













THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA. 1912.

# The Academy of Natural Sciences

OF

## Philadelphia

PROCEEDINGS OF THE MEETING

HELD MARCH 19, 20 AND 21, 1912, IN COMMEMORATION OF THE  
ONE HUNDREDTH ANNIVERSARY OF THE FOUNDING  
OF THE ACADEMY

*1812*



*1912*

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# PROCEEDINGS.

## INTRODUCTION.

Early in January, 1911, the Recording Secretary in letters to the President and the Chairman of the Library Committee, urged the desirability of a fitting observance of the one hundredth anniversary of the foundation of the Academy. He prepared an outline program which, having been elaborated by a preliminary committee consisting of Henry G. Bryant, LL.B., George Vaux, Jr., Henry Skinner, M.D., Sc.D., Thomas H. Fenton, M.D., and the Secretary, was approved by the Council, the proposed celebration was authorized, and the President was directed to appoint a Committee of Arrangements of which he should be the Chairman.

The President appointed a general committee, which, appropriately divided into sub-committees, was charged with the details of management as follows:

### CENTENARY COMMITTEES.

HONORABLE SAMUEL GIBSON DIXON, M.D., LL.D., President of the Academy,  
Chairman of the General Committee.

EDWARD J. NOLAN, M.D., Recording Secretary and Librarian of the Academy,  
Secretary of the General Committee.

### PRINTING AND PUBLICATIONS.

Henry Skinner, M.D., Sc.D.

William J. Fox

Henry A. Pilsbry, Sc.D.

Milton J. Greenman, M.D.

Witmer Stone, A.M.

Philip P. Calvert, Ph.D.

Edward J. Nolan, M.D.

### MEETINGS AND ADDRESSES.

Thomas H. Fenton, M.D.

Spencer Trotter, M.D.

Frank J. Keeley

Edwin G. Conklin, A.M., Ph.D., Sc.D.

George Vaux, Jr.

Thomas L. Montgomery

James M. Anders, M.D.

### INVITATIONS.

J. Percy Moore, Ph.D.

George McClellan, M.D.

John Cadwalader, A.M., LL.D.

G. de Schweinitz, A.M., M.D.

W. W. Keen, M.D., LL.D.

H. Sellers Colton, A.M., Ph.D.

Thomas H. Montgomery, Ph.D.

## ENTERTAINMENT.

Robert G. LeConte, M.D.	Daniel M. Barringer
Albert P. Brubaker, M.D.	Herbert Fox, M.D.
Edwin I. Simpson	Henry Winsor, M.D.
Henry Tucker, M.D.	Francis X. Dercum, M.D., Ph.D.
Hon. Charlemagne Tower	William D. Winsor
Roland G. Curtin, M.D.	Thomas G. Ashton, M.D.
Francis E. Bond	Walter Horstmann
Witmer Stone, A.M.	Charles Z. Tryon

## FINANCE.

	Hon. Samuel Gibson Dixon, M.D., LL.D.
George Vaux, Jr.	Walter Horstmann
Edwin S. Dixon	Henry G. Bryant, LL.B.
George S. Morris	John Cadwalader, A.M., LL.D.

A formal announcement of the occasion was mailed in January, 1912, to correspondents and scientific institutions throughout the world by the Corresponding Secretary, J. Percy Moore, Ph.D.:—

The Academy of Natural Sciences of Philadelphia founded in the year eighteen hundred and twelve for the cultivation of the natural sciences, in March, nineteen hundred and twelve, will have completed one hundred years of active devotion to this purpose.

For the adequate celebration of its centenary anniversary the Academy will call in convention at its Hall the learned men and institutions of the world—its collaborators.

The Academy has the honor to invite . . . . . to be present at this event, which will take place at Philadelphia on Tuesday, Wednesday, and Thursday, the nineteenth, twentieth, and twenty-first of March, nineteen hundred and twelve.

As will be seen from the letters published in connection with the proceedings, the responses have been most gratifying. Many of these documents are beautiful specimens of illumination and chirography. The appointment of one hundred and forty-seven delegates by corresponding societies and institutions was also a demonstration of the practical interest taken by the scientific world in the occasion.

Cablegrams and letters of congratulation and appreciation continued to be received after the commemorative meeting had adjourned.

On the recommendation of the Publication Committee it was decided to issue in connection with the celebration an Index to the complete series of the PROCEEDINGS and JOURNAL, a detailed history of the Academy, and a commemorative quarto volume (the fifteenth of the JOURNAL) to consist of the Proceedings of the Sessions and a collection of adequately illustrated memoirs contributed by members and correspondents.

The sessions extended over three days: the 19th, 20th, and 21st of March. The first was held on the evening of Tuesday, the 19th, because that was the time of the stated meeting of the Academy, but the 21st was the actual date of the anniversary.

The meetings were held, not as usual in the Reading Room, but in the Lecture Hall which afforded more ample accommodation and which was well filled on the occasion of the opening session, the front seats being occupied by delegates.

On the platform were seated the President, the Mayor of the City, the two Vice-Presidents, the Corresponding and Recording Secretaries, and Sir James Grant, the representative of the Royal Society of Canada.

The weather Wednesday morning was bright, sparkling, and genial, but that of Thursday was in violent and undesirable contrast, a fall of snow being driven along by a penetrating wind. It was a most gratifying evidence of the earnestness and interest of those in attendance that but little decrease in their number was observable when the meeting was called to order.

The announcement of the death of Thomas Harrison Montgomery was a pathetic incident of the opening session. As stated in the memorial note preceding his paper Dr. Montgomery had been deeply interested in the arrangements for the celebration and was the first one to hand in a contribution to this commemorative volume. It had been arranged that he should read the first paper on Thursday morning, but instead of hearing the voice which many present loved so well, the Chair announced that his funeral would take place the following morning from St. Mary's Church, West Philadelphia.

The midday luncheons provided on Wednesday and Thursday were thoroughly enjoyed and furnished the opportunity for social intercourse which was generally taken advantage of.

A brilliant reception was given as part of the anniversary celebration by the President, Mrs. Dixon, and Miss Dixon at the Bellevue-Stratford Hotel on the evening of the 20th. It was attended by upwards of fifteen hundred invited guests, the Philadelphians being manifestly delighted to meet the Academy's correspondents and delegates. A charmingly sociable tone prevailed during the evening and the occasion will long be remembered by those present as a most enjoyable feature of the program.

The indispensable banquet was also a brilliant success, owing to the discretion and good taste of the Chairman of the Committee on Entertainment, Dr. Robert Grier LeConte, who had the cooperation of Dr. Henry Tucker and Dr. Thomas G. Ashton. The luncheons and the banquet were served in the New Hall, the preparation of which in time for such service was due to the executive ability of the President and the energy of his Secretary, Edwin I. Simpson. The system of lighting produced the effect of a soft diffused illumination as pleasant as daylight. It imparted full value to the floral and other beautiful decorations.

Thanks to the cooperation of those best able to judge of the value of the work accomplished, the general success of the Centenary Celebration was commensurate with the influence exerted by the Academy on the development of the natural sciences during the past one hundred years.

EDWARD J. NOLAN,  
*Recording Secretary.*

## PROCEEDINGS OF THE CENTENARY MEETING.

## PROCEEDINGS OF THE SESSIONS.

TUESDAY, MARCH 19, 1912.

The meeting was called to order promptly at 8 P. M., the President, the HONORABLE SAMUEL GIBSON DIXON, M.D., LL.D., in the Chair.

The Recording Secretary requested the delegates, as the names of the societies and institutions represented by them were called by the Corresponding Secretary, to arise and hand their letters of credential and congratulation to the President without reading. As the exercises of the evening were likely to be lengthy, he asked, if remarks were considered desirable, that they should be brief. Thus advised, as a matter of fact no one spoke, and as much the greater number of the letters had already been delivered by mail, this otherwise tedious part of the program was not unduly prolonged.

The President, introducing the HONORABLE RUDOLPH BLANKENBURG, the Mayor of the City of Philadelphia, remarked:—

Science never makes such rapid strides as when we are governed by progressive, intelligent men, who appreciate education and the work of original research. We are to be congratulated on having such a man with us tonight and it is my especial privilege to present to you the Honorable Rudolph Blankenburg, Mayor of the City of Philadelphia.

Mr. Blankenburg spoke as follows:

## THE MAYOR'S ADDRESS.

*Mr. President, Delegates, Ladies and Gentlemen:* It is a pleasure for me to appear this evening before a body of scientific men and scientific women, and to be relieved for a little while of the cares of office and especially to be able, in a few words, to welcome you on this auspicious occasion. I am little of a scientist myself, but I have always appreciated science and those interested in scientific investigations. If it were not for such institutions as the Academy we would not be nearly as far advanced in learning and civilization as we are. Everything pertaining to the enlightenment of mankind naturally leads to the development of knowledge, of ideals, and to an evolution of truth, a higher character, and higher aims in life.

From what I learn, The Academy of Natural Sciences of Philadelphia stands at the head of similar institutions in this country. This is hardly to be wondered at, because we are at the head and front of so many things in America that this is only one small additional token of what Philadelphia does, of what Philadelphians have done, and of what Philadelphians can do, if they will. The collections within the walls of this beautiful building are among the best to be found in our country. The building itself is conveniently located and easy of access—in fact it is so convenient to my house (living, as I do, only half a square, or a stone's throw away) that I have not been within its walls for ten years. I am really almost ashamed to make this confession. If the Academy of Natural Sciences were a hundred or five hundred, or a thousand miles from Philadelphia, I am sure that I should have visited it on numerous occasions.

In looking over the history of the Academy of Natural Sciences, I learn that it was founded one hundred years ago by a few young, intelligent, and public-spirited men, who met at first in their private homes, and gradually grew in number and interest until The Academy of Natural Sciences of Philadelphia, from its small origin, erects a proud head to-day. I mention this simply as showing how great things spring from the very smallest causes: I believe this is a scientific maxim. If the few men who organized the Academy could look down upon what has been accomplished in one hundred years, they would certainly feel amply repaid in the thought that their work has been well done.

Look at the Philadelphia of a hundred years ago. The city itself then had only 53,722 inhabitants. To-day that part of the city which then comprised the whole of Philadelphia has but 89,357 inhabitants; there has hardly been any growth at all. The men who founded this great Academy hardly knew how well they were building. Philadelphia was at that time only a small place; the whole of the city was not much larger in area than the adjoining Fifteenth Ward. Gleaning from the past, should the work of old not be an incentive to people living to-day, whenever the opportunity offers, to build likewise? Many important undertakings had their origin in a small way. Never let us despise small things, my friends, but encourage all those who desire to do something for the progress of the world. It may sometimes seem idle to encourage their ambition; but even a seemingly small effort in laboring for the good of mankind and the welfare of the community should be encouraged.

Your great institution to-day stands as one of the landmarks of Philadelphia. It is being visited by hundreds and thousands of people every week: and since, through the unceasing efforts and the genius of your President, Dr. Dixon, you have secured at last this great building, one of the finest homes of its kind in this country, with so much accomplished, I am sure the future of this organization is assured. Doctor Dixon tells me that there is a fund to-day which gives you fifty thousand dollars a year for the maintenance of the wonderful collection housed in this building, and that not one cent of the Academy's capital was touched for the great improvements that have been made within the last few years.

I do not intend to make a speech. My purpose is to welcome you—to welcome you gentlemen and you ladies who come from a distance to the City of Brotherly Love. You know of Philadelphia's hospitality. Everything will be open to you. We shall be glad to take you to the great and renowned places of which only Philadelphia can boast. There may be some among you who have not even seen Independence Hall. If there be any let me know, and I shall be glad to take you there to-morrow morning so that you may be able to say, on your return home, "I have seen Independence Hall: I have visited the Cradle of Liberty." I welcome all of you, ladies and gentlemen, whether from home or abroad, and let this meeting be the forerunner of even greater success for this great institution for all the centuries to come.

After announcements by the Secretary the President delivered an historical address as follows:

THE PRESIDENT'S ADDRESS.

*Fellow Members and Guests:* This is one of the occasions which stimulate reflection. To-day we must all feel a regret that we cannot inherit the learning of those who have gone before us. So keen an appreciation do I possess of the unselfish devotion of my predecessors to science and to this institution, and so impressed am I at the monthly meetings in our Reading Room by their faces looking down upon us from their respective canvases hanging on the walls, that my feelings impel me to call upon them in spirit to join me in extending to our guests the heartiest of welcomes and to say that we, the present workers, fully appreciate how much credit is due them for our present success.

To-day this City of Brotherly Love, with the mother Commonwealth, Pennsylvania, in common with the great union of states, is at peace with all the nations of the globe. This blessed condition did not prevail on the day when our fore-fathers assembled one hundred years ago, to organize an institution for the study and advancement of the Natural Sciences. During the last days of the year 1811, the dispute between the United States and Great Britain and the doubt as to the attitude of France seemed to indicate that the national honor was hurt and that another contest with a European power was at hand. The commerce of the country had suffered. The Committee on Foreign Relations recited the wrongs that the United States had sustained from Great Britain, and declared it to be the sacred duty of Congress to call forth the patriotism and resources of the country. Extensive military measures were recommended. The Pennsylvania Legislature passed acts for enlarging the regiment of artillery and for the organization of the cavalry of the city of Philadelphia. Although war was not declared until June, 1812, in anticipation of the necessities of the situation Congress approved a loan of eleven million dollars, of which one million six hundred and forty-five thousand dollars were raised in Philadelphia.

Large meetings of people were held all over the city to consider the needs of commercial interests and to pass resolutions for the equipment of privateers and for building up the defences of the city.

The legislature relieved the tension of its patriotic resolutions by requesting a special committee to examine a machine made by Charles Redhefer, who claimed that it possessed the power of self motion, and naively stated that "if the machine be found to be imperfect the public interest will be promoted by exposing its fallacy."

In the midst of excitements due to impending war the youth of the city naturally sought the taverns and oyster cellars as meeting places, as indeed there was little in the way of diversion provided for the people of that period. The theater was seldom opened, and the feeling against it was so strong that a petition was presented to the legislature requesting it to abolish forever the exhibition of "Theatricals." Peale's Museum enjoyed great popularity, and here the *lusus*



*naturæ* were in steady demand. The calf with five legs vied for public favor with the child without ears.

Notwithstanding the preparations for war which were draining the resources of all men the founders of this institution had such faith in the future of the United States of America that they did not hesitate even with the din of martial demonstrations in their ears and the consciousness of an awful, impending struggle with gigantic powers in their minds, to proceed quietly, methodically, and unperturbed to found an association for pure learning which has now become one of the foremost among the scientific institutions of the world.

