

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.

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FRIDAY, JANUARY 30, 1903.

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

CARNEGIE INSTITUTION OF WASHINGTON.*

MEETING OF INCORPORATORS OF THE CARNEGIE INSTITUTION OF WASHINGTON.

THE meeting of the Incorporators of the Carnegie Institution was held at the office of the Secretary of State, Washington, D. C., January 4, 1902, at 10 o'clock A.M.

Present: Hon. John Hay, Secretary of State, Justice Edward D. White, Dr. Daniel C. Gilman, Dr. John S. Billings, Hon. Carroll D. Wright and Dr. Charles D. Walcott. Mr. Hay was chosen chairman of the meeting and Mr. Walcott secretary.

On receipt of notice of the filing of the Articles of Incorporation, Mr. White moved that the incorporators proceed to ballot for trustees. This was done, and the following persons were unanimously elected:

Ex Officio. The President of the United States; the President of the Senate; the Speaker of the House of Representatives; the Secretary of the Smithsonian Institution; the President of the National Academy of Sciences.

Grover Cleveland, New Jersey; John S. Billings, New York; William N. Frew, Pennsylvania; Lyman J. Gage, Illinois; Daniel C. Gilman, Maryland; John Hay, District of Columbia; Abram S. Hewitt, New Jersey; Henry L. Higginson, Massachusetts; Henry Hitchcock, Missouri; Charles L. Hutchinson, Illinois; William Lindsay, Kentucky; Seth Low, New York; Wayne MacVeagh, Pennsylvania; D. O. Mills, New York; S. Weir Mitchell, Pennsylvania; William W. Morrow, California;

* Abstracts from the Year Book, No. 1, 1902.

Elihu Root, New York; John C. Spooner, Wisconsin; Charles D. Walcott, District of Columbia; Andrew D. White, New York; Edward D. White, Louisiana; Carroll D. Wright, District of Columbia.

FIRST MEETING OF BOARD OF TRUSTEES.

The Trustees assembled in the Diplomatic Room, Department of State, Washington, D. C., Wednesday, January 29, 1902, at half past two. They were called to order by Hon. Abram S. Hewitt, who nominated for temporary chairman Hon. John Hay, who was unanimously elected and took the chair. Mr. Hewitt then nominated Dr. Charles D. Walcott as temporary secretary, and he was unanimously elected.

The secretary then read the minutes of the meeting of the incorporators and presented the Articles of Incorporation, after which Mr. Andrew Carnegie was introduced by the chairman, and made the remarks which have been printed.

The following resolution was presented and unanimously adopted:

"In addition to the personal and individual expressions extended to Mr. Carnegie for what he has done for the world to-day:

"*Resolved*, That the chairman of this meeting be requested to draft a letter addressed to Mr. Carnegie expressing the views of the Trustees concerning this magnificent gift and the purposes for which it is to be applied as set forth in the letter and other documents which have just been read."

Attention was called to the vacancy on the Board caused by the declination of Hon. Grover Cleveland, who had not found it possible to accept a place on the Board on account of his health. The Board balloted for a trustee to fill a vacancy thus arising, and Mr. William E. Dodge, of New York, was unanimously elected.

A proposed code of by-laws was then presented, discussed, amended and adopted.

Election of officers was then held with the following result:

Chairman of the Board of Trustees—Abram S. Hewitt.

Vice-Chairman of the Board of Trustees—John S. Billings.

Secretary of the Board of Trustees—Charles D. Walcott.

President of Carnegie Institution—Daniel C. Gilman.

Relative to the acceptance of the trust created by Mr. Carnegie, it was

Resolved: That the Board of Trustees, acknowledging the generosity of the gift of Mr. Carnegie, in the foundation of the Institution, desire to express the concurrence of the Trustees in the scope and purpose stated in his deed of trust, and hereby formally accept the donation and the responsibilities connected with it.

It was also voted that the resolution just adopted be forwarded to Secretary Hay, to be by him sent to Mr. Carnegie, with a letter expressing the views of the Trustees on the gift. Mr. Hay subsequently transmitted the resolution and with it the following letter:

DEPARTMENT OF STATE,
WASHINGTON, March 7, 1902.

HON. ANDREW CARNEGIE,
5 West 51st Street, New York City.

