hartley H. T., *Rep. Amer. Soc. Mammal.*
Jones, Arthur J., *Rep National Soc. College Teachers of Education.*
* Jordan, David S., *Past President and President of Pacific Division.*
1 Juday, Chancey, *Rep. Wisconsin Acad.*
Kennelly, A. E., *Rep Amer. Inst. Elect. Engineers.*
Knipp, Charles T., *Rep. Illinois Acad.*
Kober, Geo. M., *Rep. Amer. Medical Assoc.*
Laughlin, Harry H., *Rep. Eugenics Res. Assoc.*
Lindgren, Waldemar, *Rep. Amer. Inst. Mining and Metallurgical Engineers.*
1, 2, 3 Livingston, Burton E., *Permanent Secretary of the Association.*
Longwell, C. R., *Rep. Gamma Alpha.*
1, 2, 3 MacDougal, D. T., *General Secretary of the Association.*
1 McClung, C. E., *Rep. Sigma Xi.*
* McMurrich, J. Playfair, *Past President* (1922).
Mendenhall, C. E., *Rep. Amer. Phys. Soc.*
* Mendenhall, T. C., *Past President* (1889).
Merriam, John C., *Elected Member.*
Metcalf, Z. P., *Rep. North Carolina Acad.*
* Michelson, A. A., *Past President* (1910).
Miller, Dayton C., *Rep. Amer. Phys. Soc.*
2, 3 Miller, G. A., *Elected Member.*
Moore, Barrington, *Rep. Soc. Amer. Foresters.*
1, 3 Moore, C. N., *Rep. Amer. Math. Soc.*
* Moore, E. H., *Past President* (1921).
2, 3 Moore, Elwood S., *Secretary of Section E.*
Morgan, Arthur E., *Rep. Amer. Soc. Civil Engineers.*
* Morse, Edward, *Past President* (1886).
Moseley, H. W., *Rep. New Orleans Acad.*
3 Moulton, F. R., *Secretary of Section D.*
1, 2, 3 Muncy, V. E., *Rep. Amer. Soc. Mech. Engineers.*
Nice, L. B., *Rep. Oklahoma Acad.*
Nicholas, Francis C., *Rep. Maryland Acad.*
* Nichols, E. L., *Past President* (1907).
Nichols, Ernest Fox, *Rep. Illuminating Engineering Soc.*
Noyes, A. A., *Exec. Comm.*
* Orton, C. R., *President State College Br.*
1 Orton, W. A., *Rep. Amer. Phytopathol. Soc.*
1, 2, 3 Osborn, Herbert, *Exec. Comm.*
1 Paddock, Wendell, *Rep. Amer. Soc. Horticultural Sci.*

1 Parsons, Charles L., *Rep. Amer. Chem. Soc.*
Pearson, R. A., *Vice-president for Section O.*
Peter, A. M., *Rep. Kentucky Acad.*
3 Piersol, George M., *Rep. Amer. Medical Assoc.*
1 Porter, J. G., *Rep. Amer. Astronom. Soc.*
1 Rand, H. W., *Secretary of Section F.*
Ransom, B. H., *Rep. Amer. Microscopical Soc.*
Reid, H. F., *Rep. Seismol. Soc. Amer.*
* Remsen, Ira, *Past President* (1902).
2, 3 Rice, E. L., *Vice-president for Section F.*
* Richards, Theodore W., *Past President* (1917).
Richardson, R. G. D., *Rep. Amer. Math. Soc.*
2 Richtmyer, F. K., *Rep. Optical Soc. Amer.*
1, 2, 3 Rietz, H. L., *Rep. Gamma Alpha.*
1 Riggs, M. J., *Rep. Amer. Soc. Civil Engineers.*
1, 2, 3 Roever, Wm. H., *Secretary of Section A.*
Schramm, J. R., *Rep. Bot. Soc. Amer.*
2, 3 Schulte, H. Von W., *Rep. Nebraska Acad.*
Sharp, Clayton H., *Rep. Illuminating Engineering Soc.*
1, 3 Shreve, Forrest, *Rep. Ecol. Soc. Amer.*
* Slipher, V. M., *President Southwestern Division.*
2, 3 Stewart, Geo. W., *Rep. Iowa Acad.*
3 Strong, Richard, P., *Vice-president for Section N.*
1, 3 Swann, W. F. G., *Vice-president for Section B.*
1, 3 Taylor, John B., *Rep. Amer. Inst. Elect. Engineers.*
1, 2, 3 Terry, R. J., *Secretary of Section H.*
Townley, S. D., *Rep. Seismol. Soc. Amer.*
Tyrrell, J. B., *Rep. Amer. Inst. Mining and Metallurgical Engineers.*
1, 3 Walcott, Charles D., *President of the Association.*
Wallace, L. W., *Secretary of Section M.*
2, 3 Ward, Henry B., *Elected Member.*
Warwick, C. L., *Rep. Amer. Soc. Testing Materials.*
1, 2, 3 Washburn, E. W., *Vice-president for Section C.*
Welch, Paul S., *Rep. Amer. Microscopical Soc.*
* Welch, Wm. H., *Past President* (1906).
1, 2, 3 Whipple, Guy M., *National Soc. for Study of Education.*
White, David, *Rep. Geol. Soc. Amer.*
2, 3 Williams, S. R., *Secretary of Section B.*
* Wilson, Edmund B., *Past President* (1913).
Wissler, Clark, *Rep. Amer. Anthropol. Assoc.*
Withers, John H., *Rep. National Soc. College Teachers of Education.*
Woodward, R. S., *Treasurer of the Association and Past President* (1900).
Wright, Sewall, *Rep. Amer. Genetic Assoc.*
1, 3 Wylie, Robert B., *Secretary of Section G.*
1 Yerkes, Robert M., *Rep. Amer. Psychol. Assoc.*
1, 2, 3 Yowell, Everett I., *Rep. Amer. Astronom. Soc.*
Zeleny, Charles, *Rep. Amer. Soc. Zool.*

OFFICERS ELECTED

The newly elected officers, with the calendar year at the end of which the term of each expires, are as follows:

President:

J. McKeen Cattell (1924), Garrison-on-Hudson, N. Y.

Vice-Presidents for the Sections:

Section A (Mathematics), J. C. Fields (1924), University of Toronto.

Section B (Physics), E. F. Nichols (1924), Nela Research Laboratory, Cleveland, Ohio.

Section C (Chemistry), W. F. Hillebrand (1924), Washington, D. C.

Section D (Astronomy), John A. Miller (1924), Swarthmore, Pa.

Section E (Geology and Geography), W. C. Mendenhall (1924), U. S. Geological Survey.

Section F (Zoological Sciences), Edwin Linton (1924), Augusta, Ga.

Section G (Botanical Sciences), G. R. Lyman (1924), University of West Virginia.

Section H (Anthropology), E. A. Hooton (1924), Cambridge, Mass.

Section I (Psychology), G. Stanley Hall (1923), Worcester, Mass.; R. S. Woodworth (1924), Columbia University.

Section K (Social and Economic Sciences), Thomas S. Baker (1924), Carnegie Institute of Technology.

Section L (Historical and Philological Sciences), L. C. Karpinski (1924), University of Michigan.

Section M (Engineering), A. E. Kennelly (1924), Harvard University.

Section N (Medical Sciences), William A. MacCallum (1924), Johns Hopkins University.

Section O (Agriculture), L. R. Jones (1924), University of Wisconsin.

Section Q (Education), L. A. Pechstein (1924), University of Cincinnati.

Members of the Council, for four-year period:

W A. Oldfather (1927), University of Illinois.

G. W. Stewart (1927), State University of Iowa.

Members of the Executive Committee of the Council:

For four-year period:

H. L. Fairchild (1927), University of Rochester.

W. A. Noyes (1927), University of Illinois.

For one year, because Dr. Cattell, an elected member, will this year be an *ex-officio* member.

G. A. Miller (1924), University of Illinois.

Members of the Committee on Grants for Research:

For four-year period:

Aleš Hrdlička (1927), U. S. National Museum (representing Psychology, Anthropology, Education and Economics).

B. M. Davis (1927), University of Michigan (representing Botany).

To complete the term of Dr. E. G. Conklin, resigned: H. V. Wilson (1924), University of North Carolina (representing Zoology).

Elected members of Section Committees:

Section A (Mathematics), T. H. Hildebrandt (1927), University of Michigan.

Section B (Physics), W. G. Cady (1927), Wesleyan University.

Section C (Chemistry), E. W. Washburn (1927), National Research Council.

Section D (Astronomy), Frederick Slocum (1927), Van Vleck Observatory, Middletown, Conn.