The voices that started the vibrations whose echoes still resound in this Hall of Science, though no longer heard, are too numerous to be mentioned on this occasion, when there is so much that is new to be brought out within the short time allotted for this our last assembly in the Academy's first century.

The Academy was born of the enthusiasm of earnest lovers of science. They had before them a single purpose, the unveiling of some of the laws of nature and the engraving of them on the tablets of the society that they might be studied by men of all nations. To accomplish this great end as the society grew they realized the necessity of explorations, of collections, of laboratories, of a library, and of reciprocity with bodies having similar aims.

In the beginning of the nineteenth century a few young men in this city spent their spare time in studying natural history. They soon learned it was to their mutual interest to compare their notes. In the year 1812 John Speakman and Jacob Gilliams agreed that it would be well to hold regular meetings; accordingly they, with Dr. Gerard Troost, Nicholas S. Parmentier, Dr. Camillus Macmahon Mann, and John Shinn, Jr., met at the home of one of their members on the northwest corner of Market and 2d Sts., on January 25, 1812. Thomas Say was almost immediately added to their number. The minutes of this meeting set forth that their object would be the rational disposition of otherwise leisure moments. Their next assembly was held at a public house on Market Street near Franklin Place on the 21st day of March, 1812, at which time Dr. Samuel Jackson, of the University of Pennsylvania, is said to have suggested the title of The Academy of Natural Sciences. The collection of the society at this time was represented by a few common insects, a few corals and shells, a dried toad fish, and a stuffed monkey.

Thus established, the Academy, with its constantly increasing resources, has been for one hundred years administered for the benefit of all students of natural history.

Masters of science have come from all parts of the world to consult the great zoological, botanical, geological, and ethnological collections which the accumulated labors of our members, during a century of activity, have brought together in the museum.

Writers and students of all grades have come to consult the great natural history library which the liberality of our members and the worldwide exchange of our publications have enabled us to place on the shelves.

Pupils from schools have come under the guidance of their teachers to study and profit by the exhibits displayed in our public museum halls, while our specialists have delivered courses of popular lectures on the natural sciences under the auspices of the Academy and the Ludwick Institute.

In every way within its power the Academy has promoted for a century the study of the natural sciences, advanced or elementary, pure or applied.

The one hundredth anniversary is a particularly happy birthday because our precious natural history library, unexcelled in America, and our priceless collections of mammals, birds, reptiles, fishes, shells, insects, plants, ethnological and geological specimens, unsurpassed in several of the departments and in all of them rich in the type specimens of the early naturalists of America, having been for almost one hundred years exposed to the danger of damage or destruction by fire are now, with the intelligent cooperation of the Commonwealth of Pennsylvania, placed in a thoroughly fireproof building.

The society has, however, never received state or city financial aid for maintenance, but has depended entirely upon the liberality of intelligent people, mainly of Philadelphia, for the necessary funds to purchase land for our buildings, to publish the results of the scientific researches of our members, to fit out expeditions, and of late years to pay meager salaries to the members of the scientific staff.

While we have thus built up world-renowned study collections it has been impossible to develop the popular exhibits that sister institutions, rich in state and municipal appropriations, have been enabled to install.

We have, however, kept our collections systematically arranged and have, during the last decade, had the satisfaction of seeing all the historical types and study series placed in metal cases, impervious to light, dust or moth, thus insuring them the longest possible life.

Our corresponding membership now numbers about two hundred, composed only of the greatest scientists of the period.

Biographical sketches of our officers and scientific workers who carried us through the last one hundred years are recorded in our publications and as we have so little time before us they can only be casually alluded to in this brief resumé of the Academy's history. We are, however, proud of the escutcheon upon which the history of their lives is engraved.

Members of this Academy have taken a very prominent part in explorations. Thomas Say was a member of Long's Expedition to the Rocky Mountains in 1819 and 1820 and was one of the first scientific men to become personally acquainted with the vast natural history resources of the great West.

Nuttall and Townsend, thirty years after the Lewis and Clark Expedition, crossed the continent to the mouth of the Columbia River, and extended their explorations to the Hawaiian Islands, returning around the Horn. They brought home rarities of animal and plant life, many of which were unknown to science. These collections were placed in the Academy's museum, then the chief repository for natural history specimens in America, and here they are still preserved.

When the United States government was organizing the famous Wilkes Expedition of 1838, the Academy was requested to nominate its scientific staff and two of its members eventually accompanied the party.

In the year 1850 one of our members, Edward Harris, financed and accompanied the great Audubon expedition up the Missouri River. Through his modesty, we were prevented at the time from making known the important part that he took in this expedition. Other members made possible the work of DuChaille in equatorial Africa.

We provided Dr. Kane with his outfit for systematic collecting in 1853, when he made his Arctic exploration. To-day we have many specimens obtained by him. Specially interesting is the gigantic stuffed polar bear which stands in interesting contrast to the modern mounted specimen brought here by the Peary Relief Expedition.

The Hayes exploration of the far north a few years later was also aided and endorsed by the Academy.

Rear Admiral Peary, discouraged by his futile attempts to interest other institutions and governments in his proposed voyage of exploration to the north, came to us with his proposition. He was generously received and a committee was appointed to arrange the expedition, which sailed on June 6, 1891 from Brooklyn, under the auspices of the Academy, to explore the Arctic regions. On January 26, 1892, a relief party was organized under the command of Professor Heilprin. On September 24, 1892, it returned with the explorers, sailing up the Delaware River on the now historic vessel "Kite."

Peary did not reach the highest latitude on his first expedition. His aim was accomplished in showing that Greenland was an island by tracing its northernmost line. It was during his next trip, which was not under the auspices of the Academy of Natural Sciences, that he made his northernmost record previous to his polar dash.

If the Academy had not taken an interest in Peary when he was about discouraged, the chances are he would never have planted the American flag at the north pole.

Dr. Hayden, a member of the Academy, when conducting the United States Geological Survey in the west, made up his scientific parties largely from our membership. The setting apart of the great national Yellowstone Park resulted from his numerous explorations. Every three years this institution bestows upon a distinguished geologist the Hayden Gold Medal, an award which was founded by Dr. Hayden's widow.

The Pennsylvania Geological Surveys were also conducted by members of Academy: Rogers and Lesley.

Our colleagues, Leidy and Cope, were the first to describe the extinct animals from the wonderful deposits of the western states.

I may mention among the more recent expeditions those of Professor Heilprin to Yucatan and Mexico in 1890; Harrison and Hiller to Sumatra; Samuel

N. Rhoads to British Columbia, the Colorado River, and Ecuador; Donaldson Smith to Somaliland and Lake Rudolph; and Francis E. Bond to Venezuela, from all of which we have received rich returns.

The publications of the Academy had early a world-wide reputation. For many years they furnished the only adequate means through which American scientists reached the naturalists of the world. Contributions of papers came from all parts of America. To-day our various publications are exchanged with all the nations of the civilized world. It may be interesting to state here the fact that when the famous Pacific railroad surveys were made, the United States government published descriptions of all the new species it obtained in the PROCEEDINGS of the Academy.

Passing rapidly over the more important departments of our museum, we find among mammals a number of the specimens obtained by Townsend in the far West, made known to science in the JOURNAL by our correspondents Audubon and Bachman; the Harrison Allen collection of bats, the Rhoads collection of North American mammals, and the splendid collection of anthropoid apes presented by Dr. Thomas Biddle.

The collection of birds will ever stand as a memorial to two of our members: Thomas B. Wilson and John Cassin. To Dr. Wilson's liberality we owe the acquirement of the famous Rivoli collection, the Gould collection, and many others. His entire gift, comprising some 25,000 specimens, was regarded in 1857 as the finest collection in the world. Cassin spent his life in the study of this material and his researches published in the PROCEEDINGS made the Academy famous as an ornithological center the world over, while he himself stood preeminent among the ornithologists of America.

The part that the Academy played in the development of ornithology in America may be appreciated by the mere mention of those who worked within its walls or published the results of their researches in the PROCEEDINGS: Nuttall, Bonaparte, Townsend, Gambel, Heerman, Harris, and Woodhouse, among our members, and Baird, Lawrence, and Coues, among our correspondents.

In our vast series of reptiles, we find the material collected and studied by Hallowell, Cope, and Brown—names inseparable from the history of herpetology in America.

In the study of fishes at the Academy the names of Bonaparte and Cope, already mentioned in other connections, stand forth prominently and their collections are still carefully preserved. Charles LeSueur, one of our earliest members, also attained fame as an ichthyologist, while of late years several of those who studied at the Academy have become famous in the service of the United States Fish Commission—notably, the late John Adam Ryder.

The Academy has from its foundation taken a prominent part in the study of the mollusca and has accumulated a collection probably second to none. A series of investigators, eminent in their special field, have made the society one of the world centers in this department of science.

Almost a century ago Thomas Say blazed the trail for conchologists, while Dr. Isaac Lea and Timothy Abbott Conrad were his successors. Lea's work, largely published by the Academy, is the basis of all later systematic study of fresh water mussels, while to Conrad we owe the foundation of American tertiary geology and paleontology, his work in this line overshadowing that on the living mollusca. Gabb was another famous worker in this field, while to George W. Tryon, Jr., we owe the conception of the *Manual of Conchology*, begun by him in 1878 and continued by the Academy after his death in 1888. Very few works have led to so many reforms in classification or have had such a broad influence as this. Dr. Joseph Leidy, who may be termed the Cuvier of America, should be mentioned in this connection because of his fine contribution to Binney's *Terrestrial Air-breathing Mollusks of the United States*, published in 1851. This was the first American work on the morphology of the soft parts of the mollusks.

Thomas Say, already referred to as a pioneer conchologist, is also known as the father of American entomology. Owing to his energy, the Academy's collection in this department was begun—a collection which by steady growth has reached a total of a million specimens and has become of world-wide renown. The long list of entomologists who have contributed to its development, contains the names of most of those whose activities constitute the earlier history of entomology in America.

Titian R. Peale, Wilson, LeConte, Horn, McCook, Cresson, Martindale, and others have made our entomological department one of the most important in America. The Cresson collection of hymenoptera has made the Academy the greatest in America in this particular branch. The Bassett collection of galls and gall insects is the most comprehensive ever brought together.

In palaeontology the names of Leidy and Cope are preeminent. *The Extinct Mammalian Fauna of Dakota and Nebraska*, published by Dr. Leidy as the seventh volume of the JOURNAL, is a classic. Students of paleontology still come to consult the types of his descriptions, which are preserved in our collection.

Professor Cope's part in the development of American paleontology is too well known to require detailed mention and was carried on side by side with his studies of reptiles and fishes, in which his reputation was equally great. Even on his death-bed he placed the finishing touches to his report on the Pleistocene remains discovered at Port Kennedy, Pennsylvania, a paper which attracted the attention of the paleontological world and which appeared in the JOURNAL of the Academy soon after his death.

In botanical research the Academy has always held an important place and its herbarium, now numbering some 900,000 specimens, contains the types of such pioneers as Nuttall, Pursh, Muhlenberg, and deSchweinitz, besides comprehensive collections from all parts of the globe. Among those whose researches have been carried on at the Academy may be mentioned in addition to the above, Durand, Charles E. Smith, Mehan, and Redfield.

In anthropology the works of Morton and later of Harrison Allen are famous. The splendid collection of human crania brought together by the former is historic. Archeological and ethnological collections comprise the material gathered by Samuel Stehman Haldeman in North America and in the land of the Aztecs, Mayas, and Incas.

There are also the Wm. S. Vaux collection rich in specimens of the neolithic age of Europe, the Robt. H. Lamborn collection and the Clarence B. Moore collection.

Mr. Moore's collection embodies the results of more than twenty years' exploration in the southern United States and consists of thousands of specimens of the vanished art industries of our southern aborigines now saved for all time in the museum and in the fine series of reports published in the JOURNAL.

We have extensive mineral collections, foremost among which is that of William S. Vaux, noted for the beauty of its specimens and the completeness of the series.

There are the famous Febiger collection of diatoms, the Chapman study series of marine animals, and others which lack of time forces me to pass over.

So too there are many other former members of the Academy who by their scientific attainments or their loyal and generous support have helped to build up the institution, while among the living members are men who are, by their work and devotion, fully as deserving of notice as those who have gone before.

Helmholtz, in 1862, said, "In fact men of science form, as it were, an organized army, laboring on behalf of the whole nation, and generally under its direction and at its expense, to augment the stock of such knowledge as may serve to promote industrial enterprise, to increase wealth, to adorn life, to improve political and social relations, and to further the moral development of individual citizens. After the immediate practical results of their work we forbear to inquire; that we leave to the uninstructed. We are convinced that whatever contributes to the knowledge of the forces of nature or the powers of the human mind is worth cherishing, and may, in its own due time, bear practical fruits, very often where we should least have expected it."

It has been truly said that the distinctive feature of pure science is that "it is not remunerative; the practical rewards and returns are not the immediate ends in view." The work of Tyndall and Pasteur, however, on fermentation, pursued in the beginning purely because of its abstract scientific interest, later came to have enormous economic importance and led to the scientific investigations that have within recent years become of incalculable value to mankind.

The knowledge gathered by the abstract naturalist and the tabulation of scientific data concerning all forms of animal and vegetable life have a very close and direct relation to public health and preventive medicine. A long list of diseases might be compiled in which insects are directly responsible for the transmission of the bacterium or parasite life causing disease. It is now a matter of almost universal knowledge that malarial fever is transmitted from

man to man by means of the *Anopheles* mosquito, that the yellow fever virus can only be transmitted through the *Stegomyia calopus*, that the bubonic plague may be carried from man to man or from rat to man by means of the rat flea (*Pulex cheopis*), that the *Trypanosoma gambiense* of African sleeping sickness can be communicated only by means of the tsetse-fly, that the organism causing human filariasis is transmitted by the *Culex fatigans* and certain species of *Anopheles*, and evidence is gradually accumulating that the bacterium of leprosy is transmitted through the bed-bug, *Cimex lectularius*. A knowledge of the natural history of these insects was absolutely essential for the scientific study of the diseases with which they are so closely associated and public health work has only been effective in eradicating the disorders in proportion to the efforts of the sanitarian directed toward their destruction and for the protection of the individual. The entomologist, the zoologist, and the bacteriologist are each required to contribute their share in the research that means so much to public health and to mankind. If much has already been accomplished, still greater are the fields open for scientific investigation.

With the lower forms of animal life parasitic to man and known to cause disease, the connecting link, the intermediate host, the full life history are missing in many instances where it would seem that the most fertile field for the scientist has not yet been invaded. A very large province lies open for those who undertake a careful study of the relation between the vermes and the human being. Much indeed has been learned about parasites inhabiting the intestinal canal, but the parasitologist has not yet concluded the final analysis of the life history of many of these forms.

