

SCIENCE

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

FRIDAY, JANUARY 12, 1906.

CONTENTS.

The American Association for the Advancement of Science:—

The New Orleans Meeting: PROFESSOR CLARENCE A. WALDO..... 41

The Relation of Mechanics to Physics: PROFESSOR ALEXANDER ZIWET..... 49

The Sanitary Value of a Water Analysis: PROFESSOR LEONHARD P. KINNICUTT..... 56

Scientific Books:—

Schnabel's Metallurgy: DR. JOSEPH STRUTHERS. *Some Recent Books on Analytical Chemistry:* DR. CHARLES WILLIAM FOULK. *Eastwood on the Trees of California:* PROFESSOR ALBERT SCHNEIDER. 66

Societies and Academies:—

The Biological Society of Washington: E. L. MORRIS. *The Torrey Botanical Club:* ROLAND M. HARPER. *The California Branch of the American Folk-lore Society:* PROFESSOR A. L. KROEDER..... 68

Discussion and Correspondence:—

The Soils for Apples: PROFESSOR E. W. HIL-

GARD. *Isolation as one of the Factors in Evolution:* DR. E. A. ORTMANN..... 70

Special Articles:—

Reactions in Solutions as a Source of E.M.F.: CHAS. A. CULVER. *Pear-leaf Blister-mite:* P. J. PARROTT..... 72

Quotations:—

The Metric System..... 73

Current Notes on Meteorology:—

Meteorology at the Eighth International Geographic Congress; Report of the Chief of the Weather Bureau; Health, Disease, Deaths and the Weather: PROFESSOR R. DEC. WARD..... 74

The American Physiological Society..... 76

The Congress of the United States..... 76

Scientific Notes and News..... 76

University and Educational News..... 80

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

THE NEW ORLEANS MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

REPORT OF THE GENERAL SECRETARY.

THE third meeting of the association was held in Charleston, S. C., in 1850. At that time there were 622 members. The number at the meeting is not given. It was probably a negligible quantity, for until 1905 the experiment of a meeting in the south was not again tried; though, of course, the failure to meet again in that section was largely due to the fact that until recently the only time available for an annual meeting has been the hot summer months. The registration at New Orleans was 233. The attendance of unregistered members of affiliated societies would raise this number to a probable total of 300.

It will be noticed that a comparatively small number of affiliated societies thought it wise to follow the association on so long an excursion from the usual places of meeting. Assurances have been abundantly given that in the New York meeting most of the societies usually affiliating will resume that relation to the association.

The meeting of 1904 reported 4,175 members. That of 1905 about 4,500. The increase has been larger than usual and important. As soon as the association can count on 5,000 active members most of its financial problems will be solved. It is a question whether as a means to this end some special arrangement should not be made with the members of affiliated societies who are not yet members of the association. Certain it is that the experience of America, as well as of France and Great Britain, shows that the American Association fills a place peculiarly its own. The loss of its unifying influence and its aggressive propaganda of science would leave a void which nothing else could fill. There should be no difficulty in reaching harmonious relations satisfactory to all interests.

The experience at New Orleans makes it doubtful whether the experiment of scattering the vice-presidential addresses through the week is a wise departure. The meeting loses the initial momentum of a more compact arrangement.

The suggestion was made at this meeting that a distinctive badge for life members of the association should be designed and sanctioned. The idea is worthy of consideration.

The association has finally acted upon a suggestion long discussed and will undertake during 1906 two meetings, one in the summer at Ithaca, N. Y., the other in winter at New York City.

While the New Orleans meeting was small in numbers and somewhat expensive to individuals, it has been pronounced a decided success. The quality of the welcome to the south has been remarkably fine. Those attending believe that an unusual work has been done in the advancement of science and that, though the meetings will usually be necessarily small, the association should more frequently con-

vene in the remoter and unvisited cities of the country.

The following affiliated societies held sessions in conjunction with the association:

- The American Chemical Society.
- The Botanical Society of America.
- The Botanical Club of the Association.
- The Association of Economic Entomologists.
- The Entomological Club of the Association.
- The American Mycological Society.
- The Sigma Xi Honorary Scientific Society.