Section E (Geology and Geography), E. S. Bastin (1927), University of Chicago.

Section F (Zoological Sciences), Herbert Osborn (1927), Ohio State University.

Section G (Botanical Sciences), H. W. Barre (1927), Clemson College.

Section H (Anthropology), Aleš Hrdlička (1927), U. S. National Museum.

Section I (Psychology), L. L. Thurstone (1927), Washington, D. C.

Section K (Social and Economic Sciences), John Franklin Crowell (1927), 171 Liberty St., Bloomfield, N. J.

Section L (Historical and Philological Sciences), Harry E. Barnes (1927), Smith College, Northampton, Mass.; George Sarton (1926), Harvard University.

Section M (Engineering), Waldemar Lindgren (1927), Massachusetts Institute of Technology.

Section N (Medical Sciences), W. W. Cort (1927), Johns Hopkins University.

Section O (Agriculture), C. A. Mooers (1927), University of Tennessee.

Section Q (Education), Bird T. Baldwin (1927), State University of Iowa.

THE PRESIDENT

A biographical note

Dr. J. McKeen Cattell, president-elect of the American Association for the Advancement of Science, is well known to all members of the association, especially through his long and efficient service as editor of the official journal, SCIENCE. Born on May 25, 1860, at Easton, Pennsylvania, he received the A.B. degree in 1880 from Lafayette College, where his father was for twenty years president. He studied in European universities, was a fellow in the Johns Hopkins University, and received the Ph.D. degree from the University of Leipzig. He began his career as a teacher during his last year in Leipzig, as assistant to Professor Wundt.

After holding a lectureship in the University of Pennsylvania and Bryn Mawr College (1887) and in Cambridge University, England (1888), Dr. Cattell was appointed professor of psychology in the University of Pennsylvania in 1888. This position was the first chair of psychology in any university. He went to Columbia University in 1891 and was professor of psychology there for the next twenty-six years, during part of which period he was head of the departments of philosophy and anthropology. While Dr. Cattell was at Columbia University the departments of which he acted as head—psychology, philosophy and anthropology—became the strongest of their kind in America. Since 1921 he has been president of the Psychological Corporation, of New York City, the organization of which was due primarily to his vision and to his efforts.

Dr. Cattell has served American science to a very noteworthy degree, especially in three main ways: as an exceptionally original and fortunate investigator and leader in advanced scientific thought, as the most influential and appreciated of American scientific editors, and as an organizer of American scientists. In psychological research he made the most exact of the earlier psychological measurements. He published the first experimental studies of differences between human individuals, and he has seen this line of study become the one in which psychologists are at present most active. He has been a leader in the development of psychology into a science concerned with the comparative measurement of behavior and of individual differences in ability and capacity, rather than with introspective examination of the phenomena of consciousness. In the light of later developments many of his earlier writings seem to have been almost prophetic. As a teacher of advanced psychology he has seen many of his students become leaders in that field. Forty-six of his former students who received the Ph.D. degree at Columbia have become members of the American Psychological Association.

Dr. Cattell established the *Psychological Review* in 1894. He has been editor of SCIENCE since 1895, of the *Scientific Monthly* since 1900, of the *American Naturalist* since 1908, and of *School and Society* since 1915. SCIENCE, the *Monthly* and the *Naturalist* had been started before the present editor took charge of them, but they had failed. He has been able to make them all highly successful. *School and Society* was established by Cattell. They have played important parts in elevating American standards in science and education and in enlarging the opportunities of science workers and college and university teachers. SCIENCE seems to be the editor's favorite; to it he has devoted much time and energy during thirty of the best years of an energetic life. It is impossible to think of Cattell without thinking of SCIENCE.

Since 1900 SCIENCE has been the official organ of the American Association for the Advancement of Science, and the excellent arrangement by which this has been feasible has greatly benefited the association and American science as well as the journal itself. Every member of the association receives either SCIENCE or the *Scientific Monthly*, according to his wishes. The great majority take the official journal. It is safe to say that the relations of the association with SCIENCE have greatly increased and maintained the membership and have progressively enhanced the strength and prestige of the organization. At the same time SCIENCE is a powerful influence toward those things for which the association stands—the promotion of intercourse among men of science, the giving of a stronger and more general impulse and more systematic direction to research, and the procuring of increased facilities and wider usefulness for the labors of scientists. Perhaps the lending of this support to SCIENCE is as important as any other single line of endeavor in which the association is engaged.

Another kind of editorial work by which the president-elect has greatly contributed to science and the good of scientists, is the preparation and publication of the volumes of *American Men of Science*. The first

edition of that biographical directory appeared in 1906, the second in 1910 and the third in 1921. The general plan to produce a "Who's Who" for American scientists seems to have been original with Cattell; surely the detailed plans are examples of the operation of his genius. The book has had its ordinary practical, tangible, quotidian uses, but, more than that, it has greatly helped toward arousing in the scientific group an increasing healthy consciousness and sane self-confidence toward the development of a sort of *esprit de corps*—things that the founders of the American Association, seventy-five years since, regarded as so desirable. These volumes alone, including the system of "stars" that set out prominent men by a scientific method of selection, and the scientific studies that the compilation made possible, make a fine accomplishment.

Dr. Cattell's fortunate genius for democratic organization has made itself evident in many ways besides those already suggested. He has been a valuable member of many scientific societies, having, for example, first proposed and been largely instrumental in organizing the American Association of University Professors. His ingenuity is seen throughout the present machinery of the American Association, especially in the arrangement for affiliated societies, an arrangement by which increasingly necessary and desirable subdivision has been simply cared for. When specialized societies are formed there is now no fear that the association may be dismembered; the societies may become affiliated with the broader organization and have all the benefits thereof as well as those of specialization and complete autonomy. An example of Cattell's precise thought and of his skill in such matters is the present constitution of the association, which he mainly wrote.

The Psychological Corporation was organized by its present president in 1921. All members of the American Psychological Association were consulted and the plans were approved with practical unanimity. The central ideas on which it rests are original. It is a stock corporation, with branches in different states, all the stock being held by some 170 professional psychologists of high standing. Profits must be used to promote psychological research. The income of the corporation is derived from the sale of its services, special investigations, individual tests, advice in consultation, and other ways in which real psychology may be applied for the benefit of the public through firms and individuals. Such an organization promises to be of untold benefit to society as a whole as well as to the advancement of psychological science. It may well prove to be a model for the formation of other organizations in other scientific fields.

Dr. Cattell has been a member of the American Association for the Advancement of Science since 1895 and was vice-president for the Section of Anthropology in 1898 and for the Section of Education in 1912. He was president of the American Psychological Association in 1895, of the American Society of Naturalists in 1902, of the New York Academy of Sciences in 1902 and 1903, of the Society of Sigma Xi for 1913–15, and of the Eugenics Research Association in 1914. He is a member of the National Academy of Sciences, the American Philosophical Society and other scientific and educational organizations.

B. E. L.

FINANCIAL REPORTS

The annual report of the treasurer's office for the fiscal year 1923 (October 1, 1922, to September 30, 1923) will be published in full in a later issue of SCIENCE. The total endowment of the Association is shown to have been $132,014.77 on September 30, 1923. A gift of $500 from Mr. Newcomb Cleveland, of New York City, was received last year to be used for current grants for research, and this has been allotted. Since September 30 last a gift of $1,000 has been received from a member, whose name is not to be published, to be used for the Cincinnati prize, which has been awarded. Besides the $500 gift just mentioned, $3,175 was disbursed as grants for research in 1923. For 1924 the appropriation for grants is $4,000.

The financial report of the permanent secretary's office for the fiscal year 1923 (October 1, 1922, to September 30, 1923) will be published in a later issue of SCIENCE. On October 1, 1923, the total of funds on hand was $8,954.93, made up of the Proceedings' reserve ($2,500), the general emergency reserve ($5,166.98), the balance of the checking account ($180.95), and the journal fund for living life members for 1924 ($1,107.00)—the last credited as received from the treasurer's office before October 1, although it really pertains to the fiscal year 1924. Deducting the last item from the total funds on hand ($8,954.93—$1,107.00) leaves $7,847.83 as the total of appropriable funds in the permanent secretary's hands on October 1, 1923. Of this, $2,500.00 (the reserve for publishing the next Proceedings volume) is to be considered as a liability and that amount may be subtracted from $7,847.93, leaving a really available balance of $5,347.93, the net reserve at the beginning of the present fiscal year. The corresponding net reserve at the beginning of the preceding fiscal year was $5,576.08.