The work of the Academy has been so distinctly pure science that the lay public have not until recently appreciated the great practical relationship it has to health and economics. The description of the various species, their life history, their geographical range, have enabled those working in applied sciences to conduct the already successful war against the enemies of man, of the lower animals, and of plant life.

Let it be remembered that in 1793 half the population of Philadelphia either died from yellow fever, or voluntarily exiled themselves to escape from the scourge, that all the southern tier of states were kept in a state of constant terror every summer for fear of its invasion, causing a loss of millions to the commerce of the country, and then recall the fact that through entomological and medical cooperation this disease was practically eliminated from Cuba, its breeding place for ages, and that in 1905, a violent epidemic of the same plague was actually checked in New Orleans by the application of the knowledge gleaned by the medical department of our army in the more southern field.

That mysterious blight to human life and energy known as malaria, to which, as much as to the fire and sword of northern barbarians Greece and Rome owed their downfall, has been traced to its entomological source so that these two devastating diseases have ceased to be a menace to civilized communities,

allowing that great work, the construction of the Panama canal, heretofore impossible owing to their prevalence, to go on uninterruptedly under conditions of unparalleled health. The sacrifice of 5,000 American troops during the Spanish-American war, was finally found to have been due to the transmission of *Bacillus typhosus* by the common house fly, and this knowledge has been so judiciously applied by our army surgeons that a recent considerable mobilization of our soldiers was entirely exempt from that disease, conveying some faint conception of the immense debt that humanity owes to the patient workers in the field of pure science.

Economic entomology, based upon abstract work, shows an annual money loss in the United States of North America occasioned by insects amounting to \$1,272,000,000.

The congratulatory letters, with the autographs of our foreign co-workers, received from the great institutions of the world relating to this our one hundredth birthday, cannot be read owing to a want of time, but will be recorded in our Commemorative Volume.

Before closing I have a pleasant duty to perform on behalf of the Building Committee. At the request of those entrusted with planning and erecting the improvements made possible by the Commonwealth of Pennsylvania, and as Chairman of the Committee, I hand over to the corporate body, under the title of The Academy of Natural Sciences of Philadelphia, this building completed for its use, comprising fireproof stacks for its library, a reading room, lecture hall, and work rooms.

In the rhythmic language of another I reverently invoke the blessings of the God of Nature upon this temple of the Natural Sciences.

Great God of nature, let these halls  
The hidden things of earth make plain;  
Let knowledge trumpet forth her calls,  
And wisdom speak, but not in vain.

Help us to read with humble mind  
Thy larger scriptures day by day —  
True bread of life! O be thou kind,  
If, erring, we should go astray.

For deep resounding unto deep,  
Declares the wonders of thy plan;  
Life struggling from its crystal sleep  
Finds glorious goal at last in man.

The mysteries of the eternal laws  
Are but the shadows of thy might.  
God, ruling all in final cause,  
Enshrine the world in love and light!

*Harvey Maitland Watts.*

It was explained that the routine of a stated meeting would then go on, in the belief that an illustration of the formula by means of which the Academy had transacted its business as a society for one hundred years would be of interest to those familiar with the results which had made the celebration worth while.



At the call of the Chair the Recording Secretary read the minutes of the last meeting and the minute of the first Recording Secretary, Dr. Camillus Macmahon Mann, defining the date of foundation as follows:—

YEAR OF THE UNITED STATES THE 37TH.

Saturday, March 21, 1812.

In Committee agreed: The year of the institution shall commence at the present natural evolution: the spring equinox, 21st of March and the year shall be named according to the era of the United States of America in the principal city of which we assemble.

Additions to the museum and library were announced.

The Corresponding Secretary reported on letters received since the last meeting.

The Publication Committee, in conjunction with the Centenary Sub-committee on Printing and Publication, reported the titles of papers presented for consideration and also announced the details of works to be issued in connection with the celebration.

The Chair announced the death this morning of Thomas Harrison Montgomery, Jr., Ph.D.<sup>1</sup>

Under the head of "verbal communications" the Recording Secretary gave some "Reminiscences" of his fifty years' connection with the Academy as Assistant Librarian, Librarian, and Recording Secretary, his first list of accessions to the library being dated February 4, 1862.

It had been his intention to glance rapidly at a few of the interesting characters in the first half century of the Academy's history: such men as Maclure, Say, Troost, Lesueur, Morton, Correa da Serra, Bonaparte, and Keating, but the time at his disposal confined him to some of those he had personally known since 1862.

It was a cause of keenest regret that he had not recorded the recollections of a few of the contemporaries of the founders who still survived when he entered on the scene, but it could be readily believed that in the boy's most sanguine moments he had never entertained the thought that fifty years later, on the occasion of the Academy's Centenary, he would be called on to deplore his lack of foresight before such an audience.

He had seen George Ord, the biographer of Alexander Wilson and one of the ex-presidents, three or four times; Jacob Peirce, elected a member in 1813, two years before Ord; Isaac Hays, who had practically kept the early JOURNAL alive by his energy, tact, and zeal; Titian R. Peale, the intimate friend of Say and Maclure, all cordially willing to talk of the early days.

Dr. Nolan then spoke of the beginning of his work as an untrained assistant in the library and the unvarying kindness and consideration he had experienced from all the men met with at the time but especially from his dear chief, J. Dickinson Sergeant, and his beloved future preceptor, Joseph Leidy.

<sup>1</sup> See note in advance of memoir.

It was an extraordinary epoch in the history of the Academy, the beginning of its second half century, and the youth was associated with a stimulating group of men, including Leidy, Cope, Conrad, Tryon, Stewardson, Lea, Slack, Rand, Warner, Vaux, Cassin, Heerman, Meigs, Gabb, and Wilson, all men of marked individuality, many of whom had made permanent records as leaders of science in America.

Continuing, Dr. Nolan gave his impressions of some of his contemporaries of later date: Allen, Horn, LeConte, Meehan, Warner, Hawkins, Ruschenberger, Redfield, Ryder, McCook, Heilprin, Chapman, Isaac Jones Wistar, and Arthur Erwin Brown. He adopted a more intimate tone than would be desirable in a printed record in the belief that such confidences would not be objected to by his auditors, many of whom were familiar with the work of the men whom he was describing.<sup>2</sup>

In the one hundred years of the Academy's history four men had stood out prominently, with, of course, many associates, as dominant in its material and intellectual advancement. These were Thomas Say, Samuel George Morton, Joseph Leidy, and the present chief executive. The work of Say, Morton, and Leidy formed part of the history of the Academy, and if an impression were desired of the accomplishments of Samuel Gibson Dixon his auditors had but to look around them.

Closing his recollections the Secretary was distressed to remember the names of the many dear friends whom, for lack of time, he was forced to leave in the undesirable class "and others."

In conclusion he remarked:—

Those whom I knew during the first years of association with the Academy are nearly all dead. The old building, if it still existed, would be full of ghosts, and even in the present halls, in the dusk of the winter days, dear shades encounter me in the alcoves and passage ways and remind me of the time when I too shall be a recollection and a tradition.

But in the meantime it is with a feeling of profound gratitude that I bear testimony to the kindly patience and sustaining encouragement of those who are still with me and who relieve the daily task almost entirely of stress and strain.

For obvious reasons I cannot deal in personalities in the case of my living contemporaries, but I am at liberty to say that they are worthily taking the place of those who have labored so loyally for the advancement of the Academy and who, we are not forbidden by the highest reason to hope, are now rejoicing in this splendid commemoration of their labors. Had they lived when men cherished the same truths under different formulæ their motto, as I have said elsewhere, would have been, *Ad majorem Dei gloriam*.

May the men who come after us be as zealous and as disinterested in the development of truth as were those whom I have been so ineffectively remembering tonight, so that when the second Centenary is celebrated it also may be

<sup>2</sup> Much of this information and more of the same character will be found in Dr. Nolan's *History of the Academy*, to be published in connection with the Centenary Celebration.

the subject of congratulation from a like gathering of kindly and appreciative friends.

Nominations for membership were read, the elections of those formerly proposed being deferred until the following month.

The rough minutes were then read for criticism and approval as had been the custom for nearly one hundred years, the secretary explaining that he had complied with the directions of Dr. Mann and had dated the record as having been made in the 137th year of the United States.

No corrections being suggested, the minutes were adopted as read and the meeting adjourned until the following morning at 10 o'clock.

WEDNESDAY MORNING, MARCH 20.

The hall was filled with delegates, members, and visitors, when the President dropped the gavel at 10 o'clock. The following papers, nearly all of which were resumés of communications which will form a portion of the second section of this volume, were then read:

EDWIN G. CONKLIN, PH.D., Sc.D., Vice-President of the Academy and Professor of Biology in the University of Princeton:

Experimental Studies of Nuclear and Cell Division.\*<sup>3</sup>

CARLOTTA J. MAURY, PH.D., Lecturer on Paleontology in Barnard College, Columbia University:

A Contribution to the Paleontology of Trinidad.\*

WILLIAM J. HOLLAND, Sc.D., LL.D., Director of the Carnegie Museum, Pittsburgh:

David Alter, the first Discoverer of Spectrum Analysis, with exhibition of the Prism used by him.\*

JOHN WILLIAM HARSHBERGER, PH.D., Assistant Professor of Botany in the University of Pennsylvania:

The Vegetation of the Banana Holes of Florida.\*

FREDERICK WILLIAM TRUE, M.S., LL.D., Assistant Secretary of the Smithsonian Institution:

A New Species of Delphinodon.\*

HENRY HERBERT DONALDSON, Sc.D., PH.D., Professor of Neurology in the Wistar Institute of Anatomy and Biology.

The History and Zoological Position of the Albino Rat.\*

EDWARD BROWNING MEIGS, M.D., Fellow in Physiology in the Wistar Institute of Anatomy and Biology:

The Ash of Smooth Muscle.<sup>4</sup>

<sup>3</sup> An asterisk after the title of the paper indicates that an abstract has been published in advance in the *Proceedings of the Academy*, LXIV, 1912.

<sup>4</sup> The entire article is in *The Journal of Biological Chemistry*, May, 1912. This paper was prepared in association with Leon Alonzo Ryan, Ph.D., Associate Professor of Chemistry and Toxicology in the University of Pennsylvania.

MARSHALL AVERY HOWE, PH.D., Curator of the Museum of the New York Botanical Garden:

Reef-building and Land-forming Seaweeds, illustrated by views and specimens.\*

At the conclusion of Dr. Howe's paper the audience adjourned to the New Hall—the old library hall transformed—where a liberal lunch was enjoyed.

The meeting reassembled at 2:30 P. M., when BENJAMIN SMITH LYMAN, former Chief Geologist of the Empire of Japan, read a paper entitled “Natural History Morality.”<sup>5</sup>

It was followed by:

JACQUES LOEB, M.D., Sc.D., of the Rockefeller Institute for Medical Research:

Experiments on Adaptation of Animals to Higher Temperatures.

HENRY SKINNER, M.D., Sc.D., Curator of Entomology in The Academy of Natural Sciences of Philadelphia, Professor of Entomology in the Pennsylvania Horticultural Society:

Mimicry in Butterflies.\*

SPENCER TROTTER, M.D., Professor of Natural History in Swarthmore College:

The Faunal Divisions of Eastern North America in Relation to Vegetation.\*

T. WAYLAND VAUGHAN, PH.D., of the United States Geological Survey:  
Rate of Growth of Stony Corals.

HENRY AUGUSTUS PILSBRY, Sc.D., Curator of Mollusca in The Academy of Natural Sciences of Philadelphia:

On the Tropical Element in the Molluscan Fauna of Florida.\*

The session closed with illustrations by means of a collection of superb lantern views, of methods of photographing wild birds, by WILLIAM L. BAILY.

#### THURSDAY, MARCH 21.

The session was called to order by the President. The place assigned on the program to the late Dr. Montgomery was taken by EDWIN J. HOUSTON, PH.D., Professor of Physics in the Central High School of Philadelphia, who made an interesting communication on “How the Natural Sciences can be made Attractive to the Young.”\*

The following papers were then read:

JAMES A. G. REHN, Assistant in Entomology in The Academy of Natural Sciences of Philadelphia:

The Orthopteran Inhabitants of the Sonoran Creosote Bush.\*

MERKEL H. JACOBS, PH.D., of the Wistar Institute of Anatomy and Biology:

Physiological Characters of Species.\*

<sup>5</sup> *Proceedings of the Academy*, LXIV, March, 1912.

HENRY FAIRFIELD OSBORN, LL.D., Sc.D., Research Professor of Zoology in Columbia College, Curator Emeritus of the Department of Vertebrate Paleontology in the American Museum of Natural History:

Tetraplasy, or Law of the Four Inseparable Factors of Evolution.\*

GEORGE HOWARD PARKER, Sc.D., Professor of Zoology in Harvard University:

Sensory Appropriation as illustrated by the Organs of Taste in Vertebrates.\*

JOHN MUIRHEAD MACFARLANE, Sc.D., Professor of Botany in the University of Pennsylvania:

The Relation of Protoplasm to its Environment.\*

WILLIAM HEALY DALL, A.M., Sc.D., Honorary Curator of Mollusca in the United States National Museum:

Mollusk Fauna of Northwest America.

After luncheon HENRY GRIER BRYANT, LL.B., President of the Geographical Society of Philadelphia, read a paper on Governmental Agencies in the Advancement of Geographical Knowledge in the United States, illustrated by maps and charts.\*

The scientific sessions closed with a well-illustrated lecture by WITMER STONE, A.M., the Curator of Ornithology in The Academy of Natural Sciences of Philadelphia, on the Fauna and Flora of the New Jersey Pine Barrens.\*

Announcing the adjournment the President remarked:

On behalf of the Members of The Academy of Natural Sciences of Philadelphia I assure you that we all appreciate the disadvantages under which specialists labor who leave their homes to attend a general scientific meeting where they will probably hear only a few papers on the particular subject in which they are interested. We therefore regard it as a high compliment to the Academy that after having contributed your communications to the program, we have received from you the moral support and encouragement of your presence during the whole period of the sessions. This is greatly appreciated by the members of our institution.

And now adjourning for the last time in the present century we will visit the Museum, and the microscopic exhibit in the Reading Room. Some of our members will join with the delegates from sister institutions tonight in welcoming the second century of the Academy's existence.

The rest of the afternoon was devoted to the examination of one hundred and thirty-two microscopes displayed in the Reading Room, and a selection from the Academy's superb collection of butterflies arranged on the gallery surrounding the New Hall.