In accordance with its established policy the association encourages the great national societies to meet in connection with it. The paid officers of the association take charge of all matters of detail without charge to the societies. At New Orleans the number thus affiliating was much smaller than usual, but this was expected, because of the great distances of the centers of gravity of these associations from that place. Those few, however, which came south on this occasion with the association, will join in the conviction that they accomplished a genuine service in the advancement of science.

The first session of the fifty-fifth meeting of the American Association for the Advancement of Science was called to order in Temple Sinai, New Orleans, at 10 A.M., Friday, December 29, 1905, by the permanent secretary, Dr. L. O. Howard, who stated that retiring President Farlow was ill and would be compelled to remain in bed during the day, but expected to be well enough to deliver his address at 8 P.M. Dr. Howard then introduced President Calvin M. Woodward, who assumed the chair. President Woodward expressed his regret at the indisposition of Dr. Farlow and said they had met to receive a special word of welcome from the great state and city which were the hosts. It was a very great pleasure to him to call attention to the material and scientific progress which had been made in New Orleans.

Hon. Charles F. Buck, on behalf of Governor Blanchard, extended a most eloquent welcome. He said in part:

In the name of the people of the state of Louisiana, I welcome you and wish you godspeed to your deliberations. Our people are in a mood of worship in this regard. Through all the generations of the past has hung a dread, impenetrable shadow over our destiny. A mysterious disease which baffled human skill in its treatment and defied inquiry into its coming and going threatened all our hopes and expectations indefinitely. Science has lifted the shadow and unlocked the mystery. We look the future in the face with a new hope and an unshaken confidence. Your coming to us, so far away from the usual centers, just at this time, appeals to us like a voice of succor and a helping hand in a wilderness. The association thus suggested touches on the lines of the pathetic, and our thanks go out to you with our welcome.

Science, like art, has no country. What it produces it produces for the benefit of all mankind; yet we have reason to be proud of the achievements of American scientists, and we have confidence that you will accomplish great things in the future. We hope that your deliberations will be productive of good results; that the fifty-fifth session of your association held in the state of Louisiana may become memorable in its annals, not only in relation to its specific objects, but in its personal and social significance.

There must have been some other motive than the pursuit of your technical work in your coming to this far-off place; you could probably have done that so much better elsewhere—nearer home. We are bound and we are glad to recognize a human sentiment in the visitation here. We can not and we do not want to get away from the fact that we are compatriots, citizens of the great republic which stands for all that ennobles and dignifies mankind.

In this spirit, in the name of the people of Louisiana, I greet you, and while we wish the association a reunion which shall leave pleasant reminiscences and practical results in the great and infinite domain of its work, we hope that also a touch of sentiment may go with you, and, when you shall have finished your labors and returned to your homes and workshops, you will look back with pleasure to your visit to the south and remember with pleasure that you have been in the house of your friends and brothers, whose sincere

prayers for happiness and success will go with you.

Mayor Martin Behrman, on behalf of the city, spoke briefly in part as follows:

We have set out on a progressive march and are pressing forward to a great commercial development for the attainment of which we are equipping ourselves with every modern device and facility. Chief among these are our systems of sewerage and drainage, as well as one for a supply of pure and healthful water, all of which are now in course of construction, as will be evidenced in the torn up and almost impassable condition of many of our thoroughfares. I have been informed that there are in your organization members who have made a special study of these undertakings. We most earnestly invite them to examine our work as far as it has been prosecuted. Arrangements have been made to facilitate them in this inspection. We want your suggestions and advice; we invite your criticism, knowing full well that anything you may have to say will proceed solely from your desire to insure our betterment and advancement.

I can assure you that our people appreciate highly the fact that among the great features of your deliberations in this convention is the section devoted to the discussion of these very subjects. We all feel that of the many important conventions which have been held in this city, this is really the most important. Its deliberations touch and treat upon so many subjects in which our people and our city are so vitally interested that your discussions will be listened to or read eagerly and accepted as authoritative. We are pleased sincerely that you have come among us, and as the chief executive of the city I deem it an honor to extend to you a most cordial welcome.