BURTON E. LIVINGSTON,
Permanent Secretary

THE CINCINNATI SESSIONS OF THE SECTIONS AND SOCIETIES

The following reports on the [illegible]ns of the sections and societies at Cinci[illegible]en prepared

from accounts by section and society secretaries and others who were asked to act as reporters. The reports came into the permanent secretary's hands more promptly this year than was the case at the close of the Boston meeting a year ago. There is in many cases room for improvement in the nature of the reports furnished, and the permanent secretary wishes to remark that he has merely done his best with the material sent in. The reports were generally far too extensive and rewriting was necessary in most cases, requiring about seventy-five hours of very intense work. Many of the reports were otherwise quite excellent but too long—which is much better than their being of suitable length but less carefully prepared. The permanent secretary is especially grateful to those who sent him reports and thus made this presentation possible. It is planned to continue the practice of publishing these reports in one or two special issues of the journal following each annual meeting, and it is hoped that future reports may be still more useful and satisfactory.

The reports are arranged below in the serial order of the sections to which they pertain, following the arrangement of the program in the general program of the meeting.

The general program of the third Cincinnati meeting may be secured free by members in good standing if they will write to the permanent secretary and enclose six cents in stamps to pay postage. Requests will be complied with as long as the supply of programs lasts.

SECTION A (MATHEMATICS)

Vice-president and *chairman,* Harris Hancock.

Retiring vice-president, G. A. Miller.

Secretary, William H. Roever, Washington University, St. Louis, Mo.

(*Report by William H. Roever*)

Section A held a single session on Friday afternoon, jointly with the Chicago Section of the American Mathematical Society and the Mathematical Association of America. Three addresses were presented. The retiring vice-president's address, by Professor G. A. Miller, of the University of Illinois, was on "American mathematics during three quarters of a century." It has been published in SCIENCE for January 4th. The speaker dwelt on the enormous strides made by American mathematics since 1848, when no American had yet made a notable discovery in pure mathematics. The honor roll of Americans in this field of science is now very respectable, indeed, but Professor Miller said that America's position in mathematics is not yet so high as in astronomy and in geology. Following the vice-presidential address was an address by the retiring chairman of the Chicago Section of the American Mathematical Society, Professor A. B. Coble, of the University of Illinois, who spoke on "The equation of the eighth degree." The speaker presented the results of an attempt to generalize, for the equation of the eighth or any even degree, a number of chapters in geometry, group theory and function theory. Much of the generalization for the equation of the sixth degree may be thus broadened without greatly diminishing its coherency. The third address was given by Professor L. E. Dickson, of the University of Chicago, on "Algebras and their arithmetics." By means of new and original theory the speaker has been able to construct a highly developed science of arithmetics, after first determining what should be the subject-matter of arithmetics and algebras. The resulting rich array of fundamental results furnishes a true generalization of the classic theory of algebraic numbers, on the one hand, and of Hurwitz's integral quaternions, on the other hand. Professor Dickson has thus been able to unify and complete the whole subject of the theories of algebras. It was this work of Professor Dickson that won the thousand-dollar Cincinnati prize.

The American Mathematical Society, Chicago Section

Chairman, R. D. Carmichael.

Secretary, Arnold Dresden, University of Wisconsin, Madison, Wis.

(*Report by Arnold Dresden*)

The Chicago Section of the Society held sessions Friday forenoon and Saturday forenoon and afternoon. The society as a whole did not meet with the Association, but held its meeting this year in New York City, Thursday, Friday and Saturday. The Cincinnati program contained 40 papers by 34 authors. The subjects presented included the theory of groups, Fourier series, theory of elasticity, history of mathematics, theory of numbers. The authors of these papers represented 16 states (California, Massachusetts, Minnesota and Texas being among them) and the Philippine Islands. Because they were considered with the address by the same author, mentioned above, in the awarding of the Cincinnati prize, Professor L. E. Dickson's two papers on "The theory of numbers and generalized quaternions" and "Quadratic fields in which factorization is always unique," may be specially mentioned here. At the joint dinner for mathematicians and astronomers, held Friday evening, Dr. J. A. Shohat, who had recently come from Russia, expressed the profound appreciation of Russian scientists for the aid given them by America during their years of hardship. Professor H. E. Slaught spoke on the incorporation of the American Mathematical Society and the consequent need for a

revision of its by-laws. Professor Arnold Dresden reported on the progress of the campaign for an endowment fund of $100,000. Professor Oswald Veblen, president of the society, announced the establishment by the National Research Council of graduate fellowships in mathematics.

The Mathematical Association of America

President, R. D. Carmichael.

Secretary-Treasurer, W. D. Cairns, Oberlin College, Oberlin, Ohio.

(*Report by W. D. Cairns*)

The association held its eighth annual meeting Thursday afternoon and Friday forenoon, with an attendance of 158. The following officers for 1924 were elected or appointed: *President,* H. L. Rietz; *vice-presidents,* J. L. Coolidge and Dunham Jackson; *trustees,* R. D. Carmichael, A. B. Chace, E. R. Hedrick, D. E. Smith and E. J. Wilczynski; *secretary-treasurer,* W. D. Cairns; *Representatives in A. A. A. S.,* W. D. Cairns and T. M. Focke; *Delegates to the American Section of the International Mathematical Union,* R. C. Archibald and E. H. Moore. Fifty-one individuals and three institutions were elected to membership. The program consisted of eleven papers. President Carmichael gave the retiring presidential address on "The present state of difference calculus and the prospect for the future." Professor N. A. Court presented a plan for a course in modern synthetic geometry for prospective high-school teachers. Dean P. C. Nash described the place of mathematics in the program of Antioch College. Professor Mary E. Sinclair presented unfinished problems in the determination of the surface of revolution of minimum area.

The Pi Mu Epsilon Mathematical Fraternity

Director General, E. D. Roe, Jr.

Secretary General, Warren C. Bullard, 117 Redfield Place, Syracuse, N. Y.

(*Report by Kathryn Wyant*)

The fraternity held a round-table session Friday forenoon, followed by a luncheon, at which the director general spoke on "The ideals of Pi Mu Epsilon." All the six chapters were represented. It was brought out in the round-table discussion that the fraternity has been extended somewhat slowly, because of a desire to maintain very high ideals. It plans to hold a national meeting each year with the American association. Its chapter programs are to appear in the *Bulletin* of the American Mathematical Society. The chapters have been asked to supply the secretary general with complete lists of their members —alumni as well as active—and to keep the list in his hands truly up to date. The future strength of the fraternity will depend very largely on having such a complete list of members always available.

SECTION B (PHYSICS)

Vice-president and *chairman,* W. F. G. Swann.

Retiring vice-president, F. A. Saunders.

Secretary, S. R. Williams, Oberlin College, Oberlin, Ohio.

(*Report by S. R. Williams*)

Under the auspices of Section B was held, on Friday afternoon, a joint meeting with the American Physical Society, to which Section C (Chemistry) was invited. About 300 were in attendance. Professor F. A. Saunders, of Harvard University, delivered the annual address of the retiring vice-president, on "Some aspects of modern spectroscopy." The speaker was optimistic concerning the future of spectroscopy, because so many investigators are turning their attention to this field. In paying his respects to the various atomic models now engaging the attention of physicists and chemists, Professor Saunders paved the way for a symposium which followed, on "The reflection and scattering of X-rays." According to custom, three physicists were invited to speak in the symposium. Professor A. H. Compton, of the University of Chicago, and Professor Bergen Davis, of Columbia University, spoke from one point of view and Professor William Duane, of Harvard Medical School, spoke from another. A very interesting and spirited discussion closed the symposium and made it a very stimulating one, indeed.

The American Physical Society

President, Charles E. Mendenhall.

Secretary, Harold W. Webb, Columbia University, New York City.

(*Report by S. R. Williams*)

The twenty-fifth annual meeting (one hundred and eighteenth regular meeting) of the American Physical Society was held on Thursday, Friday and Saturday. About 200 were in attendance and 80 papers were presented. The following officers were elected: *President,* Charles E. Mendenhall; *vice-president,* Dayton C. Miller; *secretary,* Harold W. Webb; *treasurer,* George B. Pegram; *members of council,* A. S. Eve and A. W. Hull; *members of board of editors, Physical Review,* H. D. Babcock, W. G. Cady and John T. Tate.

The Thursday forenoon session was presided over by the president of the society. A program of papers, largely devoted to photo-electric and thermionic phenomena, brought out much discussion. The Thursday afternoon session was opened by Professor L. T. More, introducing Profesor Mendenhall for the annual presidential address, on "Some recent develop-

ments in the study of the solid state." This paper carefully outlined recent researches that have led to an appreciation of some of the important physical and chemical properties of matter in the solid state. Following this address was a program of papers devoted mainly to spectroscopy. The program of Friday forenoon contained papers related to electrical and magnetic phenomena. The Saturday forenoon program contained papers on recent researches in the field of X-ray phenomena. At the afternoon session were read a number of papers on various topics.