SIR: The Trustees of the Carnegie Institution, which you have recently founded in the city of Washington, formally accepted your gift, by the adoption of the appended Resolution.

At the same time they requested me, as the presiding officer at the first meeting of the Board, to convey to you by a letter an expression of their hearty appreciation of your munificence, and also their admiration of the noble purpose and the liberal spirit which distinguish your foundation.

For the advancement of knowledge and the education of youth, there are already in this country many strong institutions, learned societies, universities, government bureaus, libraries and museums. With all of them the Carnegie Institution can cooperate, while it has a field of its own, carefully indicated in your deed of gift, and more fully explained by the remarks which you addressed to the Board.

Every one of those whom you have chosen as Trustees will regard it as a sacred duty and a pleasure, to uphold the lofty ideal that you have set before them, and to impart to those who come

afterwards the spirit of confidence and enthusiasm with which the work has begun.

I am, Sir,

Very respectfully yours,

JOHN HAY.

Dr. Gilman, the elected President, then addressed the Board, explaining, so far as they were known to him, the circumstances which preceded the incorporation of the Carnegie Institution. His remarks were extemporaneous and intended to acquaint the Board with his attitude and that of the gentlemen with whom, at Mr. Carnegie's request, he had been associated in these arrangements which preceded the meeting of the Board. He expressed his appreciation of the honor conferred upon him by his selection as President of the Institution, and he indicated in broad outlines the probable methods of procedure. At an early day experts in many branches of science will be selected by the executive committee to whom all applications for encouragement and aid will be referred. These experts will be requested to add their own suggestions, and present their recommendations in writing. Meanwhile, the executive committee will gather information in respect to endowments and establishments for promoting science, at home and abroad, in order that this experience may be at the service of the Trustees, and that there may be cooperation, and not conflict, with other institutions in any plans that may be adopted.

After discussing nominations the following named persons were elected members of the executive committee: John S. Billings, Daniel C. Gilman, Abram S. Hewitt, S. Weir Mitchell, Elihu Root, Charles D. Walcott, Carroll D. Wright.

The following resolutions were then considered and adopted:

Resolved: That the Executive Committee is requested to prepare a report upon the work which should be undertaken by the Carnegie Institution

in the near future, such report to be submitted to the Board of Trustees at its next meeting, and to be accompanied with estimates for expenditures required.

Resolved: That the Executive Committee, when they shall have formulated plans of the work which should be undertaken by the Carnegie Institution, shall have the same printed and a copy forwarded to each Trustee prior to the annual meeting in November, 1902.

Resolved: That the Executive Committee is requested to consider the question of a proper administration building for the Carnegie Institution, to be located in Washington, including both a proper site and plans for the same.

SECOND MEETING OF THE BOARD OF TRUSTEES.

The meeting was held in Washington, at the New Willard Hotel, on Tuesday, November 25, 1902, at 10 A.M.

The President of the Institution, Mr. Gilman, made a general statement of the work of the executive committee and referred to the report of the committee, which had been printed and distributed to the Trustees in advance of the meeting.

The Secretary made a brief report, referring principally to the financial transactions of the Institution.

Consideration of the executive committee's report was then taken up, and a long discussion followed on the various recommendations made by the committee.

At the second session the Board resumed its discussion of policy and the recommendations of the executive committee, especially the purchasing of a site. As the outcome a motion to postpone till the next annual meeting the decision on the question of site was made and carried.

The Board then considered and adopted the following resolution:

Resolved: That from the available income of the Institution \$50,000 is hereby appropriated for administrative expenses, \$200,000 for grants for research during the fiscal year 1902-'03, \$40,000 for a publication fund, the expenditures to be made under the direction of the Executive Committee, and that \$100,000 of the available income

of the Institution be set apart for a reserve fund during the fiscal year 1902-'03.

Amendments to the by-laws were then considered, and the date of the annual meeting was changed from November to the second Tuesday of December, beginning with the year 1903. By-laws were also adopted providing that the fiscal year of the Institution shall be from November first to October thirty-first, inclusive, and that there shall be a finance committee consisting of three members of the Board, to be elected by the Board and to hold office until their successors are elected. The duty of such finance committee shall be to consider and recommend to the Board of Trustees such measures as it may believe will promote the financial interests of the Institution. The Board then proceeded to the choice of the finance committee, and elected Messrs. Gage, Mills and Higginson.