President E. B. Craighead, of Tulane University, extended a most friendly greeting to the visitors on behalf of the schools and colleges of New Orleans. He referred to the fact that here was located the first institution of learning for women established in this country, one hundred and fifty years ago—the Ursuline Convent. This was the home of John McDonough, who had made the largest bequest of any citizen to the public schools. It was also the home of Paul Tulane, who had made

the largest bequest to Tulane University, formerly the University of Louisiana, but which took his name in honor of its benefactor. It was the home of A. C. Hutchinson, who had left \$800,000 to the medical department of Tulane University. It was the home of Mrs. Dr. T. G. Richardson, who had given \$150,000 to the medical department of Tulane. It was the home of Mrs. Josephine Louise Newcomb, who had left \$3,500,000 to the Newcomb College, the woman's branch of Tulane University, which would be the best endowed college for women in the world. He welcomed the visitors to the home of such philanthropists and hoped their deliberations here would be fruitful of much good.

President Woodward expressed the thanks of the association for the welcome. A year ago when the members were at Philadelphia there seemed to be but one thought and that was that they should all go to New Orleans. So they decided to come, and were here—at least a part of them were here—the cream, as it were, of the association. They represented every state in the union, and were devoted to their work. While they loved science for science's sake, they also loved it because of what it did for humanity. He was proud of the noble men and women of New Orleans who had done so much for education and science. They had built the noblest monuments to themselves. In St. Louis he had abundant evidence of the activity of the people of New Orleans and Louisiana, and recalled the reproduction of the Cabildo and other Louisiana buildings at the exposition. He was interested in two things in New Orleans. He was the intimate friend of the great engineer who built the Eads Jetties, and they together had studied and theorized over the problems presented by the work. He was glad to see that to-day, because of the success of that work, great ships were lying at

the wharves in New Orleans. That was a work of science and an application of the law of physics. All that had to be done to control the greatest rivers was to understand these laws. He spoke of the yellow fever fight here, how manfully it was fought, and what a brilliant triumph it was. That also was the work of science.

He referred to Mr. Buck's remarks about the unity of the country, and said that he was glad to be here again. For he came here once before, some decades ago. On a train he and a gentleman from New Orleans got into conversation and exchanged their opinions of each other which they had held forty years ago, and agreed that if they had known each other then, as they knew each other now, there would have been no war. They were all here now in good fellowship; they were compatriots, and all working for the progress of science, and when they went back home they would take with them a mental picture of a thriving city on the banks of the Mississippi. In conclusion he announced that everybody was welcome to all the meetings of the sections, and he hoped the people of New Orleans who were interested in science would attend.

The general secretary, C. A. Waldo, then read an invitation from the sewerage and water board to inspect the public works in progress in New Orleans, with the names of a committee of five to facilitate such an inspection.

A resolution presented by Dr. Wm. Trelease, director of the Missouri Botanical Gardens, which had been favorably acted on by the council at the session in the morning, was presented to the general session for action. It related to the efforts to save Niagara Falls from destruction, and endorsed the stand taken by President Roosevelt. The resolution was adopted unanimously.

The following committees were appointed to serve during the meeting:

Committee on new members: The permanent secretary and secretary of the council.

Committee on fellows: The general secretary and the vice-presidents of the sections, Mr. Waldo, chairman.

Committee on grants: The treasurer and the vice-presidents of the sections, Mr. R. S. Woodward, chairman. In the absence of Mr. Woodward, the permanent secretary served in his place.

Mr. Theodore N. Gill was chosen auditor of the association.

After the first session of the council in St. Charles Hotel, all others were held daily, except Sunday, at Tulane University at 9 o'clock A.M. Two general sessions were held on the Friday and Wednesday following at 10 A.M. As in the previous year the vice-presidential addresses were scattered through the week.

The general program was as follows:

THURSDAY, DECEMBER 28, 1905.

Meeting of the executive committee of the council at St. Charles Hotel, 12 A.M.

Program for the entire meeting proofread and adopted.

Privileges of associate membership for the meeting extended to members of the local committee, residents of New Orleans and vicinity and to affiliated societies.