The American Meteorological Society

President, Sir Frederick Stupart.

Secretary, Charles F. Brooks, Clark University, Worcester, Mass.

(*Report by Charles F. Brooks*)

The Cincinnati meeting was very noteworthy. The Cincinnati Chamber of Commerce, which in 1869 financed the first American experiment in weather forecasting from telegraphic reports, most cordially gave a luncheon to the Meteorological Society. Vice-president A. J. Freiberg read portions of the annual reports of the chamber of commerce for 1869 and 1870, recounting the inception of weather forecasts and the subsequent transfer of the work to the U. S. Signal Service. Another luncheon to the meteorologists was given through the courtesy of Mr. John L. Sherff, of the Union Central Life Insurance Company; and a dinner was spread at the Abbe Observatory by the Fruit Association, represented by J. J. Castellini, vice-president. Mr. W. C. Devereaux, Cincinnati office, U. S. Weather Bureau, in addition to taking care of all other general arrangements, planned a most successful subscription dinner. The four special meteorological luncheons and dinners provided an unprecedented opportunity for profitable conversation under most enjoyable circumstances.

The most important group of papers and much discussion centered about what might be called hydrometeorology—especially flood forecasting, so extremely important along the Ohio river, notably at Cincinnati. W. C. Devereaux and M. W. Hayes led this discussion, and Dean Herman Schneider presented the manifold aspects of meteorology in engineering. Investigations concerning conditions in the free air also received much attention. The presidential address was of a historical nature, made vivid by the personal recollections of Sir Frederick Stupart, veteran director of the Canadian Meteorological Service.

The following officers for 1924 were elected: *President,* W. I. Milham, of Williams College; *vice-president,* A. E. Douglass, of the University of Arizona; *secretary,* C. F. Brooks, of Clark University, Worcester, Mass.; *treasurer,* W. R. Gregg, of U. S. Weather Bureau; *councilors:* E. H. Bowie, R. E. Horton, H. H. Kimball, John Patterson and B. E. Sherry. A fuller report of the Cincinnati meeting will appear in the *Bulletin* of the American Meteorological Society.

SECTION C (CHEMISTRY)

Vice-president and *chairman,* E. W. Washburn.

Retiring vice-president, W. Lash Miller.

Secretary, W. D. Harkins, University of Chicago, Chicago, Ill.

(*Report by W. D. Harkins*)

Sessions of Section C and the Cincinnati Section of the American Chemical Society were held Friday forenoon, Saturday forenoon and afternoon and Monday forenoon and afternoon. Section C joined with Section B and the American Physical Society for the Friday afternoon session on X-rays, reported under Section B, above. A dinner for chemists occurred Friday evening. Many interesting and important papers were presented and discussed. A significant feature of the sessions was that ample time was given for the discussion of each topic and for discussing related topics that were brought up. The address of the retiring vice-president, W. Lash Miller, of the University of Toronto, described the methods used in separating Wildier's bios into two independent substances, each of which aids in the growth of yeast in its own particular way. These substances were found not to be vitamines. The address will be published in a later issue of SCIENCE. W. E. Howe, editor of the *Journal of Industrial and Engineering Chemistry,* spoke of the development of industrial chemistry in the United States during the last 75 years. He paid particular attention to the general trend of the development and the influence of trade associations, fellowships and various boards. He also illustrated in a number of ways the effects of inventions of various mechanical devices upon the work of the chemist. Thus, the blowing of glass by machinery made it necessary to change the chemical composition of the glass used. Martin Fischer, of the University of Cincinnati, spoke on the electrical resistance of mutually soluble systems. He found that on cooling solutions of certain soaps the resistance remains constant until a certain temperature is reached, and then increases with great rapidity, which is not in accord with the results of McBain. The ability of lyophilic colloids to hold the solvent is an important characteristic. It is found that with soap and alcohols the amount of alcohol held increases with the length both of the soap and of the alcohol molecules. Graham Edgar, of the University of Virginia, pointed out that certain supposed abnormalities in the relation between the equilibrium in the interior of a gas

mixture and at its contact with a solid catalytic agent, are actually in accord with the mass law. He found that the equilibrium between an ester, ethyl acetate and acetic acid, alcohol and water gives a much higher percentage of ester in the vapor than in the liquid phase, so in the preparation of esters it is often advisable to distil off vapor from the liquid and allow time for the attainment of equilibrium in the vapor before it is condensed. A. P. Mathews, of the University of Cincinnati, presented an interesting paper on the nature of electricity and light. He gave a theory of the nature and origin of the positive and of the negative electron.

H. W. Rodehamel, of Indianapolis, described the methods usel by Eli Lilly and Company for the purification of insulin, and gave an account of the use of this substance in the treatment of diabetes. He told of the case of a small boy who had been given an injection of insulin to care for the sugar of his evening meal, but who failed to get the meal and was found unconscious on the floor of his room. His mouth was pried open, and a small amount of sugar administered in the form of orange juice. Within ten minutes the boy was playing as usual. The speaker stated also that when rabbits become unconscious from the same cause they are given an injection of sugar solution in one ear, and that the effect is so rapid that often the rabbit will jump up and away from the syringe before there has been time to inject the full dose. H. A. Shonle and J. H. Waldo, of the same company, presented data which indicate that insulin is a protease. In work done at the University of Cincinnati it was found that insulin can be purified by absorbing it from solution upon charcoal and afterwards causing it to be released by a change of solvent, or by using a substance which is absorbed more highly.

W. H. Rodebush believes that a radical revision of the ordinary course in physical chemistry would be of considerable benefit to the student. He considers that more time should be given to the study of atomic structure, statistical mechanics and thermodynamics, and less to the study of solutions, deviations from the gas laws, determination of molecular weights and some other topics that are overemphasized; since the relative importance of the latter has been greatly reduced by the recent remarkable developments in connection with the structure of the atom and the molecule. W. Lash Miller stated that much confusion has been introduced into thermodynamics by recent attempts to simplify the subject, particularly by the transfer of the term "free energy" from its ordinary use by Helmholtz to the zeta function of Gibbs. He considers that the psi, chi and zeta functions of Gibbs should be used without any change of terminology.

Many papers of interest, other than those mentioned above, were presented at the meeting. Some of these will be published in SCIENCE. The titles are given below:

On the composition of animal skin and some characteristics of animal skin: GEORGE D. MCLAUGHLIN and EDWIN R. THEIS, University of Cincinnati.

The occurrence of bile salts in the blood: SHIRO TASHIRO, College of Medicine, University of Cincinnati.

On the relation of vitamine B to anaphylaxis: PAUL WEDGEWOOD, College of Medicine, University of Cincinnati.

On the color change of Congo red: J. M. FOULGER, College of Medicine, University of Cincinnati.

On the silicon content of tissue: MOSES ISAACS, College of Medicine, University of Cincinnati.

The alkaloid content of Phytolacca decandra as affecting its use as a salad: H. A. WEBB and M. J. COX, George Peabody College for Teachers.

A study of some hydroxyurethanes: R. E. OESPER and WALTER A. COOK, University of Cincinnati.

New hydroxyurethanes and their conversion to hydroxylamine derivatives: LEONORA NEUFFER and ANNA L. HOFFMANN, University of Cincinnati.

The liberation of hydrogen from carbon compounds: H. S. FRY, University of Cincinnati.

The use of medicated and disinfecting soaps: L. W. BOSART, Proctor and Gamble Co.

Rays of a new type and photographic tests of atomic stability: WILLIAM D. HARKINS, University of Chicago.

Equilibria in mixtures of lactic acid and its anhydrides: G. A. THURMOND, University of Cincinnati.

Some recent developments in sugar chemistry: C. A. BROWNE, Chief, U. S. Bureau of Chemistry.

The subject of a course in physical chemistry (a critical review of recent progress): W. H. RODEBUSH, University of Illinois.

The chemistry of explosives: C. A. MUNROE, Washington, D. C.

Report of progress in the separation of the isotopes of chlorine, mercury and zinc, and the general system of isotopes: WILLIAM D. HARKINS, University of Chicago.

Lipoids, a factor in gluten quality: EARL B. WORKING, Kansas State Agricultural College.

SECTION D (ASTRONOMY)

Vice-president and chairman, Heber D. Curtis.

Retiring vice-president, Otto Klotz.