The following minute relative to the death of Mr. Henry Hitchcock was presented by Mr. Higginson and adopted by the Board:

The death of Mr. Henry Hitchcock has deprived this Board of Trustees of a cultured and wise counsellor, a progressive leader, and a valued associate. Mr. Hitchcock stood for all that was noble in manhood and the development of man. His every effort was to serve any cause with which he was connected with all the power and ability he possessed. We tender to the members of his bereaved family sincere sympathy, and place this resolution in our minutes as a permanent record of our appreciation and esteem.

The Board then proceeded to fill the vacancy caused by the death of Mr. Hitchcock. Mr. Ethan Allen Hitchcock was nominated and unanimously elected.

PROCEEDINGS OF EXECUTIVE COMMITTEE.

Organization.—At its first meeting the committee organized by electing Mr. Gilman chairman and Mr. Walcott secretary. At the same time lots were drawn for the terms of service of members, three to expire with the annual meeting in 1903, two

in 1904 and two in 1905. The result of the drawing was as follows:

Terms expiring in December,

1903, Gilman, Mitchell, Wright; 1904, Billings, Walcott; 1905, Hewitt, Root.

Advisory Committees.—As soon as it was organized the executive committee, in compliance with the instructions of the Trustees, began an investigation to determine what work should be entered upon, in the immediate future, by the Institution. Its first step consisted in the appointment of advisory committees. Eighteen such committees were appointed, as follows:

Anthropology: William H. Holmes, Chief, Bureau of American Ethnology, and Head Curator, Department of Anthropology, U. S. National Museum, Washington, D. C., *Chairman*; Franz Boas, Curator, Department of Anthropology, American Museum of Natural History, New York, N. Y.; George A. Dorsey, Field Columbian Museum, Chicago, Ill.

Astronomy: E. C. Pickering, Professor of Astronomy and Director of Harvard Observatory, Cambridge, Mass., *Chairman*; Lewis Boss, Director of Dudley Observatory, Albany, N. Y.; George E. Hale, Director of Yerkes Observatory, Williams Bay, Wis.; S. P. Langley, Secretary Smithsonian Institution, Washington, D. C.; Simon Newcomb, late Superintendent of Nautical Almanac, Washington, D. C.

Bibliography: Herbert Putnam, Librarian of Congress, Washington, D. C., *Chairman*; Cyrus Adler, Librarian, Smithsonian Institution, Washington, D. C.; J. S. Billings, Director New York Public Library, New York, N. Y.

Botany: Frederick V. Coville, Botanist, Department of Agriculture, Washington, D. C., *Chairman*; N. L. Britton, Superintendent, New York Botanical Garden, New York, N. Y.; John M. Macfarlane, Professor of Botany, University of Pennsylvania, Philadelphia, Pa.; Gifford Pinchot, Forester, U. S. Department of Agriculture, Washington, D. C.

Chemistry: Ira Remsen, Professor of Chemistry and President of Johns Hopkins University, Baltimore, Md., *Chairman*; T. W. Richards, Professor of Chemistry, Harvard University, Cambridge, Mass.; Edgar F. Smith, Professor of Chemistry, University of Pennsylvania, Philadelphia, Pa.

Economics: Carroll D. Wright, Commissioner of Labor, Washington, D. C., *Chairman*; Henry W. Farnam, Professor of Political Economy, Yale University, New Haven, Conn.; John B. Clark, Professor of Political Economy, Columbia University, New York, N. Y.

Engineering: R. H. Thurston, Director of Sibley College, Cornell University, Ithaca, N. Y., *Chairman*; William H. Burr, Professor of Civil Engineering, Columbia University, New York, N. Y.; George Gibbs, Consulting Engineer, Baldwin Locomotive Works, Philadelphia, Pa.; George S. Morison, Civil Engineer, 49 Wall Street, New York, N. Y.; Charles P. Steinmetz, Electrician, General Electric Co., Schenectady, N. Y.

Geography: William M. Davis, Professor of Geology, Harvard University, Cambridge, Mass.

Geophysics: [Joint Committee on Geology and Physics.]

Geology: T. C. Chamberlin, Head of Geological Department and Director of Museum, University of Chicago, Chicago, Ill., *Chairman*; Charles R. Van Hise, Professor of Geology, University of Wisconsin, Madison, Wis.; Charles D. Walcott, Director of U. S. Geological Survey, Washington, D. C.