Mr. George E. Beyer, executive president of the local committee, outlined arrangements made by his committee for the meeting.

FRIDAY, DECEMBER 29, 1905.

Meeting of the council at 9:15 A.M., St. Charles Hotel.

In the enforced absence of the retiring president, Dr. Farlow, the incoming president, Dr. C. M. Woodward, presided without the usual formal introduction.

First general session of the association at 10 A.M. in Temple Sinai.

Meeting called to order by the permanent secretary, Dr. L. O. Howard, who introduced the president elect, Dr. C. M. Woodward.

Addresses of welcome by Hon. Chas. F. Buck, representing the governor of Louisiana, by Hon. Martin Behrman, mayor of New Orleans, and by Dr. E. B. Craighead, president of Tulane University.

Reply by President Woodward.

Announcements by the general secretary.

Adjournment of the general session, followed by the organization of the sections.

Sections A, B, C, D, E, F, at Tulane University, Section I in the Assembly Room, Board of Trade Building, Section K in Tulane University Medical College.

1 P.M. Luncheon to the members of the association, provided by the local committee in the refectory of the university.

Addresses of vice-presidents as follows: (At 2:30 P.M.)

Vice-president Ziwet before the Section of Mathematics and Astronomy, Gibson Hall. Title, 'On the Relation of Mechanics to Physics.'

Vice-president Kinnicutt, before the Section of Chemistry, Chemical Building. Title, 'The Sanitary Value of a Water Analysis.'

Vice-President Smith, before the Section of Geology and Geography, Gibson Hall. Title, 'On Some Post-Eocene and other Formations of the Gulf Region of the United States.'

Vice-president Merriam, before the Section of Zoology, Physical Building. Title, 'Is Mutation a Factor in the Evolution of the Higher Vertebrates?'

From 4 to 7 P.M. Mrs. T. G. Richardson received the association at her residence on Prytanis Street.

At 8 P.M. the address of the retiring president of the association, Dr. W. G. Farlow, was given at Sophie Newcomb College. Subject, 'The Popular Conception of a Scientific Man at the Present Day.'

SATURDAY, DECEMBER 30, 1905.

Meeting of the council at 9 A.M., Gibson Hall, Tulane University.

Meeting of the sections at 10 A.M.

At 1 P.M. luncheon to the members of the association in the refectory.

At 2:30 P.M. addresses of vice-presidents as follows:

Vice-president Magie, before the Section of Physics, Physical Building. Title, 'The Partition of Energy.'

Vice-president Robinson, before the Section of Botany, Gibson Hall. Title, 'The Generic Concept in the Classification of the Flowering Plants.'

Vice-president Knapp, before the Section of Social and Economic Science, Board of Trade Building. Title, 'Transportation and Combination.'

At 8 P.M. the address of the retiring president of the American Chemical Society, Dr. F. P. Venable, Gibson Hall, Tulane University. Title, 'Chemical Research in the United States.'

At 9:30 P.M. general reception by the reception committee in the Palm Garden, St. Charles Hotel.

MONDAY, JANUARY 1, 1906.

Meeting of the council at 9 A.M.

Meeting of the sections at 10 A.M.

At 2:30 P.M. address of vice-president as follows:

Vice-president Jacobus, before the Section of Mechanical Science and Engineering, Gibson Hall. Title, 'Commercial Investigations and Tests in connection with College Work.'

At 8 P.M. public lecture complimentary to the citizens of New Orleans, at Sophie Newcomb College, by Elwood Mead, U. S. Department of Agriculture. Subject, 'Irrigation.'

At 9:30 P.M. meeting of the general committee, at St. Charles Hotel.

TUESDAY, JANUARY 2, 1906.

Meeting of the council in the assembly room, Gibson Hall, 9 A.M.

Meetings of the sections at 10 A.M.

Excursions to the Kenilworth Sugar Plantation and to the power plants and pumping stations and sewerage plants of New Orleans.

At 6:30 P.M. banquet of the Sigma Xi at Antoine's.

WEDNESDAY, JANUARY 3, 1906.