Secretary, F. R. Moulton, University of Chicago, Chicago, Ill.

(Report by F. R. Moulton)

The program of Section D, on Friday and Saturday forenoons and Friday afternoon, consisted of a symposium on the "Infinity of the physical universe,"

another symposium on the "Reform of the Calendar," and a number of miscellaneous scientific papers. Although the American Astronomical Society was holding its annual meeting at Poughkeepsie, N. Y., at the time, the sessions of Section D were well attended and aroused much interest, especially the first symposium. The discussion of the question of the infinity of the physical universe was introduced by Professor F. R. Moulton, of the University of Chicago. The speaker explained that the question was one to which no definite and final answer can be given either now or in the future. Nevertheless the subject deserves discussion, because it is one which the human mind ever persists in attacking; it has powerful influence on our general philosophy of science, and the ideas of astronomers respecting the extent of the visible universe and the duration of celestial bodies are now undergoing rapid expansions. It was explained that if the universe is built up of an unending succession of cosmic units which at each stage make larger units, as electrons make up atoms, atoms make up molecules, molecules make up worlds, worlds make up solar systems, solar systems make up galaxies, galaxies make up super-galaxies, and so on—each unit separated from its neighbors by distances that are great compared to their diameters—then the universe is not only infinite in extent, but it has an infinite number of each type of cosmic units, the total mass is infinite, there is no center or absolute position in it, and it may have infinite duration, both past and future. Although there can be no absolute proof of the soundness of such a conclusion, the speaker adopted as a working hypothesis that the physical universe is infinite in space and in time, and that all phenomena are in a general way cyclical. Professor Wm. D. MacMillan, of the University of Chicago, continued the discussion and made clear the rôle played by postulates in scientific theories, particularly in the one under discussion. He enumerated certain postulates that he wished to adopt and agreed with the first speaker in accepting the hypothesis that the universe is infinite in space and time. The relationship of the doctrine of general relativity to the question was discussed by Dr. Horace Levinson, of Ohio State University. Dr. Levinson explained the basis of the Einstein theory, the meaning of the curvature of space, the different forms of the solutions that have been found for the Einstein differential equations, and the astronomical consequences of the different solutions. He made clear the fact that the implications of the Einstein theory that bear on this question are neither fully developed nor unique.

The reform of the calendar was discussed by Mr. M. B. Cotsworth, secretary of the International Fixed Calendar League; Dr. Charles F. Marvin, Chief of U. S. Weather Bureau; Professor Benjamin F. Yanney, of Wooster College, Ohio, and other speakers. The grave defects and inconveniences of the present calendar were pointed out, and the simplicity of a calendar consisting of thirteen months of four weeks each was explained. An interesting feature is that, in order that the same dates shall fall on the same day of the week on successive years, it is necessary to have one "skip day" in each ordinary year, the last one in the year, that does not have a week-day name, and two such days on leap years. In spite of the fact that this interrupts the regular recurrence of the Sabbath on every seven days, the plan has received the highest ecclesiastical indorsement all over the world. It is also supported widely by commercial and governmental agencies. An international conference on the subject will be held in Geneva, Switzerland, next summer, and it is hoped that concerted action will be taken at that time.

Professor E. S. Manson, of Ohio State University, established the famous solutions of the problem of three bodies, due to Lagrange, by a method whose directness and simplicity leave nothing to be desired. Professor W. Carl Rufus, of the University of Michigan, gave a new and simple method of determining the character of the oscillations of Eta Aquilae and other variable stars of the Cepheid type. Dr. Elliott Smith, of the Cincinnati Observatory, gave an interesting illustrated paper on the effects of non-luminous matter in reducing and cutting off the light of the stars. Dr. Louis A. Bauer, of the Carnegie Institution of Washington, gave a paper on the relations between solar activities and terrestrial magnetic and electric phenomena. He presented evidence of an annual period in the solar activity.

A telegram announcing the death, on December 28, of Dr. Otto Klotz, eminent director of the Dominion Observatory, Ottawa, Canada—who would have given the retiring vice-presidential address at this meeting of Section D, had his health permitted, almost on the hour at which he passed away—cast a shadow over the meeting of the section.

SECTION E (GEOLOGY AND GEOGRAPHY)

Vice-president and chairman, Nevin M. Fenneman.
Retiring vice-president, H. W. Shimer.
Secretary, Elwood S. Moore, University of Toronto, Toronto, Ontario.

(Report by E. S. Moore)

The celebration of the seventy-fifth anniversary of the association added greatly to the importance of the Cincinnati sessions of Section E, which were unusually successful. Friday was devoted to joint sessions with the Association of American Geographers, arranged with the kind cooperation of Richard E. Dodge, secretary of that association. Two of the outstanding papers presented were those of T. C. Chamberlin, on

"Seventy-five years of American geology," and William M. Davis, on "The development of geography in the United States." These will be published elsewhere in SCIENCE. C. H. Birdseye gave a splendidly illustrated address, "Through the canyon of the Colorado river." He vividly recounted a perilous journey from Lee's Ferry, Arizona, to Needles, California, undertaken last summer by himself and seven others. The trip was made chiefly in the interests of the U. S. Reclamation Service. Only two earlier expeditions have accomplished this trip. Friday afternoon was spent in the club rooms of the Cincinnati Literary Society, following a subscription luncheon, which was largely attended. The retiring presidential address of the Association of American Geographers was given by Ellsworth Huntington, who spoke on "Geography and natural selection." Hervey W. Shimer, retiring vice-president of the American Association for the Advancement of Science for Section E, delivered a paper on "Some forces in man's social evolution." These two papers will be published in SCIENCE. T. A. Jaggar, Jr., lately returned from Japan, gave a remarkable account of the causes of the Japanese earthquake with moving pictures of the great fire. Thursday afternoon and Saturday were occupied with the regular program of Section E. In his paper on "Clockwork measurements of the internal shearing in the Glacier de la Brenva, Italian Alps," R. T. Chamberlin described experiments with an automatic recording shear meter, and concluded that glacier behavior may be compared to that of other rocks in the following particulars: (1) Glacier ice in the nevé region resembles sedimentary rock, while below this region it has many of the characteristics of metamorphic rock; (2) recumbent folds and other phenomena show that rock flow by recrystallization is an important means of glacier movement; (3) shearing of slices and thrust faults, displacing older structures, give testimony of the importance of rock fracture in glacier motion. A paper by T. A. Jaggar, Jr., on "External evidences of regular internal magmatic movement in active volcanoes" furnished much new information on subjects that have long been of great interest to geologists. He presented a large number of measurements and interpretations of Hawaiian lava activity. In another paper, on "The Tokyo earthquake, a study of the economics of disaster," Dr. Jaggar stated that the average annual toll of earthquakes and volcanoes is about 30,000 persons and half a billion dollars in property. Danger to many American cities was emphasized, since they are not immune to earthquakes. Papers of great general interest were by Charles D. Walcott, on his work in the Canadian Rockies; by J. Paul Goode, on "Progress in map presentation of the earth's surface entire," and by S. W. McCallie, on Stone Mountain, Georgia, the huge granite intrusion on which the great memorial is being carved. A fuller report of papers presented before Section E will appear in a later issue of SCIENCE.

Dr. William M. Davis presented a report of the American Association for the Advancement of Science committee on "Geological features of city parks," consisting of Dr. Davis, C. D. Walcott and E. S. Moore, appointed at the Boston meeting to look after the carrying out of a resolution passed by Section E and approved by the association council at that meeting. The resolution urged the development of geological features in city parks as a matter of education. Many replies to the circular letters sent out have been received, and a considerable number of geologists are taking up this matter in earnest.

The Association of American Geographers

President, Ellsworth Huntington.

Secretary, Richard E. Dodge, Connecticut Agricultural College, Storrs, Conn.

(*Report by Richard E. Dodge*)

The twentieth annual meeting consisted of three sessions of the Association of Geographers and two sessions arranged jointly with Section E, American Association for the Advancement of Science. The meeting lasted from Thursday afternoon to Saturday afternoon. It was largely attended and interest was maintained until nearly 6 o'clock Saturday evening. Thirty-three members of this association were present and twenty papers were read in its sessions. The next meeting will occur at Washington with the American Association for the Advancement of Science, a year hence. The following officers for 1924 are announced: *President,* Curtis F. Marbut, U. S. Bureau of Soils; *vice-president,* Oliver E. Baker, U. S. Bureau of Agricultural Economics; *treasurer,* Vernon C. Finch, University of Wisconsin; *secretary,* Charles C. Colby, University of Chicago; *editor,* Almon E. Parkins, George Peabody College for Teachers; *councillors,* W. L. G. Joerg, American Geographical Society, George R. Mansfield, U. S. Geological Survey, Wellington D. Jones, University of Chicago, Harlan H. Barrows, University of Chicago, Ellsworth Huntington, Yale University.