History: J. Franklin Jameson, Head of Department of History, University of Chicago, Chicago, Ill., *Chairman*; Charles Francis Adams, Boston, Mass.; Andrew C. McLaughlin, Professor of American History, University of Michigan, Ann Arbor, Mich.

Mathematics: E. H. Moore, Head Professor of Mathematics, University of Chicago, Chicago, Ill., *Chairman*; Frank Morley, Professor of Mathematics, Johns Hopkins University, Baltimore, Md.; Ormond Stone, Professor of Astronomy and Director of Leander McCormick Observatory, Charlottesville, Va.

Meteorology: Cleveland Abbe, Professor of Meteorology, U. S. Weather Bureau, Washington, D. C.

Paleontology: Henry F. Osborn, DaCosta Professor of Zoology, Columbia University, New York, N. Y., *Chairman*; Henry S. Williams, Professor of Geology, Yale University, New Haven, Conn.

Physics: R. S. Woodward, Dean of School of Pure Science and Professor of Mechanics and Mathematical Physics, Columbia University, New York, N. Y., *Chairman*; Carl Barus, Professor of Physics, Brown University, Providence, R. I.; A. A. Michelson, Head Professor of Physics, University of Chicago, Chicago, Ill.

Physiology (including Toxicology): S. Weir Mitchell, Philadelphia, Pa., *Chairman*; H. P.

Bowditch, Professor of Physiology, Harvard Medical School, Cambridge, Mass.; William H. Howell, Dean of Johns Hopkins Medical School, Baltimore, Md.

Psychology: J. Mark Baldwin, Professor of Psychology, Princeton University, Princeton, N. J.

Zoology: Henry F. Osborn, DaCosta Professor of Zoology, Columbia University, New York, N. Y., *Chairman*; Alex. Agassiz, Curator Natural History Museum, Cambridge, Mass.; W. K. Brooks, Professor of Zoology, Johns Hopkins University, Baltimore, Md.; C. Hart Merriam, Chief U. S. Biological Survey, Washington, D. C.; E. B. Wilson, Professor of Zoology, Columbia University, New York, N. Y.

These advisers were requested to give the committee their views on various important suggestions received by the Institution, as well as independent recommendations originating in the committees. The following is a copy of the letter appointing the advisers and inviting suggestions and recommendations:

MARCH 11, 1902.

DEAR SIR:

The Executive Committee of the Carnegie Institution have been requested by the Trustees to prepare, in the course of the Summer, a plan of procedure, and in the meantime to engage in preliminary studies of the problems committed to them, by consultation with acknowledged authorities at home and abroad.

The plan of the Institution includes the appointment from time to time of counsellors, or advisers, to whom the Committee may refer important suggestions, and from whom they may receive independent recommendations. You are invited to act as one of these advisers until the annual meeting of the Trustees, in November next. It is the purpose of the Institution to provide liberally for any expense that may be incurred in clerical service and in travel by those whom they may consult. If it is agreeable to you to accept this invitation, a more personal communication will be addressed to you at an early day. An immediate answer is requested.

Respectfully,

D. C. GILMAN,
President.

The reports received from the advisory committees, as far as they relate to scope and plan are printed in Appendix A.

A circular letter was also prepared and sent to nearly a thousand scientific men and investigators of prominence, mainly in the United States. This was accompanied by a pamphlet that included the articles of incorporation, the founder's address, and a list of the officers. The circular letter is as follows:

Letter to the Heads of American Institutions and to Others Interested in the Work of Investigation.

The Carnegie Institution sends to you herewith a copy of Mr. Carnegie's deed of gift and other information in respect to the organization of the new foundation.

Some of the ablest thinkers and investigators in the country have already called attention to important lines of inquiry. Their communications will be referred to special committees in different departments of knowledge—astronomical, physical, chemical, biological, geological, archaeological, philological, historical, bibliographical, economical, etc.—and the referees will be requested to add their own suggestions and to report to the Carnegie Institution such methods of procedure and the names of such investigators as they deem likely to advance with wisdom the great purpose of the foundation.