Meeting of the council, Gibson Hall, 9 A.M.

Closing general session, Gibson Hall, 10 A.M.

Trolley ride to all points of interest complimentary to members of the association, at 3 P.M.

The courtesies and privileges of the Boston Club, the Pickwick Club, the Chess, Checkers and Whist Club, the Young Men's Gymnastic Club, the Country Club and the Round Table Club were extended to members of the association during their stay in New Orleans.

REPORTS OF COMMITTEES.

On the Study of Blind Invertebrates.

Mr. A. M. Banta continued his work on the fauna of Mayfield's cave during last winter and through the entire summer. I have passed on his paper 'Mayfield's Cave as a Unit of Environment and the Ecological Relation of its Inhabitants,' which is now ready for the printer. It is a unique and comprehensive work on the fauna of this cave. The work was completed without calling on the appropriation made at the last meeting for the work of the committee.

It was the plan to have Mr. Banta visit the region in Pennsylvania where Professor Cope,

years ago, secured his blind catfish which has not been found again. The finishing of his Mayfield Cave paper delayed him so that he was not able to do this before going to Harvard University, where he holds a fellowship. He is at present at Harvard, working on the reactions of cave animals. Live specimens have been sent him from time to time.

Mr. Banta will visit How's Cave in central New York during this week. This cave being in the glaciated region ought to have a much newer fauna than the Indiana, Kentucky and Missouri caves, all of which are south of the drift region.

For unavoidable reasons I have not been able to go into the field myself.

The entire appropriation made for this work at the last meeting of the association is available for the future work of your committee.

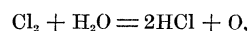
Respectfully submitted,

(Signed) C. H. EIGENMANN,

Recorder.

REPORT OF COMMITTEE ON ELECTROCHEMISTRY.

A study has been made of the behavior of platinum and iridium in chlorine water and in dilute hydrochloric acid. Smooth platinum foil brought about no evolution of gas even after standing 168 hours in chlorine water. Under precisely similar circumstances an iridium foil caused an evolution of 44.4 of gas, 55 per cent. of which was oxygen. The oxygen results from the reaction



while the chlorine came from the solution, the original vapor pressure having been about half an atmosphere. This series of experiments showed that iridium was a more powerful catalytic agent than platinum. A number of electrolytic experiments were made with hydrochloric acid of different concentrations. In all cases more oxygen was evolved from the iridium anode than from the platinum anode. The question as to the final equilibrium is still in doubt.

It was hoped that a tantalum anode could be secured for this work, but this proved impossible and the money appropriated for the year 1905 was not drawn from the treasury. The committee asks that this unexpended balance be left available for the coming fiscal year.

WILDER D. BANCROFT,
EDGAR F. SMITH,
L. KAHLBERG.

Verbal reports of progress were made by the committees on 'The Relation of Plants to Climate' and of 'Anthropometric Measurements'.

GRANTS.

\$200 were allotted by the committee on grants to Messrs. Parsons, Kinnicutt and Venable to assist in the publication of Professor Parson's 'Bibliography of Beryllium.'

\$100 were allotted to 'The Concilium Bibliographicum Zoologicum.'

RESOLUTIONS.

Preservation of Niagara Falls.

As has been well said by President Roosevelt in his message to the fifty-ninth congress, 'there are certain mighty natural features of our land which should be preserved in perpetuity for our children and our children's children.' Chief among these natural wonders in the east is Niagara Falls, the continuance of which as a scenic feature is now seriously threatened by the use of the water for the production of electric power. Authorities agree that grants to existing corporations for power purposes will, when the now rapidly proceeding work of development is completed, entirely destroy the American fall, also making useless the magnificent New York State Reservation which has so well preserved the natural beauty of the cataract's surroundings.

President Roosevelt further suggests that if the state of New York can not promptly take action to avert this impending calamity, 'she should be willing to turn it over to the national government, which should in such case (if possible, in conjunction with the Canadian government) assume the burden and responsibility of preserving unharmed Niagara Falls.'