## THE BANQUET.

The actual anniversary of the birthday of the Academy was celebrated by a banquet in the evening, when one hundred and sixty delegates, members, and guests, assembled in the New Hall, which was beautifully decorated for the occasion. The tables were arranged in a long rectangle, the center of which was filled by a collection of palms, ferns, and flowering plants. The guests arranged themselves in friendly groups and the Chair was taken by the President, Dr. Dixon. On his right were placed the Hon. Rudolph Blankenburg, Mayor of Philadelphia; Hon. John Cadwalader, Vice-President of the Academy; Mons. Jean de Pulligny, Director of the Commission of French Engineers to the United States; Charles Custis Harrison, LL.D., late Provost of the University of Pennsylvania; William J. Holland, Sc.D., LL.D., Director of the Carnegie Museum, Pittsburgh; Edward J. Nolan, M.D., Recording Secretary and Librarian of the Academy; and Walter Horstmann. On the left were seated Edwin G. Conklin, Ph.D., Vice-President of the Academy and Professor of Biology in Princeton University; Henry Fairfield Osborn, LL.D., Sc.D., President of the American Museum of Natural History; J. Percy Moore, Ph.D., Corresponding Secretary of the Academy and Assistant Professor of Zoology in the University of Pennsylvania; Theodore N. Gill, A.M., M.D., LL.D., Professor of Zoology in George Washington University; Henry G. Bryant, LL.B., President of the Geographical Society of Philadelphia; and Edwin S. Dixon.

DR. CONKLIN in his capacity as Toastmaster, remarked:

*Gentlemen:* We have come to the last and crowning event in this Centenary Celebration of The Academy of Natural Sciences of Philadelphia. Anniversaries mark something more than mere length of life—tombstones do that; anniversaries mark progress. They are milestones, rather than tombstones; and to-night we pass one great, one major milestone in the history of this institution.

It is not always easy to distinguish between milestones and tombstones. You know the story of the old lady, who, visiting friends in Cambridge, found a stone by the roadside inscribed "1 M. from Boston." Reading it with emotion "I'm from Boston" she remarked "how simple, how sufficient!"

But we are not now on the subject of tombstones. We are passing one of the milestones, as I have said—one of the major milestones.

The Academy of Natural Sciences of Philadelphia has many distinguishing characteristics. One of them is the fact that it was not founded by Benjamin Franklin; but I think it is more than probable that some good and ingenious, if not ingenuous, phylogenist might be able to trace certain of its splendid characteristics back to that great founder. At least, we may say that we are, in a way, related to the American Philosophical Society, our elder sister, which was the product of the fertile brain of the philosopher and statesman.

The title of this institution has always impressed me as being a particularly modest one: The Academy of Natural Sciences of Philadelphia. We have evidence here to-night, and have had throughout this whole celebration, of the fact that The Academy of Natural Sciences in Philadelphia is an Academy that

is known throughout the world. I was amused, a few years ago, to see in Switzerland the title of a certain hotel, *L'Hotel de l'Universe et de Genève*. The title of this Academy might, from this time forth, be, "The Academy of Natural Sciences of the World and of Philadelphia."

Some of you who have not been here very frequently have been amazed, I am sure, as I have been, at the transformation that has taken place. Those of you who met in the old library in the days not very far in the past will fail to identify that hall with this bower of blossoms. In truth the Academy has had a new birth within a few years past; or, speaking biologically, I might say that it has undergone a complete metamorphosis. It has passed from the tadpole stage into that of an imago. This metamorphosis has come about through the good management, wise foresight, skilful care, of one man, he who sits on my right, the Commissioner of Health of Pennsylvania, the President of the Academy, Dr. Samuel Gibson Dixon. That for which so many in the Academy have longed and labored has at last come. It came in the form of a good, substantial fireproof building. It is said of one of the Emperors of Rome that he found that city brick and left it marble. It can be said that Dr. Dixon found the Academy serpentine and left it reinforced concrete.

It is not my function, however, to make an address. My duty is a very minor one: I have merely to call on those who shall instruct and entertain you. I do not say that I am to "introduce" those who are to give this pleasure for I should not care to introduce those who are better known than myself. You may have heard the story of how President Stanley Hall, of Clark University, arrived on the evening train at a town, just before the hour at which he was to give a lecture, and was met at the station by one of the committee. He was taken in a carriage to the lecture hall, and at once went on the platform. The man who had brought him from the carriage walked to the front and said, "Ladies and Gentlemen: I have the great pleasure and honor of introducing to you to-night a man whose name is a household word, one who is known from the Atlantic to the Pacific and from the Canadian border to the Gulf of Mexico—a man whose name, as I have said, is a household word. I cannot think of the name at this moment, but he is the President of that very well-known university, a university that has been heard of all over the world, not merely in this country, but in Europe, an institution that everybody knows. It is so well known that I need not mention the name. The name of that university is —. Well, in truth, ladies and gentlemen, I do not know the name of the university; but, as a matter of fact, on the way from the station up here, I found that this gentleman was a very delightful fellow, and I introduce him."

Now it is that way frequently, I think, with introductions, so that I shall merely call on those who are to speak.

During the latter part of last week, I received a telegram from the President of the Academy. It was reported to me over the telephone from the telegraph office, and the message came to me that the President had appointed me Post-

master. That sounded pretty well, and I inquired at what place I had been appointed the Postmaster. I wanted to know that, and also what the salary was; and then I learned (I must confess, with a good deal of disappointment) that I was not a Postmaster after all, but only a Toastmaster. Some who agreed to speak have backed out. Still, there is plenty of talent here; and I am glad that we have with us to-night His Honor, Mayor Rudolph Blankenburg, of our goodly city of Philadelphia.

MAYOR BLANKENBURG:

*Mr. President, Members of The Academy of Natural Sciences of Philadelphia, and Guests:* I do not know what you have done that I should be inflicted upon you to-night. I came here confident that I would not be called upon to speak on this auspicious occasion. One of the prerogatives of the office of Mayor of Philadelphia is an invitation to every banquet that takes place; the penalty, almost invariably, that he must earn his "meal ticket" by a speech. If I only had the capacity, I could eat enough during the four years of my term to last me for the rest of my life should I live to be a hundred, but unfortunately, I have not that capacity.

A feeling of awe overcomes me when I look into the faces of learned and scientific men because they are so far beyond my ken that a sense of profound humility overcomes me in their presence. This sensation of insignificance has been materially dispelled this evening as I look at the magnificent dining room presided over by Dr. Dixon. We have before us beautiful decorations, and the elaborate menu which we have discussed, as well as everything else connected with it, including liquids, has convinced me that scientists are only mortals after all.

I know that you have enjoyed yourselves thoroughly. You have partaken of the good things set before you and some of you may even have indulged in something besides Schuylkill water; (I should have said, "some of *us*.")

I have made a discovery this evening—which is of such importance that it must be announced first before this august assembly. It is nothing less than that the forty women who are as much members of the Academy as any of you men, do not seem to be able to eat. This is the most remarkable discovery of recent years. I am sure these ladies would not be excluded from the feast had they learned to eat like men!<sup>6</sup>

I shall be brief, as there are many speakers to follow me. We are proud of The Academy of Natural Sciences of Philadelphia. It is known all over the world and is one of the institutions that appeals to every citizen. The Academy has done much to give Philadelphia the name and the fame to which we are justly entitled as a center of learning. I believe the collections in your building are as extensive and as valuable as those in any similar institution in the United States. They have been gathered through the energy and care of the men who have, in one hundred years, from small and humble beginnings, succeeded in giving to Philadelphia its foremost scientific society. How it has flourished in

<sup>6</sup> In allusion to the fact that there were no ladies present.



recent years, and especially during the term of your office, President Dixon, is well known to all. A splendid future is in store for us of service to the City, the State and to the whole country, in collaboration with the many other educational institutions of a similar character of which we boast.

We should not duplicate too much, but try to have every institution attend to its own province and functions. Every institution of learning ought to have an individuality of its own, and I believe that the Academy has an individuality that is not part and parcel of any other institution of our city.

Philadelphia is going to build a new Free Library. This Library will be located on the Parkway. (Whenever I hear the Parkway mentioned, I feel like crawling into a hole and pulling the hole in after me.) There are many people in Philadelphia who think that the Parkway is the most important project before the public to-day. I am not of this opinion. We all favor the Parkway; we all want to beautify Philadelphia, make her something like Paris, at one time the most beautiful city of the world. As we know, Paris has the *Champs Elysées*. There is nothing quite equal to this Paris "parkway," as we would call it in our vernacular. We shall give Philadelphia a *Champs Elysées*, only let us be reasonable as to time. We have no Baron Haussman nor Emperor Napoleon, who simply demolished and built up as they pleased, because they were accountable to no one for their acts. If we had commenced operations forty years ago, Philadelphia to-day would probably be as beautiful as Paris, but we were utilitarians then and had little thought for the beautiful. Now we have awakened, and it is not yet too late.

We are going to finish the Parkway, and on this Parkway, almost opposite the Academy of Natural Sciences, we shall build a new Free Library. We mean to make this library one of the institutions of the country. I ask of you here present, as I request the gentlemen at the head of the Free Library, not to enter the domain of the other; that is, not to duplicate or to waste force in the same direction. Let each be original in its own way. What is the use of a library with books of reference that will be rarely used and then have these books duplicated across the street? You have a library with many rare scientific books that are useful to you in your own researches. There is no sense in having in a library across the street the same books. Let us cooperate. With cooperation we can have everything in Philadelphia that will tend towards the benefit and welfare of the whole community.

We are all proud of Philadelphia, even those who live at a distance, even those from Boston, the "Hub of the Universe." Philadelphia is one of the great and leading cities of the world. We have many institutions that are not to be found elsewhere. Take Girard College, with its vast grounds and fine buildings. Stephen Girard, a Frenchman, gave us Girard College; his name is honored and will be revered for all time. Fifteen hundred is the average number of orphan boys who are there educated year in and year out, free of charge. They are housed, fed, clothed, and educated, and many of the graduates of that college

are to-day citizens of prominence in our commonwealth and all over the United States. We have the finest public schools, we have the University of Pennsylvania and many other educational institutions, each in its own way adding its share toward the education of our people and the advancement of our great country.

One more thought—a thought that has been dear to me for many years: Science is one of the great powers for progress and light, but it must be combined in its teachings with hard, common sense. Let us get as close as we can to nature, for all science comes from and is closely related to nature, and the more natural we are, the wiser we shall become. Sense and science should govern us in the problem of government, especially that of municipal government, for it comes closest to us and is all-important in the destinies of our land. If we have honest, efficient and pure municipal government, the question of the future of our country will be solved.

We are to-day attempting in Philadelphia to solve this important question. Our people suffered for many years because selfishness had taken the place of public spirit; avarice, that of high-minded devotion to the public good; cowardice, that of courage; partisanship had conquered patriotism. The people had for many years failed to rule Philadelphia, just as they failed in other municipalities. At last we proclaimed in our own city a new Declaration of Independence. The people arose in their might, threw off the shackles, declared for and obtained freedom. This is a government, as Lincoln so vividly and tersely expressed it, “of the people, by the people, and for the people.” Let us have this kind of government. It is the legitimate rule; the natural, the scientific and philosophical direction of public affairs. You members of the Academy of Natural Sciences can help to establish a “Public Academy of all the Sciences,” of splendid common sense and patriotic spirit for the whole city. Then we shall solve the great question of municipal government, of honest and progressive government on business lines.

Forgive me for speaking of myself, but thirty, aye forty years of my life have been devoted to this problem. The opportunity has at last presented itself for solution. We have commenced and are doing the best we know how. We are applying scientific methods to every department of the city government, and I ask you, members of the Academy of Natural Sciences, to help us apply the principles that prompt your devotion and energy, to the solution of the question of municipal government. Then one hundred years hence, at your bi-centennial celebration, it will be related as a proud historical fact that, when the Centenary of the Academy was celebrated, the prediction was made and has been fulfilled that this great society could, would and did lend its weighty influence to the popular cause. That it applied the same thoughts and ideas to the solution of municipal government that it has given to the investigation and expansion of the natural sciences.

Then the second centenary of this influential body will not only be identified

with the accomplishment of the noble purposes that you and all of us have set out to accomplish, but it will also behold and celebrate the solution of the great municipal problem which involves the permanent existence of the government that was established by Washington and preserved by Lincoln.

Our government is founded and will be perpetuated on thoughts and ideals expressed in four of the most illustrious documents ever emanating from human mind—the Declaration of Independence, the Constitution, Washington’s Farewell Address, and Lincoln’s address at Gettysburg. Give us the government defined by these patriots and this country will be a beacon light to all nations for all time to come.

DR. CONKLIN:

Many different countries are represented here to-night. One of them has been foremost in the natural sciences, the land of Cuvier, the land of Saint Hilaire, the land of Lamarck. I have great pleasure in presenting to you Mons. Jean de Pulligny, the Director of the French Commission of Engineers to the United States, who will convey the greetings of the French scientific societies on this occasion.

MONS. DE PULLIGNY:

*Mr. President and Gentlemen:* It is an agreeable duty and a great honor to me to address a meeting of such men as are gathered around me this evening. I have come here to carry the greetings of all French scientific societies, and especially the *École Polytechnique*, of which I had the honor of being a pupil in my youth, a good many years ago.

If you can look back with legitimate pride on a century of useful work, the *École Polytechnique* can claim sixteen years more of kindred occupation.

I regret that we will not meet at the end of another century to comment on the success of the Academy during the intervening years. So, gentlemen, I renew the hearty congratulations of the French societies, especially the *École Polytechnique* to which I shall carry back the greetings of The Academy of Natural Sciences of Philadelphia.

DR. CONKLIN:

We have with us the distinguished President of a sister institution, believed in New York, and perhaps elsewhere, to be the greatest museum of natural history in the world. I imagine that on this occasion it would scarcely be safe to insist on this; but there were some German scholars over here studying museums, a few years ago, and one of them went back and published a report in German, which said that the plans of the American Museum of Natural History of New York would, when carried out, give it that rank. We are, therefore, particularly pleased to have with us the President of that institution, one who is no stranger in this place; who was associated intimately with Cope, who called him “one of my boys.” He is the man who, in the Bronx

Zoological Garden, has brought to our doors the wonders of the living world; and who, in the American Museum of Natural History in the Central Park, has made to live again the strange monsters of a past world. I have pleasure in calling upon Professor Henry Fairfield Osborn to speak to us upon the cultivation by the Academy of the science of paleontology.