No large appropriations can be made at present, as there will be no income from the fund before August. The summer will be chiefly devoted to a careful study of the problems of scientific investigation, at home and abroad, and in the autumn definite plans of procedure will be formulated.

Any member of the Executive Committee will be glad to receive from you at any time suggestions, opinions, and advice as to fields that the Carnegie Institution ought to occupy and the best methods for carrying forward its work in those fields; but in order that important papers designed for official consideration may be properly recorded and filed, they should be addressed to the President of the Carnegie Institution, 1439 K street, Washington, D. C.

DANIEL C. GILMAN, *Chairman*,
CHARLES D. WALCOTT, *Secretary*,
JOHN S. BILLINGS,
ABRAM S. HEWITT,
S. WEIR MITCHELL,
ELIHU ROOT,
CARROLL D. WRIGHT,

March, 1902.

Executive Committee.

For its guidance, the committee has formulated and adopted the following statements as to its purposes, principles, organization and policy:

Purposes.—In connection with the determination of the policy of the Institution, it is necessary to clearly define its purposes and to adopt some general plan for organization and administration. The purposes are declared by the founder to be

"To found in the city of Washington an institution which, with the cooperation of institutions now or hereafter established, there or elsewhere, shall in the broadest and most liberal manner encourage investigation, research and discovery—show the application of knowledge to the improvement of mankind, provide such buildings, laboratories, books and apparatus as may be needed, and afford instruction of an advanced character to students properly qualified to profit thereby."

And he adds:

"That his chief purpose is to secure, if possible, for the United States of America leadership in the domain of discovery and the utilization of new forces for the benefit of man."

The trust deed enumerates several aims, all of which may be grouped under two heads, viz:

(A) To promote original research.

(B) To increase facilities for higher education.

Under (A) may be grouped:

(a) The promotion of original research 'as one of the most important of all subjects.'

(b) To discover the exceptional man * * * and enable him to make the work for which he seems specially designed his life work.

(c) The prompt publication and distribution of the results of scientific investigation.

Under (B) may be grouped:

(a and b) The increase of facilities for higher education by increasing the efficiency of the universities and other institutions, either by utilizing and adding to their existing facilities or by aid-

ing teachers in various institutions in experimental and other work.

(c) To enable such students as may find Washington the best point for their special studies to take advantage of the facilities there for higher education and research.

Principles.—It is the judgment of the executive committee that the aims enumerated can be best carried into effect under the following principles, which are to be departed from only in very exceptional cases.

The Institution proposes to undertake—

(A) To promote original research by systematically sustaining—

(a) Projects of broad scope that may lead to the discovery and utilization of new forces for the benefit of man, pursuing each with the greatest possible thoroughness.

(b) Projects of minor scope that may fill in gaps in knowledge of particular things or restricted fields of research.

(c) Administration of a definite or stated research under a single direction by competent individuals.

(d) Appointment of Research Assistants.

(B) To increase facilities for higher education by promoting—

(a) Original research in universities and institutions of learning by such means as may be practicable and advisable.

(b) The use by advanced students of the opportunities offered for special study and research by the Government bureaus in Washington.

The Institution does not propose to undertake—

(a) To do anything that is being well done by other agencies.

(b) To do that which can be better done by other agencies.

(c) To enter the field of existing organizations that are properly equipped or are likely to be so equipped.

(d) To give aid to individuals or other organizations in order to relieve them of financial responsibilities which they are able to carry, or in order that they may divert funds to other purposes.

(e) To enter the field of applied science except in unusual cases.

(f) To purchase land or erect buildings for any organization.

(g) To aid institutions when it is practicable to accomplish the same result by aiding individuals who may or may not be connected with institutions.

(h) To provide for a general or liberal course of education.

Organization.—The executive committee, keenly realizing the importance of thoroughly investigating and fully considering every proposed action before recommending it to the Trustees, have given much time and thought to the subject of organization, and at the several meetings have discussed the suggestions received from individuals and from the advisory committees. It is hoped and expected that the Institution will set a high standard for research. This the committee believes can be best attained and maintained by establishing such laboratories and facilities, not found elsewhere, as are necessary when dealing with problems.

The committee is of the opinion that organization in Washington should be provided for by—

(a) Purchasing in the northwestern suburb of the city a tract of ground suitable for present and future needs.