THEREFORE BE IT RESOLVED That the American Association for the Advancement of Science hereby records its hearty concurrence in these suggestions of President Roosevelt, and instructs its president and secretary to communicate to the president of the senate and to the speaker of the house of representatives of the United States its strong conviction that Niagara

Falls should be preserved as a natural wonder, and further expressing the earnest hope that the congress now in session will take prompt and energetic action looking toward an international consideration of the impending danger to Niagara Falls. And further, be it

Resolved, That each member of the American Association for the Advancement of Science is hereby urged to write to the senators and congressmen of his own state, earnestly favoring immediate action for the preservation of Niagara Falls.

An Appalachian Forest Reserve.

Resolved, That the American Association for the Advancement of Science, now in session at the city of New Orleans, again respectfully calls attention to the rapid rate at which the forests of the Appalachian Mountain region are being destroyed, and to the fact that, as a result of such destruction, the streams tributary to the Mississippi, as well as those flowing into the south Atlantic, are becoming continuously more irregular in their flow, and hence of less value for navigation and power purposes.

Resolved, That the association, therefore, respectfully petitions the congress of the United States to make such provision as may be necessary for the protection of these mountain forests, and directs that copies of these resolutions be transmitted to the honorable, the secretary of agriculture, and to the honorable, the speaker of the house of representatives.

The above resolution was unanimously approved by Section G, American Association for the Advancement of Science, at the meeting of December 30, 1905; also reported recommended by Section I.

AMENDMENTS.

The following amendments to the constitution were proposed and are to be acted

upon at the New York meeting, having been duly read at the last general session of the New Orleans meeting:

1. Add the words 'and Psychology' to the name of Section H, making it read 'Anthropology and Psychology.'

2. Add a new section, to be called Section I—Education.

POLICY OF THE ASSOCIATION.

In accordance with the resolution adopted by the last Philadelphia meeting through which a number of national scientific societies were accepted as having qualifications for membership equal to the qualifications for fellowship in the American Association, several hundred members from these societies were in the usual way made members of the American Association, were then nominated for fellowship and were elected by the council.

The committee on policy presented the following resolutions which were adopted by the council:

1. *Resolved*, That the terms of office of all officers of the association shall begin with the close of the meeting at which the elections take place.

2. *Resolved*, That the position of second assistant to the permanent secretary be abolished at the close of the year, 1906.

3. *Resolved*, That an invitation be extended to the National Association for the Scientific Study of Education to affiliate with the American Association on the same terms as other affiliated societies.

CLOSING GENERAL SESSION 10 A.M.

WEDNESDAY.

The report of the general secretary was read. Resolutions of thanks and appreciation unanimously adopted as follows:

Resolved: That the appreciative thanks of the American Association for the Advancement of Science be, and they are, hereby extended

1. To President Craighead and the board of trustees of Tulane University for the provision of ample and adequate meeting places for most of the sections in the University buildings; further to Dr. Chaillé and Dr. Metz for the excellent pro-

vision made for the Section of Physiology and Experimental Medicine in the medical school of the university; to the board of trade for the use of its building, granted to the Section of Social and Economic Science through the interest of Secretary Mayo, of the New Orleans Progressive Union; to Rabbi Heller and the Congregation of Temple Sinai for the use of that building for the opening session, and to Professor Dixon for having the auditorium of the H. Sophie Newcomb College opened for the address of the retiring president of the association, and other purposes.

2. To Professors Craighead and Anderson and their associates in the committee on meeting places and equipment for their provision of appliances, lantern service and other necessities for the meetings.

3. To the sewerage and water board for enabling the Section of Mechanical Science and Engineering to inspect the sanitary improvements now under way in the city; to the officials of the United States Navy Yard for courtesies shown to the same section; to the dock commissioners for exhibiting the shipping facilities of the port to the Section of Social and Economic Science; to Mr. Charles Farwell and Dr. Dyer for a demonstration of the workings of the large sugar estate of the former; and to Professor Blouin and Dr. Brown for having the further privilege accorded the visiting chemists and others to inspect the Kenilworth Sugar Plantation.