DR. OSBORN:

In addressing the Mayor of Philadelphia, the President and members of The Academy of Natural Sciences of Philadelphia, and the Toastmaster, I rise with the greatest pleasure to the toast of "The Academy of Natural Sciences of Philadelphia and its Relation to the Development of Paleontology in America."

I bring greetings to the Academy from the scientific institutions of New York City, the American Museum of Natural History, and Columbia University, as well as an expression of the debt that all of us constantly feel to the men who have worked within these walls and have developed that division of the biology of the past known as paleontology.

This country has ever afforded peculiar opportunities for the development of this branch of science which was founded in France by the genius of Cuvier. There were first the Pleistocene fossils discovered in the Eastern and Middle States, some of which Thomas Jefferson considered of greater interest than the political developments in the stirring period of 1808. Then came our Western Territory, an arid region constituting an unknown continent. The first explorers of the *Mauvaises Terres* brought back a revelation of the existence of wonderful records of the world's life. Fortunately for science as early as 1851 these fragments were brought to Philadelphia, and to the hands of one who lives immortal in the history of American science and the world's science, Dr. Joseph Leidy.

Never was there a greater opportunity and never was there a man more ready to grasp it than that quiet, unpretentious, unassuming, wonderfully gifted observer of nature. It is particularly interesting to review his work, which was written in the exact spirit of Cuvier, and to see his long record of direct observation of the entire extinct fauna, not only of the East but especially of the great western territories,—to find how permanent that work is, how well it stands the test of time, how accurate his descriptions, how perfect his figures and illustrations, and how, even today, they form the best standards for all the work which has been done since. So I think it may fairly and truly be said, without any exaggeration incidental to this historic moment, that Joseph Leidy was the founder of the paleontology of the vertebrates in America. After a continuous series of epoch-making papers and contributions which he was in the habit of contributing year after year to meeting after meeting—he brought his work to a climax in 1869 when he published his great monograph, *The Extinct Mammalian Fauna of Nebraska and Dakota*, in the JOURNAL of the Academy. That work still ranks in its breadth and its accuracy as one of the finest contributions that has been made to vertebrate paleontology in this country. In fact, Leidy started

with an entirely new world of life, because he soon learned that he could not base his study of American fossils on the work of the French paleontologists, for the life of our western regions was not known in the Old World, every specimen represented a new species, a new genus, or a new family, and in some cases a new order.

It proved an unfortunate circumstance for Leidy that paleontology is a science requiring ample expenditure of money, for as years went on he was reluctantly obliged to leave the field to his equally ambitious and more wealthy pupils and followers, Cope and Marsh, whose writings belong to the new, or Darwinian period of the science, while Leidy was essentially pre-Darwinian. The three men, were, however, intimately associated with the Academy; they put the science of vertebrate paleontology as coming from the United States on a new basis, commanding the attention and admiration of the savants of the Old World. This was a great achievement, and its beginnings issued from these halls.

It is most interesting to contrast the characters of the three men, Joseph Leidy, Edward Drinker Cope, and Othneil Charles Marsh. They were as different as any three men could possibly be made by nature and nurture. In the admirable speech of your Mayor nothing truer was said than that he had made a discovery at this dinner, namely, that scientists are only mortals, after all. Whereas Leidy was essentially a man of peace, Cope was what might be called a "militant" paleontologist; whereas Leidy's motto was "Peace at any price," Cope's was "War, whatever it costs." Perhaps there was a scientific Providence in all this, perhaps these antagonistic spirits were necessary to enliven and disseminate interest in this branch of science throughout the country. This subtle combative quality in paleontology seems a strange quality; by a strange inversion, the more ancient, the more difficult to study, the more refractory the fossil, the greater the animation of discussion regarding its relationship and descent. From this subtle ferment there arose the famous rivalry which existed, not between Leidy and either of the others, because it was impossible to quarrel with Leidy, but between the descendant of a Quaker family and the nephew of a great philanthropist. It is certain that when I took up the subject as a young man and first came to the City of Brotherly Love thirty-five years ago, from the quiet shades of Princeton, I always expected to learn of some fresh discussion, some recent combat; and it was always here in the Academy of Natural Sciences that one could find one of the centers of the convulsive movements. I remember one day coming into this very hall and finding two of the youthful attendants carrying on an animated discussion regarding a dispute that they had overheard at the meeting of the Academy the night before.

Whereas in Leidy we had a man of the temper of an exact observer, Cope was a man who loved speculation; if Leidy was the natural successor of Cuvier, Cope was the follower of Lamarck, a man of remarkable inventive genius. Leidy covered in his contributions to the Academy the whole world of nature from the Protozoa and Infusoria up to Man, and lived as the last great naturalist of the

old type who was able by capacity and training to cover the whole field of nature, whereas Cope mastered, in itself a wonderful achievement, the entire domain of the vertebrates from the fishes up. Marsh, with less breadth and less ability, nevertheless was a comparative anatomist of a high order, and had a genius for appreciating what might be called the most important thing in science. He always knew where to explore, where to seek the transition stages, and he never lost the opportunity to point out at the earliest possible moment the most significant fact to be discovered and disseminated.

These three men, therefore, approached the subject from the standpoint of three entirely different temperaments and their contributions were of an entirely different character. Leidy was a great describer, Cope was a phenomenal taxonomist, while Marsh was less productive than either but extremely effective in everything he published. Leidy was not a taxonomist or classifier of animals, he was a great naturalist; Cope revolutionized every class of vertebrates which he treated: fishes, amphibians, reptiles, mammals, by his novel arrangement of their systematic characters and his daring innovations in classification.

I had the pleasure of knowing Leidy slightly and of a long personal acquaintance with Marsh; I knew Cope very intimately,—I was, as your toastmaster said, “one of his boys.” He always welcomed Scott and myself to his house; his library and his collections were as open as those of a museum. On one memorable occasion when I visited his house he pulled out a drawer of his black walnut work-table, where he always sat and wrote his papers, and brought out a packet carefully done up in paper and twine, saying, “Osborn, here are some records that you have never seen before.” I said, “Well, what are they?” He replied, “These are my Marshiana, here is everything relating to the mistakes which that man Marsh has made; and when the time comes, Osborn, I am going to launch this on the world.” Well, he did; the bombshell was exploded in due time, and this great mass of information regarding the supposed incapacity of Marsh was spread on the pages of the *New York Herald* in one of its Sunday issues. The very next Sunday, however, Marsh, who, it appears, had likewise been accumulating a private stock of Copeiana, proved with equal success that Cope’s life was one long string of errors from first to last.

Heredity makes strange bedfellows. It is only by the most extraordinary combination of personal characteristics that we find among scientific men of the greatest capacity, such strange mixtures of personal qualities side by side with genius.

Time, however, softens things and also brings about some strange recombinations and associations. Marsh in the course of time passed away, Cope followed him, and Mrs. Cope was good enough to send to the American Museum of Natural History his historic black walnut work-table together with a complete set of his writings. I remembered the drawer out of which Cope had pulled his “Marshiana.” Shortly afterward Director Walcott invited me to succeed Marsh as paleontologist of the United States Geological Survey, and soon

after I received from New Haven all of Marsh's manuscripts; that is, everything not published which related to his unfinished monographs. Where was the best place to put these manuscripts? Why, in the same drawer in which Cope had collected his Marshiana, and there they may be found today.

Well, gentlemen, let me in closing wish the Academy of Natural Sciences the company and association of many more such men as Leidy, Cope, and Marsh; let me express the hope that this present life of the Academy with its new opportunities, may be a continuation of the old life, but that with improved conditions there may come the discovery among the young students of the public schools and your University, men of genius to succeed those we are honoring tonight.

If you have in this great city, as is undoubtedly the case, young men with a talent for such studies, here is where they will find their opportunity, here is where they will be welcomed, and here is where the Academy will develop the men who will continue its glorious traditions.

THE PRESIDENT:

I had declined to speak this evening because I thought it my place to listen to what others had to say about the institution that has been so effectively sustained by the citizens of Philadelphia and of the Commonwealth of Pennsylvania, but after listening to the history of the wars between the naturalists of the past, at this time when the Academy has just received the most gracious testimonials from her sister institutions all over the world assuring us of their sympathy and cooperation in our work, one is encouraged to hope for an international code of peace. I realize more fully than ever that scientific and educational institutions are effective agents in establishing such a code. Most gratifying to our members and to the citizens of Philadelphia in general are the compliments paid the Academy by scientists from every part of the world and such assurances of cooperation give rise to reasonable hope that the work of the Academy and kindred institutions will be an important factor in the establishment of peace on earth and good will among men.

DR. CONKLIN:

We are greatly honored to-night in having with us the Nestor of American Zoology, a man who was contemporary with Joseph Leidy, and the other men of whom we have just been hearing. I refer to Dr. Theodore N. Gill, of the National Museum at Washington. Here at the Academy we have the custom of dating events as before or after Nolan. Dr. Gill tells me that he was elected a member of this Academy in the year 1860. Now, since Dr. Nolan became connected with the Academy as a boy in 1862, we have to admit that Dr. Gill belongs to the pre-Nolan period. Dr. Gill has recently been very ill, and he has paid us the great compliment of coming here and staying throughout the whole celebration; and I am now glad to call on him to tell us whatever he may please, just as his spirit may move him.

As this is the seventy-fifth birthday of Dr. Gill I propose that we stand and drink his health.

This was cordially done.

DR. GILL:

It is fifty-two years since I was elected a Correspondent of this Academy. When Dr. Nolan gave his address, night before last, it was with the greatest pleasure that I listened to his reminiscences. When admitted to association I was given all the privileges of the society: I had a pass-key, and could visit the Academy not only by day, but also by night. I take the greatest pleasure in acknowledging the advantages enjoyed by me at that time, and to testify as to how greatly I enjoyed the benefits conferred by the institution and how persistently I attempted to derive from it all the benefits possible.

The Academy was then a comparatively small institution, but nevertheless far ahead of any other of the kind in the country. In that early time (that is, during the last of the 50's and the first of the 60's), there were in Philadelphia quite a remarkable collection of young students of about the same age, almost all of whom belonged to the Academy. One of these that I recall (and I think that I recall almost all of them) was Edward Cope. Another was Horatio Wood, who is the only one of the lot now living.

Cope, as you know, was versatile. At that time, he was almost exclusively interested in the reptiles, but he developed year after year, in many ways, so that he covered all nature, not even confining himself to the vertebrates.

Horatio Wood was at that time more especially interested in the myriapods and the horny corals.

George Horn was also active. He was at that time also interested in the corals. A short time after he took up the study of Coleoptera, in which he became a past master.

Gabb was actively engaged in the study of invertebrate paleontology.

These men occasionally assembled together. One such meeting was in March, 1861, when William Stimpson was present. Absenting himself for a time he came back with some doggerel, in which he included those present. It was dedicated to the "Polymythian Society of Monosyllabics, who contributed nine-tenths of the Proceedings of the Academy of Natural Sciences in 1861," and as nearly as I remember it ran somewhat as follows:

"Into this well of learning dipped,  
With spoon of *Wood* or *Horn* —  
For students, *Meek* and lowly,  
Silver spoons should treat with scorn.  
Though *Gabb* should have the gifts of *Gill*,  
As *Gill* has gift of *Gabb*,  
'Twould show a want of judgment still,  
To try to *Cope* with *Meek*."

The Academy was a most delightful place. I made frequent visits from Washington, and in 1861 I held a Jessup Fund Scholarship for three months, enjoying largely my continued stay in Philadelphia. During that time, I had the free use of the building, and still had a pass-key, which I freely used.

Among the older members who impressed me were Leidy, Conrad, Isaac Lea,



and Tryon. Leidy was a handsome man of striking personality but somewhat round-shouldered. He was a man of the widest range of knowledge and information and was able to put his hand almost immediately on any book of reference. He was familiar with all forms of life from Amœba to Man. I entered the University as a medical student under him. As a lecturer, he was not eloquent, but he gave the facts in a trenchant, impressive way which arrested the attention and gave direction to the thoughts of the student. In range of knowledge, he excelled anyone that I have ever known—even Cope was much inferior in that respect, but Leidy was not a generalizer and did not care to consider questions from a philosophical point of view. Cope, on the contrary, was willing to discuss any philosophical question. One of the subjects of the day (that was before Darwin's day, you know) in which Cope was deeply interested was the vertebrate theory of the skull. That has been so completely buried that I fear many of you may not be familiar with what the theory was. It held that the skull was composed of four vertebræ. It was more especially advocated by Richard Owen, and widely accepted in England. The first discussion of any length I had with Cope was on the subject of this vertebrate theory. He strenuously advocated it; I contended against it, and gave my reasons. We went to Leidy and appealed to him, and he said: "I do not take any interest in these questions. I do not believe in the theory."

DR. CONKLIN:

*Gentlemen:* We have with us the director of another museum, one of the greatest of this country, that of the Carnegie Institute of Pittsburgh. Wherever you go, in the great museums in this country or abroad, you will see life sized models of that prehistoric beast, *Diplodocus carnegii*, a creature which always reminds me of the poet's description of the comet: "Ten thousand miles of flaming head; ten million miles of tail."

I call upon Dr. William J. Holland, of Pittsburgh.

DR. HOLLAND:

Through the kindness of the Toastmaster I have been spared the agony of suspense, which sometimes afflicts those who are called upon to make after-dinner speeches. You may have heard that Daniel accounted for his escape from the lions by stating that they were to make an after-dinner speech and had therefore lost their appetites. I have dined in peace and face you with a glad heart and unimpaired digestion.

When I was a boy of ten my mother brought me to Philadelphia. I had in my pocket four gold dollars—little gold dollars—some of you remember them. I went to the bookstore of J. B. Lippincott, and I bought Dr. Livingstone's first volume. I have that book in my library to-day. It is the first book bought with my own money, and stands first in a long list of thousands of volumes which are in my library. It is on that account one of my treasures. My mother was

went to tease me afterwards because I used to express fear that Dr. Livingstone would discover everything in Africa before I could have a chance. The day after visiting Lippincott's bookstore I visited the Academy of Natural Sciences, lodged in that tall narrow building, which has been referred to this evening as having stood where later stood the Hotel Lafayette. There I feasted my eyes upon Dr. Kane's polar bear. For years the memory of that wonderful sight has lived with me, and whenever thinking of the arctic regions, Dr. Kane's polar bear, by the laws of natural association, has come back in memory, glorified, as are all the visions of childhood. Yesterday, after more than half a century, I saw Dr. Kane's polar bear again. Horrible! How the now time-worn relic has shattered the memories of childhood! Taxidermy has made great advances during the past half of a century. We can do better in the way of stuffing polar bears to-day. We had three polar bears sent in cold storage to us from within the Arctic Circle only a short time ago, and prepared them in Pittsburgh. Had anybody told me more than fifty years ago, as I stood looking at Dr. Kane's bear, that I should myself have three bears of the same species shipped to me from Siberia to Pittsburgh, and that I should have them skinned there and mounted for a museum, I should have declared the idea supremely ridiculous. But the thing has actually happened.