(b) Erecting thereon a central administration building, to serve as the administrative headquarters of research work conducted, directed, or aided by the Carnegie Institution.

(c) Establishing such laboratories from time to time as may be deemed advisable.

(d) Employing the best qualified men that can be secured for carrying on such research work as it may be decided to undertake in Washington.

(e) Continuing and developing the present office organization as the Executive Committee may find it necessary to do in order to properly conduct the work of the Institution.

The only organization outside of Washington to be provided for at present should be such advisers and advisory committees as may from time to time be found necessary in connection with the development of the research work of the Institution.

It is the opinion of the committee that such persons and committees should be largely advisory and not executive in their function. Executive work should be in charge of paid employees of the Institution. These may be officers, research associates and special employees.

Policy.—Soon after the executive committee began its investigations it became evident that two lines of policy were open, namely:

(a) To sustain broad researches and extended explorations that will greatly add to knowledge.

(b) To make small grants.

Research may be defined as original investigation in any field, whether in science, literature or art. Its limits coincide with the limits of the knowable. In the field of research the function of the Institution should be organization, the substitution of organized for unorganized effort wherever such combination of effort promises the best results; and the prevention, as far as possible, of needless duplication of work. Hitherto, with few exceptions, research has been a matter of individual enterprise, each worker taking up the special problem which chance or taste led him to and treating it in his own way. No investigator, working single handed, can at present approach the largest problems in the broadest way thoroughly and systematically.

With an income large enough to enter upon some large projects and a number of minor ones, it appears to be wiser, at the beginning, to make a number of small grants and to thoroughly prepare to take up some of the larger projects. With this in view the executive committee recommended to the Trustees that there be placed at its disposal for the fiscal year 1902-'03, two hundred thousand dollars for aid to special researches in various branches of science, and \$40,000 for the publication of the results achieved. Dur-

ing the year plans will be perfected, data secured and experience gained that will be of great service in formulating recommendations for the ensuing year.

In the opinion of the committee, the most effective way to discover and develop the exceptional man is to put promising men upon research work under proper guidance and supervision. Those who do not fulfil their promise will soon drop out, and by the survival of the fittest the exceptionally capable man will appear and be given opportunity to accomplish the best that is in him. When the genius is discovered, provide him with the best equipment that can be obtained.

In making grants the wisest policy appears to be to make them to individuals for a specific purpose rather than to institutions for general purposes.

Grants.—Under the authority conferred upon it by the Trustees at their first meeting, the executive committee made three grants, as follows:

March 25, 1902. To the Marine Biological Laboratory, Woods Hole, Mass., for general support	\$4,000
April 15, 1902. To Dr. J. McK. Cattell, Columbia University, New York, for preparing a list of the scientific men of the United States	1,000
April 15, 1902. To Dr. Hideyo Noguchi and Professor Simon Flexner, Philadelphia, Pa., for continuation of their studies of the toxicological actions of snake venom and allied poisons	1,000
Total	\$6,000

Since the second meeting of the Trustees, on November 25, 1902, the executive committee has made the following grants in the several departments of science mentioned; anthropology, mathematics and other branches will be acted upon later:

Astronomy	\$ 21,000
Bibliography	15,000
Botany	11,700
Chemistry	3,000
Economics	15,000

Engineering	4,500
Exploration	5,000
Geology	12,000
Geophysics	8,500
History	5,000
Investigation of project for southern and solar observatory	5,000
Investigation of project for physical and geophysical laboratories	5,000
Investigation of natural history projects	5,000
Marine biological research	12,500
Paleontology	1,900
Physics	4,000
Physiology	5,000
Psychology	1,600
Publications	5,500
Research assistants	25,000
Student research work in Washington...	10,000
Zoology	4,000
Total	\$185,200

CHARLES D. WALCOTT,
Secretary.

SUMMARY.

As a convenient summary of the plans and methods thus far agreed upon the following minute is approved:

The methods of administration of the Carnegie Institution thus far developed are general rather than specific.

The encouragement of any branch of science comes within the possible scope of this foundation, but as the fund, munificent as it is, is inadequate to meet the requests for aid already presented, not to mention others which are foreseen though not yet formulated, attention has been concentrated upon a selection of those objects which, at this time and in our country, seem to require immediate assistance.