The first session was opened by Professor R. deC. Ward, of Harvard University, with an illustrated paper on the work of the International Ice Patrol in the North Atlantic. As a result of several seasons' operations, it is now possible to state with reasonable accuracy the extreme limit of iceberg distribution, and steamer lines are arranged accordingly. The seasonal weather types in a number of selected cities in North America, with special emphasis on Mexico, were presented by two advanced students of Clark Uni-

versity, George F. Howe and J. Elmer Switzer. These indicated clearly how modern meteorology is making weather summaries more definite and usable. Professor A. E. Waller, of Ohio State University, showed the evolution of the American flax industry from its beginning in the cool, moist east, where the plant was raised for fiber, to its later development in the dry northwest, where seed is grown. The session closed with two papers on Ohio geography: one an illustrated description of the plant geography of Ohio, by Professor E. N. Transeau (of Ohio State University), and the other by Professor R. H. Whitbeck (of the University of Wisconsin), a summary of the trend in American water-borne commerce, as illustrated on the Ohio River.

The Saturday afternoon session was devoted primarily to economic geography. Professor E. C. Case, of the University of Cincinnati, presented an analysis of manufacturing in the Valley of East Tennessee. This paper was admirably supplemented by one on the "Growth of southern cotton manufactures," by Professor A. E. Parkins, of Peabody College for Teachers. The reasons for the growth of these industries were analyzed and comparisons were made with the conditions that prevail in the textile section of New England. Professor P. E. James, of Clark University, spoke briefly of the development of transportation in South America, showing by a series of maps that the routes of the Incas were practically the only land routes developed until after 1880. He showed the increase in navigated waterways due to the rubber industry. A good illustration of a careful study of a small area was given by Professor N. A. Bengtson, of the University of Nebraska, a detailed analysis of the conditions of occupation and development in the Santa Elena Peninsula, an oil-bearing region of Ecuador. Another striking regional analysis was that of the "Apple industry in the Annapolis valley of Nova Scotia," by C. C. Colby, of the University of Chicago. He considers the rôles played by location, surface features, climate and supplementary industries in making this great apple region successful. The closing session opened with a paper by Professor J. Paul Goode, of the University of Chicago, devoted to an analysis of the significant features of the best known and most used map projections, from the time of Mercator's map until to-day. The accompanying illustrations came to a climax in a presentation of the Homolosine projections recently perfected by Professor Goode—a projection which seems better than any other to present the globe as a flat surface without considerable distortion. Several papers given at this session indicate rapidly growing interest in economic geography, which is fast developing into an interpretive science. Complete abstracts of all papers given at this meeting will be published in the 1924 volume of the "Annals."

The National Council of Geography Teachers

President, R. M. Brown.

Secretary, George J. Miller, State Teachers College, Mankato, Minn.

(*Report by Geo. J. Miller*)

Three sessions were held this year, one of which was a "dinner meeting," and all were well attended. The meeting was characterized by strong and carefully prepared papers, by freedom and thoroughness of discussion, and by evidence of a maturing opinion as to what should be accomplished at the various levels of geographic education. Committees dealing with specific problems were instructed to complete tentative conclusions and submit the same for consideration and publication at the eariest possible date. The three outstanding papers dealt with junior high school geography, the use of geographic principles and traditional geography and present trends. These papers will appear in full in the *Journal of Geography.* The council took a definite stand against the great body of detail now incorporated in elementary school textbooks. It also has undertaken to prepare a score card for judging textbooks. It is probable that junior high school geography and the use of geographic principles in teaching will be the central theme of the next meeting. W. R. McConnell, of Miami University, was elected president for 1924.

SECTION F (ZOOLOGICAL SCIENCES)

Vice-president and *chairman,* E. L. Rice.

Retiring vice-president, M. M. Metcalf.

Secretary, Herbert W. Rand, Harvard University, Cambridge, Mass.

(*Report by Herbert W. Rand*)

Of special interest to Section F this year was the address of the retiring president of the association, Professor J. P. McMurrich, of the University of Toronto. The privilege of a complimentary visit to the exceptionally fine collection of animals maintained by the Cincinnati Zoological Park Association was greatly appreciated by all zoologists. The collection is well worth visiting. The exhibits presented by the zoological societies, while not extensive, included many matters of special interest. Demonstrations relating to genetics, especially the cytology of genetics, predominated. Embryological models, neurology, protozoology, skin regeneration in amphibians, and technical apparatus also figured among the exhibits. An instructive group of demonstrations and exhibits in entomology was arranged by the Entomological Society of America. The address of the retiring vice-president of Section F, Dr. Maynard M. Metcalf, of

Oberlin College, was delivered at the zoologists' dinner, Friday evening, December 28. The subject of the address was "Research and the American college." Defining science as the whole field of testable reality and research as the search for truth concerning the reality in the midst of which we live and to which we must relate ourselves, Dr. Metcalf emphasized the importance of an educational scheme calculated to foster the instinct for truth which is ingrained in the human soul, and to stimulate it to productive activity. One of the most important functions of an educational institution is to produce properly trained research men. This end is most likely to be attained if students become inspired with the research spirit and directed toward research while in their undergraduate course. In most of our colleges and universities the conditions under which the undergraduate pursues his studies are not very favorable to the development of research workers. These conditions should be improved by increasing the ratio of the number of teachers of high academic rank to the number of students. At present usually far too large a proportion of the teaching is done by persons of the rank of instructor and assistant, and the student gains too little contact with teachers of professorial rank. Dr. Metcalf outlined the conditions which would obtain in an ideal college—with a faculty large in proportion to the number of students and constituted almost entirely of men of professorial rank, and with classes small enough so that the work of the individual student could be adequately guided by the professor in the course. The present practice of attempting to indicate the quality of a student's work by some system of mechanically expressed "grades" should be abandoned. In place of grades the student should receive merely the teacher's personal commendation or criticism. Arbitrary rewards for scholarship are undesirable. In leading the student toward investigation, emphasis should not be put upon the utilities; truth itself is the best guide into the unknown. The most important work is likely to be done by those for whom the main urge is the "love of the game itself."

The American Society of Zoologists

President, M. F. Guyer.

Secretary, W. C. Allee, University of Chicago, Chicago, Ill.

(*Report by Herbert W. Rand*)

The American Society of Zoologists held sessions Thursday, Friday and Saturday, its sessions being as far as possible presided over by President Guyer. In the unfortunate absence of Secretary Allee, the work of the secretary was performed by Professor H. H. Newman, of the University of Chicago. The retiring president of the society did not present an address. At the business meeting of the Society the following officers were elected: *President,* R. G. Harrison; *vice-president,* R. K. Nabours; *member executive committee,* M. F. Guyer; *member National Research Council,* J. T. Patterson; *associate editors, Journal of Morphology,* A. A. Schaeffer, Helen Dean King, S. O. Mast; *representatives in the Council of the American Association for the Advancement of Science,* Caswell Grave, R. E. Coker; *chairman of committee on Standardization of Biological Stains,* S. I. Kornhauser. Professor W. C. Curtis presented a memoir on the life of the late Professor George Lefevre, of the University of Missouri. The business session was prolonged in a discussion of the problems of publication and the relations of the Society to the Wistar Institute.

For the presentation of a general program of papers covering the several fields of zoology, sessions were held Thursday morning and afternoon and Friday morning and afternoon. The sessions on Friday were each divided into two sections meeting simultaneously. At the end of Friday's sessions a considerable number of papers on the general program had not yet been called, and a special session was therefore arranged for Saturday morning, to complete the program. Including the "late titles," the general program comprised exactly 100 papers, distributed by subjects as follows: Embryology, 10; Endocrinology, 10; Cytology, 13; Protozoology, 6; Parasitology, 20; Physiology, 29; Comparative Anatomy, 5; Experimental Zoology, 4; Miscellaneous, 3. A considerable number of papers were presented "by title" only. The time allowed for papers ranged from five to fifteen minutes, most of them being scheduled for either fifteen or ten minutes each. All the sessions were very well attended.

At four on Friday afternoon an address on the "Theory of nervous activity and the theory of sight" was presented by Professor P. P. Lasareff, of the Physical Institution of Moscow, a special guest of the society. He presented an argument to the effect that in all organs under all conditions excitation is possible only as a consequence of changes in ionic concentration of the medium. From this should follow that in neuro-muscular fatigue it is not the brain centers that become fatigued. Indefatigability is always correlated with periodicity of function, as is well exemplified by the apparatus of the heart and of respiration; the indefatigability is a consequence of the periodicity of action. Professor Lasareff reported observations indicating that in the brain centers occur periodic chemical reactions which produce periodic electro-motive effects. Hence, active brain centers should create electro-magnetic waves in the surrounding ether.