To be a member of The Academy of Natural Sciences of Philadelphia seemed to me in my youth the highest honor which could come to mortal man; and later, when good old Doctor Ruschenberger, Mr. John Jordan, the President of the Historical Society of Pennsylvania, and Dr. Nolan proposed me for membership, I was one of the happiest young men in America.

The memories which cluster around this institution are precious to me. I will not speak of those who are living. I knew Durand and Fiot, and many other botanists, who in my youth were connecting links with the early days of this institution. When Mr. Stone entertained us this afternoon with his most interesting account of the pine-barrens of New Jersey, there came back to me a flood of recollections of certain golden days which I passed in company with Durand, Fiot, my own father (who was a botanist), and my mother's cousin, Francis Wolle, on the occasion of an excursion to New Jersey to study and collect plants. I am glad to recognize here to-night the son-in-law of Francis Wolle, Professor Doolittle, the honored professor of astronomy in the University of Pennsylvania. These halcyon days, when all the world was young, and my friends were the wisest of all men, when the flowers we gathered were the brightest, and the bird-songs we heard were the sweetest, will never come again.

It has been my lot for a number of years to preside over the destinies of the great museum established by the generosity of one of the most noted sons (by adoption) of Pennsylvania at the headwaters of the Ohio. Supported by the generous gifts and sympathetic counsels of Andrew Carnegie we have undertaken to do in the western part of this great Commonwealth work allied to that which

your Academy is doing here on the banks of the Delaware. The kindling inspiration, the fire on our altar, came from the hearthstone of science here. There is a great field for research before us, as we stand in the gateway of the West, through which Long, and Lewis and Carke, went forth for their journeys of exploration, but the original impulse and the exemplification of what is to be done have come to us through such men as your own Say, Audubon, LeConte, and Leidy.

But let us forget Pittsburgh for a moment and come back to this institution. Gentlemen, the best library of scientific literature in the departments of zoology and botany in North America is found under this roof. We owe a debt to Thomas B. Wilson and the men who have come after him for having assembled here in this library the works of the great scientific investigators in these fields, as they have from time to time appeared. We are attempting in Pittsburgh to build up such a library; but, only the other day, when one of my associates proposed to me to prepare a bibliography of the ichthyology of South America, I was compelled to say to him, "Run over to Philadelphia to the Academy of Natural Sciences and there prepare the manuscript in the form in which it ought to be. It is idle to cite titles at second-hand. The books are in Philadelphia. Go there." He went, and we have secured a bibliography covering the subject, as I trust, in a satisfactory manner. In order to do it we had to send to Philadelphia.

Gentlemen, science, which is simply ordered knowledge, has had no more efficient handmaiden in this country during the last century than The Academy of Natural Sciences of Philadelphia, the Centenary of which we are celebrating at this time. I am a member of many of the great societies in Europe, but, as I said a few moments ago in conversation with my friend Dr. Nolan, the Zoölogical and Linnean Societies of London, the *Société Zoologique de France*, and a score of others, which I might name, have none of them done more useful work, nor accomplished better things for the advancement of human knowledge, than this Academy, so admirably presided over to-day by our honored friend, Dr. Dixon.

As Americans and as Pennsylvanians we are proud of The Academy of Natural Sciences of Philadelphia, we rejoice in the achievements of the one hundred years which have passed, and our wish and hope is that, when another hundred years shall have rolled their course, this institution will stand proudly, wearing even greater honors, and possessed of even more exalted reputation, than now belong to her.

DR. CONKLIN:

*Gentlemen:* We are celebrating to-night not merely the Centenary of The Academy of Natural Sciences of Philadelphia, but also the Semi-Centenary of Dr. Edward J. Nolan's connection with this Academy. Let us stand and drink to the health of Dr. Nolan.

I call upon Dr. Nolan "to read the 'rough minutes' of the meeting."

DR. NOLAN:

*Gentlemen:* I can say metaphorically as well as literally that I am not yet too full for utterance, but I am reminded of a friend who has undergone so many surgical operations that she declares she has nothing left but lungs and recollections. I have, however, in addition, a tongue, and as long as the lungs continue to supply the motor force, I am willing to talk in the interest of the Academy.

I have been dealing earlier in the proceedings somewhat extensively in "recollections" but were I not surrounded by friends, I should feel tonight as a stranger in a strange land. The Academy moved into this building in 1876, when I had for fourteen years been administering the affairs of the Library and the Publication Office to the best of my ability and with little or no assistance. Many of you remember the aspect of this old hall, austere, not to say dingy, in which the work was continued until the completion of the stack building, and we are startlingly conscious tonight of how it has been transformed by the energy of the President. In the northeast corner was the little room in which I sat and worked for more than thirty-six years. Its only attraction was the view it afforded of the beautiful trees in Logan Square. Directly to the west, separated by an alcove, was the even darker and gloomier room inhabited by my beloved preceptor, Joseph Leidy, of whom you have heard so much tonight. There he did much of the work which has rendered this society illustrious, always ready, no matter what his engrossment, to give his time for the assistance of others. Arranged around the hall were equally small and gloomy study rooms, every one teeming with recollections of men who have been efficient in promoting the credit of the Academy. These were placed, as far as possible, at the service of visiting naturalists as well as resident students, and in one of them the genial Elliott Coues from time to time did much work in ornithological bibliography. He told me on one occasion that it was the most satisfactory room in which he had ever worked "for if I had a good fishing-pole I could draw to my table every book I need without getting up." A little beyond, Heilprin, for a time, discharged the duties of Executive Curator, and the last room on the north side was for some months inhabited by the venerable Titian R. Peale, a contemporary of the founders.

Recollections become more vivid as I go on, regardless of the lovely lights and plants and draperies and evidences of good cheer that everywhere delight our senses tonight. There to the right of where I now stand Tryon was ensconced for years, engaged on his epoch-making work in conchology, and just beyond Henry C. McCook elaborated the results of his fine field-work among the ants and spiders. The other rooms were occupied from time to time by equally illustrious men. It was to the door directly opposite mine that the good angel of a distinguished arctic explorer directed his steps when he succeeded in enlisting the Corresponding Secretary's interest in his plans. Had he turned to the right instead of to the left he would have met with but scant encouragement.

I have a vivid remembrance of another social gathering in this hall. It was a very generous dinner given by the lamented William S. Vaux to the Centennial Commissioners in 1876. The affair was a distinguished success, the provision both of solids and liquids being generous and the spirit of the gathering most genial, but when I contrast the surroundings of that occasion with those we are enjoying tonight, I am impressed with the fact that "the world do move."

The only other event of the kind in the history of the Academy is a pleasant tradition, and not one of my recollections. It was a dinner given in 1854, at the instance of Dr. Ruschenberger, who acted as Chairman, in Musical Fund Hall. One hundred and four members enjoyed the feast and joy was unrestrained. At the risk of causing discontent with the elegant and sufficient bill of fare provided for this evening's entertainment, I shall, as an illustration of the change in social usage, call your attention to the perfectly exuberant catalogue of eatables provided on that occasion. Without dwelling too much on details I may say that while there was but one soup, and that nameless, there were two kinds of fish, four boiled meats, ten side dishes, the French names of which I shall not pronounce out of regard for the feelings of Mons. de Pulligny. Then there were five roasts: beef, capons, saddle of mutton, turkey, and ham. Under game were served pheasants, prairie grouse, partridges, terrapin, and (it is to be hoped not too game) *fried oysters*. There were six entries under "Pastry"; ten under "Dessert," and the whole was washed down with Madeira, Champagne (Heidsieck and Mumm's), Pale Sherry, Claret, Brown Sherry, Scharzberg, Steinberg, Liebfraumileh, Brandy, Coffee, Whisky and, last but probably not least—Punch. Curiously enough there is no mention of ice cream, so apparently indispensable at the close of our contemporary feasts.

Strange to say the work of the Academy went on as usual, no notable additions to the death list having been recorded on the minutes of subsequent meetings.

I think our admirable committee on entertainment, while they no doubt have done as well as they could, have supplied no such provision for the inner man as is set forth on that bill of fare of 1854.

Of course, congratulations are in order. The President has indicated our feelings on that subject, and it is not necessary to say more. It is very likely, almost certain, so far as we know at present, that nobody here now will participate in the second hundred years' celebration of the Academy's birthday; but we do not know what may eventuate in this era of progress in biological science, and Metchnikoff or some one else may discover a life-renewing bacillus that will leave at our discretion the extent of our lives. If this be so, one reason for wishing to prolong our existence would be the anticipated joy of participating in the celebration of the Two-Hundredth Anniversary of the Academy; and if I meet with any of you on that occasion I am sure we shall be a bunch of jolly old boys. And so — Good Night.

DR. CONKLIN:

Now, gentlemen, we have come to the close of the first century of the Academy. Some of you may think we have got further but we are only entering upon the second century, and I propose that we all rise and drink to the continued growth and glory of The Academy of Natural Sciences of Philadelphia.

The toast was drunk standing and with the singing of *Auld Lang Syne* the company adjourned at 11.45 P. M.

DELEGATES TO THE CENTENARY CELEBRATION.

The following delegates were appointed by the institutions in connection with which they are named:

- FRANK DAWSON ADAMS, Ph.D., F.R.S.,  
The Geological Society of London.
- JOHN W. ADAMS, V.P.M.  
The University of Minnesota.
- HERMAN V. AMES, A.M., Ph.D.,  
Amherst College.
- EDWIN S. BALCH, A.B.,  
The Franklin Institute.
- GEORGE A. BARTON, Ph.D.,  
The Archæological Institute of America.
- JOHN BIRKENBINE,  
The American Institute of Mining Engineers.
- JAMES ARNOLD BLAISDELL,  
Pomona College, Claremont, Cal.
- WALTER M. BOEHM, Ph.D.,  
The State University of Iowa.
- W. E. BRITTON, Ph.D.,  
The Entomological Society of America.
- ERNEST WILLIAM BROWN, A.M., Sc.D.,  
The University of Cambridge, England,  
The Royal Society of London.
- HENRY G. BRYANT, LL.B.,  
The Geographical Society of Philadelphia,  
The Royal Geographical Society of London.
- HIS EXCELLENCY HON. HELMAR BRYN, Envoy Extraordinary and Minister  
Plenipotentiary of Norway to the United States of America.  
Kongelige Frederika Universitet, Kristiania.
- THOMAS J. BURRILL, Ph.D., LL.D.,  
The University of Illinois.
- GARY N. CALKINS, Ph.D.,  
Société Zoologique de France.
- PHILIP P. CALVERT, Ph.D.,  
Sociedad Aragonesa de Ciencias Naturales.
- WILLIAM CAMPBELL, A.M., D.Sc., Ph.D.,  
The University of Durham Philosophical Society, Newcastle-upon-  
Tyne.

- E. P. CATHCART,  
The University of Glasgow.
- GEORGE HUBBARD CLAPP, Ph.B.  
The Carnegie Institute and Museum.  
The University of Pittsburgh.
- WILLIAM BULLOCK CLARK, Ph.D., LL.D.,  
Johns Hopkins University,  
The National Academy of Sciences.
- RICHARD A. CLEEMAN, M.D.,  
The College of Physicians of Philadelphia.
- F. V. COLVILLE,  
The Washington Academy of Sciences.
- JOHN H. COMSTOCK,  
The Entomological Society of London.
- MELVILLE T. COOK, Ph.D.,  
The Connecticut Experimental Station,  
The American Phytopathological Society.
- W. M. C. COPLIN, M.D.,  
The Philadelphia Pathological Society.
- EZRA T. CRESSON,  
The American Entomological Society.
- WHITMAN CROSS, Ph.D.,  
The Geological Society of London.
- CHARLES B. DAVENPORT, A.M., M.D.,  
Société Zoologique de France.
- WILLIAM MORRIS DAVIS, Ph.D.,  
The Geological Association of London.
- WILLIAM T. DAVIS,  
The Staten Island Association of Arts and Sciences.
- ALVIN DAVISON, Ph.D.,  
Lafayette College.
- EDWARD V. D'INVILLIERS,  
The American Institute of Mining Engineers.
- RAYMOND L. DITMARS,  
The New York Zoological Society.
- HON. SAMUEL G. DIXON, M.D., LL.D.,  
Accademia della Scienze Fisiche e Matematiche di Napoli,  
Ateneo Veneto,  
R. Scuola Superiore di Agricoltura in Portici,  
Accademia Gioenia di Scienze Naturali in Catania,  
Società di Lettere e Conversazione Scientifiche, Genova,  
I. R. Accademia di Scienze, Lettere ed Arti degli Agiati, Rovereto,  
Università di Torino.



- JAMES MAPES DODGE,  
The Engineers' Society of Western Pennsylvania.
- HENRY H. DONALDSON, Ph.D., Sc.D.,  
The American Philosophical Society,  
The University of Chicago.
- CHARLES L. DOOLITTLE, Sc.D.,  
The University of Michigan.
- HENRY STURGIS DRINKER, E.M., LL.D.,  
Lehigh University.
- JONATHAN DWIGHT, JR., M.D.,  
The American Ornithologists' Union,  
The Linnæan Society of New York.
- HON. W. A. F. EKENGREN, Chargé d'Affaires, Swedish Legation, Washington,  
D. C.  
K. Vetenskaps Akademien,  
Sällskapet for Anthropologi och Geographi.
- DAVID G. FAIRCHILD,  
The Bureau of Plant Industry.
- WILLIAM GIBSON FARLOW, M.D., LL.D.,  
The Linnean Society of London.
- JOSEPH HORACE FAULL, Ph.D.,  
The Canadian Institute.
- EPHRAIM P. FELT, Sc.D.,  
The Entomological Society of America.
- CHARLES H. FERNALD, Ph.D.,  
The Entomological Society of London.
- J. WALTER FEWKES, A.M., Ph.D.,  
The American Anthropological Association.
- STEPHEN A. FORBES, Ph.D.,  
The Illinois State Laboratory of Natural History.
- HOWARD B. FRENCH,  
Philadelphia College of Pharmacy.
- CHARLES STUART GAGER, Ph.D.,  
Torrey Botanical Club,  
The University of Missouri.
- THEODORE N. GILL, M.D., LL.D., Ph.D.,  
The Smithsonian Institution.
- CLARENCE McC. GORDON, A.M., Ph.D.,  
Lafayette College.
- SIR JAMES GRANT, M.D.,  
The Royal Society of Canada.
- MILTON J. GREENMAN, M.D.,  
The Wistar Institute of Anatomy.