Efforts have been and will be made to secure cooperation with other agencies established for the advancement of knowledge, while care will be exercised to refrain from interference or rivalry with them. Accordingly, ground already occupied will be avoided. For example, if medical research is provided for by other agencies, as it appears to be, the Carnegie Institution will not enter that field. Systematic

education, abundantly provided for in this country by universities, colleges, professional schools, and schools of technology, will not be undertaken. Nor will the assistance of meritorious students in the early stages of their studies come within the scope of this foundation. Sites or buildings for other institutions will not be provided.

Specific grants have been and will be made, for definite purposes, to individual investigators, young or old, of marked ability, and for assistance, books, instruments, apparatus and materials. It is understood that such purchases are the property of the Carnegie Institution and subject to its control. The persons thus aided will be expected to report upon the methods followed and the results obtained. In the publication of results it is expected that the writer will say that he was aided by the Carnegie Institution of Washington, unless it be requested that this fact be not made known.

In order to carry out the founder's instructions in respect to bringing to Washington highly qualified persons who wish to profit by the opportunities for observation and research afforded by the various scientific bureaus of the United States Government, a certain sum is set apart for this purpose.

In addition, the Carnegie Institution will appoint from time to time a number of persons to be known as research assistants, who may or may not reside in Washington, and who shall undertake to carry on such special investigation as may be entrusted to them by the Institution. The appointments will be made for a year, and may be renewed in any case where it seems desirable. Permission may be given to go abroad, if special advantages not accessible in this country can thus be secured.

Publication is regarded by the founder as of special importance. Accordingly,

appropriations will be made for this purpose, especially for the printing of papers of acknowledged importance, so abstruse, so extended or so costly that without the aid of this fund they may not see the light.

With respect to certain large undertakings involving much expense, which have been or may be suggested, careful preliminary inquiries have been and will be made.

In order to secure the counsel of experts in various departments of knowledge, special advisers have been and will be invited from time to time for consultation. Valuable suggestions and counsel have already been received from such advisers.

DANIEL C. GILMAN,
*President of the Carnegie
Institution.*

WASHINGTON,
November 25, 1902.

AMERICAN ASSOCIATION FOR THE AD-
VANCEMENT OF SCIENCE.

SECTION B, PHYSICS.

THE sessions of Section B, in affiliation with the American Physical Society, at Washington, were very successful; the attendance was much larger than has been usual, and it was characterized by the presence of many leading physicists representing a wide territory. Forty-five papers of a high average quality were given; twenty-six of these were presented before Section B, and nineteen before the Physical Society. The number of papers would undoubtedly have been much larger had not this meeting followed so closely upon the Pittsburgh meeting. Nearly every paper drew forth some discussion, though it would seem that this feature of the sessions might be extended with profit. A rough classification of subjects shows that fourteen were on optics, twelve on electricity and magnetism, eight on general subjects, six on heat, three on sound and two on meteorology.

Ernest F. Nichols, vice-president of Section B, and Arthur G. Webster, vice-president of the American Physical Society, were the presiding officers.

In accordance with the revised constitution, several officers were elected to serve at the Washington meeting and also at future meetings, the object being to secure a more consistent and efficient policy of administration. Those officers which serve for several meetings, including the Washington meeting, are Dayton C. Miller, secretary for five years; and the following members of the sectional committee, Gordon F. Hull, five years; Arthur G. Webster, four years; D. B. Brace, three years; Ernest Merritt, two years; Ernest F. Nichols, *ex officio*, two years. The other officers for the Washington meeting, in addition to those mentioned above, were Henry S. Carhart, member of the council; W. S. Franklin, *ex officio* member of the sectional committee; Charles E. Mendenhall, member of the sectional committee; George F. Stradling, member of the general committee, and Lyman J. Briggs, press secretary.

The vice-president for the next, the St. Louis, meeting is Edwin H. Hall, of Harvard University.

On Monday the retiring vice-president, W. S. Franklin, gave an address on 'Popular Science,' which was listened to with great interest, and which drew out some spirited and valuable discussion. The paper has been given in full in a previous issue of SCIENCE. The abstracts of the other papers presented before Section B are given below:

*The Semidiurnal Periods in the Earth's
Atmosphere:* FRANK H. BIGELOW, U. S.
Weather Bureau.

There occur at the surface of the earth two types of diurnal periods in the meteorological elements. The temperature,