4. To the Boston Club, the Pickwick Club, the Chess, Checkers and Whist Club, and the Young Men's Gymnastic Club, the Country Club and the Round Table Club, for extending the privileges of their houses to all members of the association.

5. To the Round Table Club for a general smoker; to the Louisiana Society of Naturalists for an informal reception given to the visiting botanists and zoologists; to Mrs. T. G. Richardson, whose home was hospitably opened; and to the many other citizens of New Orleans and its vicinity whose welcome was so admirably expressed by Mr. Buck on behalf of the governor of the state, by Mayor Behrman and President Craighead, and who, in one way or another, have made our visit pleasurable, without interfering with the more serious purposes of the association and affiliated bodies.

6. To the very efficient press committee and representatives of the newspapers, who have treated our proceedings with unusual interest, intelligence and care, thus furthering the general purposes of the association, and at the same time

promoting local interest in pure and applied science.

Finally, and in the most comprehensive sense, to the local committee and especially to its presidents, Drs. Craighead and Beyer, its secretary, Mr. Mayo, and the chairman of its finance committee, Mr. Godchaux—in addition to the courtesies already mentioned—for providing ideal lunch arrangements, so convenient to the meeting places as to avoid a wasteful break in the day's work; for tendering a delightful reception—the peculiar charm of which was due in large part to the tactful management of Miss Minor and her associates in the ladies' reception committee; for a final ride, enabling us to carry away a coherent impression of New Orleans and its many points of historic interest; and for many acts of thoughtfulness—individual as well as collective—that will cause the past week to remain among the most pleasant memories that cluster about the many pleasant meetings of the association.

(Signed) WILLIAM TRELEASE, Chairman,

For the Committee,

Messrs. Trelease, Magie and Newcomb.

Response to these resolutions and farewell were given for the local committee by Professor Geo. E. Beyer, who extended a cordial invitation to the association to meet soon again in New Orleans. Response by President Woodward, who was also formally thanked by the association for his efficient and acceptable work as presiding officer. Adjourned.

GENERAL COMMITTEE.

At the meeting of the general committee on Monday evening, January 1, 1906, it was decided to hold a special summer meeting at Ithaca, New York, to close on or before July 3, 1906, and a regular winter meeting in New York City to begin on Thursday, December 27, 1906. The presidential and vice-presidential addresses will be omitted at the summer meeting and given at the winter meeting.

The officers elected at the New Orleans meeting will, therefore, hold over to the close of the New York meeting. Chicago was recommended as the place of the winter meeting of 1907.

The following officers were elected for the Ithaca and New York meetings:

President: Dr. W. H. Welch, Baltimore, Md.

Vice-Presidents:

Section A—Dr. Edward Kasner, New York City.

Section B—Professor W. C. Sabine, Cambridge, Mass.

Section C—Mr. Clifford Richardson, New York City.

Section D—Mr. W. R. Warner, Cleveland, O.

Section E—Professor A. C. Lane, Lansing, Mich.

Section F—Professor E. G. Conklin, Philadelphia, Pa.

Section G—Dr. D. T. MacDougall, Washington, D. C.

Section H—Professor Hugo Münsterberg, Cambridge, Mass.

Section I—Mr. Chas. A. Conant, New York City.

Section K—Dr. Simon Flexner, New York City.

General Secretary: Mr. John F. Hayford, Washington, D. C.

Secretary of Council: President F. W. McNair, Houghton, Mich.

CLARENCE A. WALDO,

General Secretary.

THE RELATION OF MECHANICS TO PHYSICS.¹

IN the historical development of mechanics the names of Galileo, Newton and Lagrange mark the principal epochs, each of the three periods, from Galileo to Newton, from Newton to Lagrange and from Lagrange to our time, covering roughly a century.

When Galileo in 1633, at the age of sixty-nine years, was forced by the prelates of Rome to abjure solemnly the truth of the Copernican system of the universe to the proof of which he had devoted the main efforts of a long and active life, he had still to write his most remarkable work, the *'Discorsi e dimostrazioni mate-*

¹ Address of the vice-president and chairman of Section A, Mathematics and Astronomy, of American Association for the Advancement of Science, New Orleans, December 29, 1905.