ROSS G. HARRISON, A.M., Ph.D.,  
The American Association of Anatomists.

SAMUEL HENSHAW, A.M.,  
The Museum of Comparative Zoology,  
Harvard University.

REV. WILLIAM J. HIGGINS, S. T. L.,  
The Catholic University of America.

FREDERICK W. HODGE,  
The Bureau of American Ethnology.

JAMES W. HOLLAND, A.M., M.D.,  
Jefferson Medical College.

WILLIAM J. HOLLAND, Ph.D., Sc.D., LL.D.,  
The Carnegie Museum,  
The Carnegie Institute,  
The Entomological Society of London,  
The Entomological Society of Western Pennsylvania,  
The University of Pittsburgh.

EDMUND OTIS HOVEY, Ph.D.,  
The New York Academy of Sciences.

LELAND O. HOWARD, Ph.D.,  
The American Association for the Advancement of Science,  
The Entomological Society of America,  
The American Association of Economic Entomologists,  
Société Entomologique de France.

MARSHALL AVERY HOWE, Ph.D.,  
The New York Botanic Garden.

W. H. HOWELL, M.D., LL.D.,  
The American Physiological Society.

GEORGE S. HUMPHREY,  
Staten Island Association of Arts and Sciences.

HERBERT S. JENNINGS, A.M., Ph.D., LL.D.,  
The American Society of Naturalists.

CHARLES W. JOHNSON,  
The Boston Society of Natural History.

EMORY R. JOHNSON, M.L., Ph.D.,  
The University of Wisconsin.

JAMES FURMAN KEMP, Sc.D.,  
Columbia University,  
Sociedad Científica Antonio Alzate.

WILLIAM A. LATHROP,  
The American Institute of Mining Engineers.

FREDERICK S. LEE, A.M., Ph.D.,  
The American Physiological Society.

- F. L. LEWTON,  
The Botanical Society of Washington.
- WILLIAM LIBBEY, A.M., Sc.D.,  
The American Geographical Society.
- WALDEMAR LINDGREN, M.D.,  
The Geological Society of Washington.
- WILLIAM A. LOCY, Sc.D.,  
Northwestern University.
- JACQUES LOEB, M.D., Sc.D., Ph.D.,  
The University of California,  
Rockefeller Institute for Medical Research.
- BRITA LONG,  
Philadelphia High School for Girls.
- FREDERIC A. LUCAS, Sc.D.,  
The American Museum of Natural History.
- SAMUEL BLACK McCORMICK, LL.D.,  
The University of Pittsburgh.
- GEORGE G. MACCURDY, A.M., Ph.D.,  
École d'Anthropologie de Paris.  
American Anthropological Association.
- JOHN M. MACFARLANE, Sc.D.,  
The Royal Society of Edinburgh,  
The Botanical Society of America.
- R. TAIT MCKENZIE, M.D.,  
McGill University.
- CHEVALIER J. C. MAJONI, Royal Consul of Italy at Philadelphia,  
Società Geografica Italiana,  
Reale Istituto Lombardo di Scienze e Lettere.
- JOHN W. MALLEY, LL.D., M.D., Ph.D.,  
The University of Virginia,  
The Chemical Society of London.
- SAMUEL J. MELTZER, M.D., LL.D.,  
The American Physiological Society.
- JOHN ANTHONY MILLER, A.M., Ph.D.,  
Swarthmore College.
- CHARLES SEDGWICK MINOT, Sc.D., LL.D.,  
The American Association for the Advancement of Science,  
The University of Oxford,  
Reale Accademia della Scienze di Torino.
- S. WEIR MITCHELL, M.D., LL.D.,  
The College of Physicians of Philadelphia.
- JOHN R. MOHLER, V.M.D.,  
The Bureau of Animal Industries.

- THOMAS H. MONTGOMERY, JR., Ph.D.,  
The University of Texas,  
The Texas Academy of Sciences,  
The Marine Biological Laboratory, Wood's Hole.
- THOMAS L. MONTGOMERY,  
The Wyoming Historical and Geological Society of Wilkes-Barre.
- GEORGE T. MOORE, Ph.D.,  
The St. Louis Academy of Sciences,  
The Missouri Botanical Garden.
- H. F. MOORE, Ph.D.,  
The United States Bureau of Fisheries.
- J. PERCY MOORE, Ph.D.,  
Société Zoologique de France.
- EDWARD L. NICHOLS, Ph.D., LL.D.,  
Cornell University.
- REV. JULIUS A. NIEUWLAND, C.S.C., Ph.D., Sc.D.,  
The University of Notre Dame.
- C. EDGAR OGDEN,  
The Delaware County Institute of Science.
- HENRY FAIRFIELD OSBORN, Sc.D., LL.D.,  
The American Philosophical Society.
- SAMUEL C. PALMER,  
Leland Stanford Junior University.
- F. PAYNE,  
University of Indiana.
- HOSIAH HARMAR PENNIMAN, Ph.D., LL.D.,  
University of Pennsylvania.
- EDWARD PENNOCK,  
The American Microscopical Society.
- EVERETT F. PHILLIPS, Ph.D.,  
The Bureau of Entomology.
- H. VLADIMIR P. POLEVOY, Secretary of the Imperial Russian Consulate  
General, New York,  
Society for the Development of Experimental Sciences, Moscow.
- CHARLES L. POLLARD, A.M.,  
Staten Island Association of Arts and Sciences.
- HENRY S. PRATT, Ph.D.,  
Haverford College.
- JEAN DE PULLIGNY,  
École Polytechnique.
- RICHARD RATHBUN, Sc.D.,  
The Smithsonian Institution.
- DAVID REESMAN, M.D.,  
Philadelphia Pathological Society.

- SAMUEL N. RHOADS,  
Delaware Valley Ornithological Club.
- THEODORE W. RICHARDS, A.M., LL.D.,  
The University of Oxford.
- J. T. RORER, Ph.D.,  
Colorado College.
- ABBOTT LAWRENCE ROTCH, A.M.,  
The Boston Society of Natural History,  
The Appalachian Mountain Club of Boston,  
American Academy of Arts and Sciences.
- JOHN G. ROTHERMEL,  
The Wagner Free Institute of Science.
- WILLIAM E. SAFFORD,  
The Botanical Society of Washington.
- L. E. SAYRE,  
The Kansas Academy of Sciences.
- H. L. SCHANTZ, M.D.,  
The American Microscopical Society.
- CHARLES SCHUCHERT, A.M.,  
The Yale University Museum,  
The Connecticut Academy of Sciences.
- WILLIAM BERRYMAN SCOTT, LL.D., Ph.D., Sc.D.,  
Princeton University,  
The Geological Society of London.
- ISAAC SHARPLESS, Sc.D., LL.D.,  
Haverford College.
- HENRY SKINNER, M.D., Sc.D.,  
Magyar Nemzeti Museum.
- ALEXANDER SMITH, Ph.D.,  
The Chemical Society of London.
- ALLEN J. SMITH, A.M., M.D.,  
The Philadelphia Pathological Society.
- EDGAR FAHS SMITH, LL.D., Ph.D.,  
The University of Pennsylvania.
- LEONARD STEJNEGER,  
United States National Museum,  
Videnskab Selskabet i Kristiania.
- NETTIE M. STEVENS, A.M.,  
Leland Stanford Junior University.
- J. J. STEVENSON, A.M., LL.D.,  
The Geological Society of America.
- GEORGE B. SUDWORTH,  
The United States Forest Service.

1 PROCEEDINGS OF THE CENTENARY MEETING.

JOSEPH SWAIN, M.S., LL.D.,  
Swarthmore College,  
Leland Stanford Junior University.

WALTER T. SWINGLE, M.D.,  
Société Botanique de France.

CHARLES H. TOWNSEND, Hon. Sc.D.,  
The New York Aquarium.

FREDERICK W. TRUE, M.D., LL.D.,  
The Smithsonian Institution.

SAMUEL M. VAUCLAIN,  
The American Philosophical Society.

T. WAYLAND VAUGHAN, A.M., Ph.D.,  
The Geological Society of Washington.

MADELENE VERRIE,  
Philadelphia High School for Girls.

HENRY L. VIERECK,  
The Entomological Society of Washington.

CHARLES D. WALCOTT, Sc.D., LL.D.,  
The Smithsonian Institution,  
The Carnegie Institution of Washington,  
The American Philosophical Society.

JOHN F. WALLACE,  
The Western Society of Engineers.

R. M. WARD, M.D.,  
The Royal Microscopical Society.

ETHELBERT D. WARFIELD, LL.D.,  
Lafayette College.

JOSEPH W. WARREN, M.D.,  
Bryn Mawr College.

HENRY S. WASHINGTON, A.M., Ph.D.,  
Reale Accademia di Scienze, Lettere ed Arti degli Zelanti di Acireale.

THOMAS L. WATSON, Ph.D.,  
The Virginia Geological Survey.

FRANCIS M. WEBSTER, M.D.,  
The Entomological Society of Ontario

J. H. M. WEDDERBURN,  
The Royal Society of Edinburgh.

WILLIAM M. WHEELER, Ph.D.,  
The Entomological Society of America.

MILTON C. WHITAKER, M.S.,  
The University of Colorado.

EDWARD E. WILDMAN,  
The Philadelphia Central High School.

JOSEPH WILLCOX,

The Wagner Free Institute of Science.

ARTHUR WILLEY, A.M., Sc.D.,

The Marine Biological Association of the United Kingdom.

ALLIE W. WILLIAMS, M.D.,

The Surgeon-General's Office.

GARDNER F. WILLIAMS, M.A., LL.D.,

The South African Association for the Advancement of Science.

EDMUND B. WILSON, LL.D., Ph.D., Sc.D., M.D.,

The Society of American Zoologists.

WILLIAM P. WILSON, Sc.D.,

The Philadelphia Commercial Museums.

SELECTIONS FROM THE LETTERS RECEIVED IN RESPONSE TO THE  
ANNOUNCEMENT OF THE CENTENARY CELEBRATION.

ACADÉMIE ROYALE DES SCIENCES, DES LETTRES ET DES BEAUX  
ARTS DE BELGIQUE.

A l'Académie des Sciences naturelles à Philadelphie:

L'Académie Royale des Sciences, des Lettres et des Beaux Arts de Belgique est très sensible au grand honneur que vous lui avez fait en l'invitant à participer au Jubilé de l'Académie des Sciences naturelles de Philadelphie. Nous avons reçu d'elle, l'agréable mission de vous adresser ses remerciements et ses chaleureuses félicitations.

Heureuse de rappeler les excellentes relations qu'elle a nouées avec elle depuis près d'un siècle, l'Académie Royale de Belgique comprend la légitime fierté avec laquelle l'Académie des Sciences naturelles de Philadelphie doit considérer son histoire durant les cent années écoulées depuis sa fondation. Il lui suffit d'évoquer les noms des savants dont les nombreuses et importantes publications ont paru dans vos PROCEEDINGS, dans votre JOURNAL et, dans vos TRANSACTIONS OF THE AMERICAN ENTOMOLOGICAL SOCIETY, pour apprécier les services que votre illustre Académie a rendus aux sciences naturelles dans ses domaines les plus variés.

Notre Académie s'associe donc aux hommages qui seront rendus à votre glorieux passé et aux vœux qui seront formés pour la continuation de votre prospérité.

Puisse votre Académie poursuivre le cours de sa belle et féconde carrière pendant une longue suite d'années! C'est le vœu le plus sincère que forme l'Académie Royale de Belgique.

Le Secrétaire perpétuel de l'Académie,  
LE CHEVALIER EDMOND MARCHAL.

Bruxelles le 19 Mars, 1912.



## R. ACCADEMIA DI SCIENZE, LETTERE ED ARTI IN PADOVA.

Padova, li XXVIII, II, MCMXII.

Amplissimo Viro Academiae Disciplinarum Naturalium Philadelphiae Praefecto S.:

Cum pergratae nobis fuerint litterae tuae humanissimae, quibus nobis benigne invitasti, ut Sollemnia saecularia, quibus Academia Vestra praeclearissima natalem suum centesimum omnium cum plausu prosequitur, Vobiscum ipsi concelebraremus, fieri sane non potest, quin et plurimas tibi gratias agamus et maximam semper gratiam, ut debemus, habeamus. Cum vero id aegre ferendum sit, quod Academia nostra per unum aliquem nostrorum sociorum Sollemnibus istis faustissimis interesse non possit, hoc quidem profitemur, nos si non corporibus at certe animis adfuturos esse, te, Vir optime atque honoratissime, cunctamque Academiam istam nobilissimam cui tam digne ipse praes, bonis omnibus prosequentes, ut ad saluberrima artium liberalium omniumque disciplinarum incrementa et progressus communemque civilis consortii utilitatem omnia Vobis fauste feliciter fortunateque eveniant.

Nunc vero cum omnium collegarum verbis tum nostro nomine te summa observantia colentes valere et salvere iubemus.

Praeses

V. CRESCINI

Secretarius

A. MEDIN.

## I. R. ACCADEMIA DI SCIENZE, LETTERE ED ARTI DEGLI AGIATI ROVERETO.

Illustrissimo Sigr. Presidente della Accademia di Scienze naturali in Filadelfia:

L'Accademia degli Agiati, onorata del gentile invito di intervenire alla commemorazione del centenario della fondazione di codesta illustre Accademia, prega l'illustrissimo Sigr. Presidente a volerla rappresentare in occasione delle feste del centenario, che rammenterà l'opera data con efficace costanza al progresso delle scienze, dalla secolare Accademia di Filadelfia.

Da parte nostra auguriamo alla consorella che le gloriose sue tradizioni del passato, valgano a rinsaldare il lavoro e lo studio per il bene universale, nella armonica cooperazione di tutti al fine comune.

Noi gradiremo a suo tempo la relazione ufficiale della commemorazione medesima; intanto preghiamo l'illustrissimo Sigr. Presidente e i congressisti a voler gradire i sentimenti dei nostri più distinti ossequi.

Dall' Aula dell'I. R. Accademia degli Agiati Rovereto, li 28 Febbraio 1912.

Il Presidente:

DR. PROBIZER.

L'Accademico Segretario:

POSTINGER.

## AKADEMIA UMIEJETNOŚCI W KRAKOWIE.

Corresponding Secretary, The Academy of Natural Sciences of Philadelphia:

The President and Council of the Cracow Imperial Academy of Sciences beg to offer The Academy of Natural Sciences of Philadelphia their sincere thanks for the invitation which they have received to take part in the celebration of its Centenary Anniversary.