The Society of Zoologists participated in joint sessions with the American Society of Naturalists (which see), the Botanical Society of America and the Ecological Society of America (which see), and the Joint Genetics Section (of the Society of Zoologists and the Botanical Society) presented a very excellent program, which is reported below under the heading for that section.

The Entomological Society of America

President, T. D. A. Cockerell.

Secretary-treasurer, C. L. Metcalf, University of Illinois, Urbana, Illinois.

(*Reports by C. L. Metcalf and Herbert W. Rand*)

The eighteenth annual meeting of the society was one of the busiest and best attended thus far held. There were six sessions, on December 27, 28 and 29, three for the presentation and consideration of miscellaneous contributions, two for the business session and the Symposium and one for the annual public address. Attendance at the several sessions ranged from 75 to about 200. The following officers were elected for 1924: *President,* Charles W. Johnson, Boston Society of Natural History; *first vice-president,* W. E. Britton, Connecticut Agricultural Experiment Station; *second vice-president,* Charles T. Brues, Bussey Institution; *secretary-treasurer,* C. L. Metcalf, University of Illinois; *members of executive committee,* Herbert Osborn, T. D. A. Cockerell, Arthur Gibson, W. D. Funkhouser, Edith M. Patch, J. H. Emerton; *representatives in the American Association for the Advancement of Science Council,* P. P. Calvert and James G. Needham. Special committees were authorized to consider and report upon (1) the proposed sale of the Barnes Collection of Lepidoptera to the government for the benefit of the U. S. National Museum, and (2) a preferred usage for such entomological terms as appear to be in current use in conflicting and confusing forms. A grant of $70.00 was voted for the support of the *Zoological Record.* The Thomas Say Foundation announced the probable appearance at an early date of a second memoir on North American Entomology. Sixty-four new members were elected during the year, bringing the total membership to 672, the largest in the history of the society.

The general sessions were crowded with reports of research and investigation. A symposium on "Methods of protection and defense among insects" gave comprehensive consideration to this subject under two categories: (a) Synthetic papers dealing with protective structures, constructions, form and color, positions and behavior; and (b) a series of short reports of original observations on specific cases of protection. Many of the papers dealt with the uncertainty as to the effectiveness of so-called protective adaptations, while others presented striking cases of their effectiveness. More than 30 papers were presented in the symposium, many of them beautifully illustrated.

President T. D. A. Cockerell, of the University of Colorado, well-known student of fossil insects, presided throughout the sessions, and on Saturday afternoon delighted his audience with an intimate account of a collecting trip taken during the summer to Siberia and Japan. The closing session of the society was held on Saturday evening. Dr. James G. Needham, of Cornell University, in the annual public address of the society, presented a much-neglected phase of entomological investigation under the title "The rôle of insects in food production." He showed how this much-despised class of animals contains species that offer wholly unappreciated possibilities as foods for game birds and fishes. An exhibition of drawings, preparations, etc., attracted much attention.

The American Association of Economic Entomologists

President, A. G. Ruggles.

Secretary, A. F. Burgess, Melrose Highlands, Mass.

(*Report by A. F. Burgess and Herbert W. Rand*)

The sessions of the thirty-seventh meeting of the association opened Saturday morning and continued till Wednesday afternoon. Excluding symposia and joint sessions there were 84 papers presented. There were sessions of the Section of Apiculture and the Section of Horticultural Inspection (separately reported below), and a number of general sessions. On Monday evening there was a session of the Insect Pest Survey and the Extension Entomologists. The attendance throughout the meeting was as large as that of any earlier meeting; 65 new members were elected. At the business session Dr. L. O. Howard presented a report on the International Conference on Phytopathology and Economic Entomology held in Holland last year. The constitution was amended to provide for life members. Dr. D. L. Van Dine was named to represent this association on the board of trustees of the Tropical Plant Research Foundation. A. F. Burgess was elected president for 1924, and C. W. Collins (Melrose Highlands, Mass.) was elected secretary.

The general programs contained many interesting and important papers. The president's addresses, by Dr. A. G. Ruggles, was on "Pioneering in economic entomology" and was of much interest and value. A symposium on methods of estimating insect abundance and damage occupied most of the Monday forenoon session, and the Tuesday forenoon session was devoted to an important series of papers relating to the European corn borer. The A. A. E. E. joined with the American Phytopathological Society (which see)

for a symposium on "Crown Gall." The sessions of the sections are reported below.

Section of Apiculture, A. A. E. E.

Chairman, S. B. Fracker.

Secretary, G. M. Bentley, University of Tennessee, Knoxville, Tenn.

The Saturday forenoon session was devoted to the address of the chairman and a symposium of short papers on "Methods of teaching beekeeping." Professor Fracker presented evidence that American foulbrood is mainly disseminated by movements and shipments of bees and used bee supplies, rather than by honey shipments. The symposium discussion was led by Professors J. S. Hine, G. M. Bentley, F. B. Paddock and F. E. Millen. The speakers expressed these ideas among others: that elementary courses in beekeeping should be practical for short-course students, but confined to fundamentals for four-year students, and that practical problems are not as well suited for graduate students as fundamental problems such as those of bee physiology. From the many interesting papers presented may be mentioned a very well-illustrated description of the storing and ripening of honey by honeybees. E. F. Phillips discussed the wide distribution of the Isle of Wight disease in Europe and presented a paper on the bee louse in this and other countries. A plan for the exchange of translations of European literature was adopted by the section. The chairman was directed to appoint one or more delegates to the International Apicultural Congress, to be held at Quebec next September. A resolution was adopted favoring restriction on interstate movement of drawn comb with or without bees. At the next meeting (Washington) special attention is to be given to queen breeding. R. W. Harned was elected section chairman and G. M. Bentley, University of Tennessee, Knoxville, Tennessee, was elected section secretary for 1924.

Section of Horticultural Inspection

Chairman, P. A. Glenn.

Secretary, E. R. Sasscer, U. S. Department of Agriculture, Washington, D. C.

The Saturday afternoon session of the section was opened by the showing of a motion-picture illustrating the activities of the Federal Horticultural Board, in fumigation, inspection, etc. Recent work of the Federal Horticultural Board was discussed by its chairman, Dr. C. L. Marlatt, who pointed out a number of important problems that arose during 1923. Mr. Lee A. Strong gave an informing talk on methods practiced in California to prevent entry of injurious insects and plant diseases into the state. Dr. T. J. Headlee briefly outlined recent work against gipsy moth in New Jersey. Professor J. J. Davis pointed out the present need for a careful investigation of methods now in vogue for the fumigation of nursery stock. Important foreign insects recently intercepted were discussed by Mr. E. R. Sasscer. The chairman of the section for 1924 is E. R. Sasscer and the secretary is W. B. Wood.

The Wilson Ornithological Club

President, T. L. Hankinson.

Secretary, Gordon Wilson, State Normal College, Bowling Green, Ky.

(*Reports by Gordon Wilson and Herbert W. Rand*)

The club held sessions on Monday and Tuesday, the Monday forenoon session being arranged jointly with the Ecological Society of America. All sessions were well attended. The following officers were elected for 1924: *President,* Albert F. Ganier; *vice-president,* William I. Lyon; *secretary,* Gordon Wilson, State Normal College, Bowling Green, Ky.; *treasurer,* Ben J. Blincoe; *editor,* Lynds Jones; *council members,* H. L. Stoddard, Wm. Rosen and T. L. Hankinson.

Professor Dayton Stoner, of the University of Iowa, gave a paper on birds of Fiji and New Zealand. He stated that 224 avian species are known from New Zealand and only 75 for Fiji. Fiji has few water birds, while New Zealand has many. The speaker presented some valuable data on the extinct moa and showed slides of the kiwi or apteryx. Birds of Naknek Lake, Alaska, were discussed by Professor James S. Hine, of Ohio State University. The water birds there nest on inaccessible ledges or low-lying islands, apparently as a result of the abundance of foxes. The birds of Reelfoot Lake, Tennessee, were the subject of a paper by Mr. Albert F. Ganier, president of the Tennessee Ornithological Society. The lake lies near the Mississippi and was a swamp till 1812, when the area sank in an earthquake. This region is a great paradise for hunters. Wood-duck, hooded merganser and mallard breed here and coots are very plentiful. Mr. Ganier will contribute to the *National Geographical Magazine* from the wealth of his observational knowledge of this lake. Professor Francis H. Herrick, of Western Reserve University, contributed important information and showed wonderful photographs on the nesting habits of the American eagle. He has been studying an eagle nest near Lake Erie, by means of an observatory built in a tree 85 feet from the nesting tree. The observations reported referred to a single pair of birds and extended over thirteen days, from 5 a. m. to 7 p. m. The food brought to the nest consisted mainly of fishes, but frequently chickens and other objects were brought. Ben J. Blincoe, of Dayton, Ohio, presented a summary of our present knowledge of the breeding of the prairie horned lark in

Kentucky. Several Kentucky ornithologists are interested in making a cooperative study of this bird as it occurs in the state.

The Tuesday session was devoted to bird-banding as a means of studying migration, etc. The speakers were: Dr. Lynds Jones (Oberlin College), E. A. Goldman (U. S. Biological Survey), A. F. Ganier (Nashville, Tenn.), William I. Lyon (Waukegan, Ill.), and J. M. Robinson (Alabama Polytechnic Institute). The papers aroused much interest in this comparatively new way of studying birds. It seems best to trap and band adults rather than to band the young. Traps are being devised to catch birds that do not come to the ground to feed, even humming-birds. It is hoped that many bird lovers will take up the fascinating work of banding and recording the birds of their localities.

SECTION G (BOTANICAL SCIENCES)

Vice-president and *chairman,* Charles J. Chamberlain.

Retiring vice-president, Francis E. Lloyd.

Secretary, Robert B. Wylie, State University of Iowa, Iowa City, Iowa.

(*Report by Robert B. Wylie*)

Under the auspices of the section committee a joint session with the Botanical Society of America and the American Phytopathological Society occurred on Friday afternoon. The first number on the program was the retiring vice-presidential address, given by Professor Francis E. Lloyd, of McGill University, on fluorescent pigments in plants. The green fluorescent pigments fluoresce red, while the others fluoresce yellow, orange or green. By Professor Lloyd's new method, dark-field illumination is so employed that not only the fluorescence of cell pigments *in situ* may be demonstrated but also structural relations may be studied at the same time. Preparations of living plants were microscopically exhibited, gleaming brilliantly in hues of red, orange or yellow, as were also color-process photomicrographs of these same organisms, the first photographs ever made by means of fluorescent light emitted by the plants themselves. Professor Lloyd's address was followed by three invitation papers. Professor L. R. Jones, of the University of Wisconsin, discussed the relations of environmental conditions to disease susceptibility in plants, specially emphasizing the influence of temperature. The paper was illustrated by charts of relations between temperature and susceptibility to disease caused by fungi in several crop plants. Dr. Lester W. Sharp, of Cornell University, discussed recent cytological progress, emphasizing the gains secured through the conception of protoplasm as a colloidal system. Thus are the points of view of cytologists, physiologists and chemists brought together. Dr. Sharp discussed cytoplasmic inclusions and chromosomes. He stated that recent progress favors the plasmodial theory of the multicellular organism. Dr. B. M. Duggar, of the Missouri Botanical Garden, discussed hydrogen-ion concentration with reference to cell metabolism, reviewing recent contributions on the germination of spores, the growth of fungi and the problems of cell absorption and metabolism in higher plants, as influenced by the H-ion concentration. Isoelectric points in protoplasm received attention, and emphasis was laid on the necessity for distinguishing between the protoplasm and the cell sap when H-ion concentration is being studied.

The Botanical Society of America

President, Benjamin M. Duggar.

Secretary, Ivey F. Lewis, University of Virginia, University, Va.

The Cincinnati meeting was the eighteenth annual meeting of the society. It opened Thursday morning and was finished on Monday. The following officers for 1924 were elected: *President,* William Crocker; *vice-president,* A. F. Blakeslee; *representatives in the council of the American Association for the Advancement of Science,* B. M. Duggar and J. R. Schramm. The program of the meeting was arranged to care for papers on general botany (general sessions) and those of the three sections of the society: Physiological Section, Systematic Section, and Mycological Section. Several sessions of the society frequently occur simultaneously and each section has its own chairman and secretary. The Joint Genetics Section is a joint organization of students of genetics in this society and in the American Society of Zoologists. Its sessions are reported on a subsequent page, after the reports for both Sections F and G have been all presented; it is considered as the first in the series of organizations that are equally related to those two sections of the association. The reports for the general sessions of the Botanical Society will be given here, followed by those for the sessions of the three sections of the society.

General Sessions, B. S. A.

(*Report by I. F. Lewis*)

General sessions of the society were held Friday forenoon and afternoon (in the latter case jointly with Section G and the Phytopathological Society; see directly under the heading for Section G, above), Saturday afternoon (jointly with the American Society of Naturalists and the American Society of Zoologists; see under the former) and Monday forenoon. The Botanists' dinner occurred Friday evening, at which the retiring president's address was given by

Professor Henry C. Cowles, of the University of Chicago. He spoke on "Some successes and failures in the field of ecological research."

The Friday forenoon general session included ten papers, about evenly divided as to subject between algae and seed-plant anatomy. Dr. W. D. Hoyt, of Washington and Lee University, emphasized the importance of physiological characters in delimiting alga species. Dr. E. L. Stover, of Eastern Illinois State Teachers' College, discussed thickening in xylem vessels. Eloise Gerry, of the U. S. Forest-Products Laboratory, presented new information on the relation of depth of chipping to turpentine flow and to the value of the lumber subsequently recovered from pines that are used for turpentine production. Dr. C. A. Noé, of the University of Chicago, exhibited specimens of American coal balls, which promise to furnish much new information on fossil plants of the Carboniferous. The Monday forenoon general session included 11 papers. Isabel S. Smith, of Illinois College, described anatomical features of the Nelumbo seedling. D. M. Mottier, of Indiana University, reported on experimentation with fern prothallia, and H. M. Benedict, of the University of Cincinnati, spoke on senile changes in leaves of annuals. J. T. Lloyd, of the University of Cincinnati, demonstrated the separation of the leaf pigments of the copper beech. A paper by Elizabeth G. Britton, of the New York Botanical Garden, dealt with the present promising and encouraging status of the wild-flower conservation movement.

The Systematic Section, B. S. A.

Chairman, John H. Schaffner.

Secretary, Alfred Gundersen, Brooklyn Botanic Garden, Brooklyn, N. Y.

(*Report by Alfred Gundersen*)

Dr. W. R. Maxon was elected chairman of the section for 1924, and Mrs. Agnes Chase, of the U. S. Bureau of Plant Industry, was elected secretary. A committee, with H. A. Gleason as chairman, was appointed to study the project for the Systematic Section to prepare a list of genera of the United States and Canada, to set forth all the various points of view thus far taken by workers in taxonomy.

The Systematic Section met on Saturday with Professor Schaffner as chairman, for a symposium on the "Age and area hypothesis of Willis." Of the five papers presented, four were opposed to the hypothesis. Dr. H. A. Gleason, of the New York Botanical Garden, discussed evidence from phytogeography that retreating migrations are important factors in the history of most plants, particularly in the North Temperate zone. Endemics of isolated habitat may never have opportunity for expansion. Professor E. W. Berry, of the Johns Hopkins University, pointed out that continual environmental flux must result in the extinction of more specialized, less plastic forms. Large genera are not necessarily older than small ones. The distribution of fossil genera was generally much more extensive than is the distribution of correspondin existing genera. Professor M. L. Fernald, of Harvard University, spoke on ancient and modern floras of the Gaspé Peninsula and of Newfoundland. The ancient ranges were much more restricted, both within and outside of these regions. The unglaciated areas about the Gulf of St. Lawrence have 100 endemic species, whose nearest relatives are from 1,500 to 3,000 miles away. On the other hand, glaciated western Nova Scotia has essentially no endemics. According to Professor E. W. Sinnott, of the Connecticut Agricultural College, widely dispersed species are to be regarded as comparatively young ones, which have not yet had time to become disintegrated, rather than as very ancient ones. Dr. J. M. Greenman, of the Missouri Botanical Garden, alone spoke in favor of the Willis view as recently qualified. From a study of certain groups of the genus *Senecio* in Central and South America, he found evidence that species of the same group show more or less definite relation between the area occupied and the age of the species. However regarded, Willis's hypothesis has stimulated interest in plant geography more than any contribution since the days of Lyell, Sir Joseph Hooker and Darwin.

NOTE

Reports of the sessions of the other sections and societies and the statement of the permanent secretary concerning the organization and work of the association will be printed in the issue of SCIENCE *for February 1.*