They have much pleasure in transmitting to The Academy of Natural Sciences of Philadelphia, kindest wishes and felicitations on behalf of their own institution; and they beg leave to express, on this opportunity, the feelings of keen sympathy and high appreciation which the students of science in Poland entertain for the work of that illustrious American corporation.

ST. TARNOWSKI,  
President,  
ULANOWSKI,  
General Secretary.

Cracow, March 7th, 1912.

## K. AKADEMIE VAN WETENSCHAPPEN TE AMSTERDAM.

The members of the Koninklijke Akademie van Wetenschappen at Amsterdam welcome the opportunity afforded by the celebration of the Centenary of the foundation of The Academy of Natural Sciences of Philadelphia to send their cordial greetings to their colleagues in America.

During the past hundred years The Academy of Natural Sciences of Philadelphia has contributed generously to the progress of scientific thought and has occupied a distinguished place among the institutions of a country which has rapidly placed itself in the van of scientific research.

The constantly increasing intercourse between the scientific world of America and Europe is an earnest testimony of the growth of the spirit of good will and friendly emulation which stimulates the march of progress in all departments of scientific thought.

It is in this spirit that the members of the Koninklijke Akademie of Amsterdam express the confident hope that The Academy of Natural Sciences of Philadelphia will fulfil with equal distinction in the future as in the past its noble mission of enlarging the domain of truth and knowledge.

H. A. LORENTZ,  
President.  
J. D. VAN DER WAALS,  
Secretary.

Amsterdam, March, 1912.

*Exquisitely engrossed and illuminated on folio sheet in a satin-lined cylindrical case with gilt clasps.*

ALBERT-LUDWIGS-UNIVERSITÄT, FREIBURG I. BR.

Freiburg i. Br., den 8. März 1912.

An die Akademie der Naturwissenschaften von Philadelphia:

Prorektor und Senat der Albert-Ludwigs-Universität Freiburg i. Br. danken für die freundliche Einladung zu der Jahrhundertfeier am 19–21. März. Zu unserem lebhaften Bedauern müssen wir es uns versagen, an der bedeutsamen Veranstaltung durch einen Delegierten vertreten zu sein, doch begleitet unsere Universität dieses Jubiläum, welches eine an Erfolgen reiche Periode in der Entwicklung der naturwissenschaftlichen Akademie von Philadelphia abschliesst, mit den wärmsten Sympathien und übermittelt der Akademie ihre aufrichtigen Glückwünsche.

Der Prorektor  
FABRICIUS.

## K. ALBERTUS-UNIVERSITÄT ZU KÖNIGSBERG I PR.

DER PROREKTOR  
der Königlichen  
ALBERTUS-UNIVERSITÄT

Königsberg i. Pr. den 20 Februar, 1912.

Der hochverehrten Academy of Natural Sciences of Philadelphia, beehre ich mich im Namen und im Auftrage der Königlichen Albertus-Universität zu Königsberg in Preussen unseren ganz ergebensten Dank für die gütige Einladung zu dem Säcular-Jubiläum auszusprechen.

Leider ist es nicht möglich, einen Delegierten zu dem hohen Feste zu senden. Es ist uns aber ein herzliches Bedürfnis, unseren innigen Wünschen wenigstens schriftlich Ausdruck zu geben.

Wer nur irgendwie Kenntnis der Naturwissenschaft besitzt, weiss die hohen Verdienste Ihrer Akademie zu würdigen. Gleich mehreren preussischen Universitäten ist Ihre Akademie in schwerer, kriegerischer Zeit gegründet worden. Die ersten Mitglieder haben durch diese Stiftung in hervorragender Weise das erhabene Wort betätigt, dass die Pflege der Wissenschaften nicht minder wie der starke Arm des Kriegers zur wahren Blüte eines Staates gehört. Und dieser Ideale, auf die Forschung gerichtete Sinn ist in Ihrer Akademie mit Treue gepflegt und immer weiter ausgebildet worden. Von Ihrer Stadt, die schon in ihrem Namen von einem auf die höchste Humanität gerichteten Streben Zeugnis gibt, ist eine Fülle wissenschaftlicher Erkenntnis ausgegangen; die Forschungen, die Sie in Ihrem JOURNAL und in Ihren PROCEEDINGS niedergelegt haben, sind das Gemeingut der gelehrten Welt geworden. Möge Ihre ruhmreiche Akademie noch viele Jahrhunderte blühen und der Wissenschaft immer neue und reiche Schätze bescheeren und dadurch auch die innere unzerstörbare Gemeinsamkeit der Nationen fördern.

Die Albertus-Universität wird alle Zeit mit Dankbarkeit und herzlicher Sympathie der Academy of Natural Sciences gedenken.

In ausgezeichnetster Verehrung

ganz ergebenst.

KRAUSKE.

## AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Smithsonian Institution, Washington, D. C.,  
March 16, 1912.

The American Association for the Advancement of Science, through its delegates appointed for this purpose, presents to The Academy of Natural Sciences of Philadelphia its heartiest good wishes on the occasion of the celebration of the Centenary Anniversary of the founding of the Academy.

It further congratulates the Academy on the admirable work it has accomplished and upon its prospect for more good work in the future.

By L. O. HOWARD,  
Permanent Secretary.  
Through Delegates Appointed.

## AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.

Dallas, Texas, March 11, 1912.

Corresponding Secretary, The Academy of Natural Sciences of Philadelphia:

Sir: I have the honor to acknowledge the receipt of the invitation of The Academy of Natural Sciences of Philadelphia to the American Association of Economic Entomologists to be represented at the Centenary Anniversary ceremonies soon to be held in Philadelphia. In behalf of this Association I desire to thank the Academy for the honor of this invitation.

From the beginning of its long and active career The Academy of Natural Sciences of Philadelphia has fostered and encouraged entomology. Many of the most prominent contributors to the science in America have been connected with the Academy. Many others who have played conspicuous parts in American economic entomology have received their inspiration from the work of the Academy. In fact, there is not an entomologist in the United States who does not, directly or indirectly, owe a debt of gratitude to the Academy.

Doctor L. O. Howard, of Washington, has been requested to represent this Association at the coming ceremonies and to express its good wishes, high appreciation of the uniform good work it has done in the advancement of science, and its hope that this work will continue to grow.

Very respectfully  
W. D. HUNTER,  
President.

## AMERICAN MICROSCOPICAL SOCIETY.

The James Millikan University, Decatur, Ills., March 15, 1912.

The American Microscopical Society, in common with other similar societies the world over, rejoices in the century of honorable and useful activity of The Academy of Natural Sciences of Philadelphia, and extends to you its greetings and congratulations on the completion of one hundred years of productive effort. We confidently hope that the century upon which you are now entering will be one of eminent success and influence.

T. W. GALLOWAY,  
Secretary, American Microscopical Society.

## THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK.

To the President and Board of Trustees of The Academy of Natural Sciences of Philadelphia, Greeting:

The President and Board of Trustees of The American Museum of Natural History, through their delegate, Doctor Frederic A. Lucas, desire to tender to The Academy of Natural Sciences of Philadelphia, their congratulations on the completion of a century of active and earnest work.

In this, the New World, few institutions can claim so long a career as yours, few are so important, none can number among its members a more brilliant galaxy of men of science than that which includes the names of Morton, Wistar, Leidy, and Cope.

May the progress of the Academy be ever upwards, may its career be as prosperous, as vigorous in the future as in the past; may it ever stand, as it has done for an hundred years, for all that is best in the cause of science in America.

HENRY FAIRFIELD OSBORN,  
President.

ARCHER M. HUNTINGTON,  
Secretary.

New York City, March the eighteenth, 1912.



## AMERICAN PHILOSOPHICAL SOCIETY.

The American Philosophical Society to The Academy of Natural Sciences of Philadelphia, Greeting:

The American Philosophical Society presents its heartiest congratulations on this Hundredth Anniversary of the foundation of the Academy. A kindred society recognizes the high purpose of the founders of the Academy, rejoices in the tenacity with which that purpose has been fulfilled, and bespeaks a long continuation of prosperity and usefulness for it.

With much good will the American Philosophical Society sends representatives to do honor to this Anniversary Celebration.

Given at Philadelphia this nineteenth day of March in the year Nineteen Hundred and Twelve.

WILLIAM W. KEEN,  
President.

Attest: I. MINIS HAYS,  
Secretary.

*Beautifully printed on a folio sheet.*

## ATENEIO VENETO.

Venezia, li 23 February, 1912.

Honoured Sir:

The Ateneo Veneto gratefully accepts the kind invitation of The Academy of Natural Sciences of Philadelphia, but, being unable to send a special deputy to the celebration of your centenary festivities, we beg your illustrious President to represent our Academy.

A hundred years have lately elapsed since the foundation of the Ateneo Veneto that has always been faithful to its scientific, artistic, and patriotic programme, and it very gladly hails the Hundredth Anniversary of its sister Academy, with hearty wishes for an ever prosperous, active, and fruitful life, like that to which your acts (records) of these hundred years are witness.

With sincere congratulations and best respects,

The President,  
FILIPPO NANI MOCENIGO.

To the Secretary of the Academy of Natural Sciences of Philadelphia.

## K. BAYERISCHE AKADEMIE DER WISSENSCHAFTEN.

München, den 5 März 1912.

An die Academy of Natural Sciences of Philadelphia:

Die K. bayerische Akademie der Wissenschaften bedauert, zur Hundertjahrfeier der ältesten naturwissenschaftlichen Gesellschaft der Vereinigten Staaten keinen Vertreter schicken zu können. Verknüpfen sie doch mit ihr nicht nur die allgemeinen, völkerverbindenden Interessen der Wissenschaft, sondern auch seit vielen Jahren ein reger, stets mit Freude entgegenkommener Austausch der Gelehrten Schriften.

Die K. bayerische Akademie der Wissenschaften beglückwünscht die Academy of Natural Sciences zu der eifrigen Arbeit, die sie in ihren PROCEEDINGS und JOURNAL seit langem für die Wissenschaft leistet und wünscht ihr eine gedeihliche und kräftige Weiterentwicklung.

Mit ausgezeichneter Hochachtung,

DR. VON HEIGEL,  
Präsident.

## BOTANISCHER VEREIN DER PROVINZ BRANDENBURG.

Dahlem, den 7 März, 1912.

Der Academy of Natural Sciences of Philadelphia dankt der Botanische Verein der Provinz Brandenburg verbindlichst für die Einladung zur Feier des 100jährigen Bestehens der Akademie.

Bei Eintritt eines so seltenen Festes setzen Freunde sowie Vertreter befreundeter Gesellschaften eine Ehre darein im Kreise der feiernden Körperschaft persönlich zu erscheinen. Leider kann jedoch zur Zeit kein Mitglied des botanischen Vereins es ermöglichen, die grosse Entfernung zwischen den Sitzen beider Körperschaften zu überwinden und der Akademie an ihrem Ehrentage die Glückwünsche des Vereins mündlich darzubringen. Deshalb bittet der Verein, der seit langen Jahren in den freundschaftlichsten Beziehungen zu der Akademie steht und seine Schriften mit den ihrigen tauscht, ihr durch dieses Schreiben die herzlichsten und aufrichtigsten Wünsche aussprechen zu dürfen für ihr weiteres Gedeihen, für immer grössere und erfolgreichere Ausdehnung ihrer Arbeiten und Bestrebungen. Denn wie in der Natur selbst nichts still steht, sondern alles sich ständig zu entwickeln strebt, so streben auch die naturwissenschaftlichen Gesellschaften dauernd danach, sich immer reicher zu entfalten, immer neuen, umfassenderen Aufgaben sich zu widmen, immer höhere Ziele sich zu stecken.

Die von der Akademie seit 100 Jahren geleistete, auf den verschiedensten Gebieten so erfolgreiche Arbeit bürgt dafür, dass sie in ihrer Bedeutung immer zunehmen, dass sie die wissenschaftliche Welt auch ferner mit vielen wertvollen Leistungen beschenken und bereichern wird. Der botanische Verein sieht zwar seine Hauptaufgabe darin, seine Heimatprovinz botanisch zu erforschen, er ist sich aber stets bewusst gewesen, dass er diese Aufgabe ohne ständige Fühlung mit der Botanik nicht blos, sondern auch mit der gesamten Naturwissenschaft nicht in befriedigender Weise erfüllen kann. Deshalb weiss er die weit umfassendere Tätigkeit der Akademie sehr wohl zu schätzen und zu würdigen, und es wird ihm zur freudigen Genugtuung gereichen, wenn er auch in Zukunft aus seiner Beziehungen zu einer so alten und angesehenen Körperschaft Nutzen ziehen und ihr zeigen darf, wie wertvoll ihm diese alte freundschaftliche Verbindung ist.

Die Akademie zu Philadelphia möge wachsen, blühen und gedeihen.

Der Vorstand des Botanischen Vereins der Provinz Brandenburg J. A.

EMIL KOEHNE.

## BRITISH MUSEUM OF NATURAL HISTORY.

Cromwell Road, London, S. W.

The British Museum of Natural History, London, hereby conveys to The Academy of Natural Sciences of Philadelphia its warmest congratulations on the occasion of the celebration of the Academy's Centenary Anniversary. The British Museum of Natural History extends to the Academy the most sincere wishes for the future prosperity and well-being of the Academy and its earnest desire that the very friendly relations which have so long existed between the two institutions may be maintained and strengthened as the years go by for their mutual benefit and the cultivation of the natural sciences.

In the regretted absence of a representative the British Museum of Natural History hopes that The Academy of Natural Sciences of Philadelphia will accept this assurance of the cordial good will of the Museum.

L. FLETCHER,  
Director.

March 13, 1912.

## BUFFALO SOCIETY OF NATURAL SCIENCES.

February 14, 1912.

Corresponding Secretary of The Academy of Natural Sciences of Philadelphia.

Dear Sir:

At a meeting of the Board of Managers of the Buffalo Society of Natural Sciences, held Friday evening, February 9, 1912, your courteous invitation to the Society that it should be represented at the One Hundredth Anniversary of the founding of your Academy was presented to the Board and the following resolution was unanimously adopted: Resolved: That this Society extend to The Academy of Natural Sciences of Philadelphia its most hearty congratulations upon the near approaching Centenary Anniversary of its founding and with such congratulations to express the sincere feeling of respect and appreciation which, in common with all workers in natural science, this Society feels for the splendid and valuable work accomplished by the Academy during the one hundred years of its useful existence and to bespeak for it a further long continuance of its active and honorable life.

By direction of the Board it gives me great pleasure to transmit to you this resolution which now appears upon our minutes.

Very respectfully yours,

HENRY R. HOWLAND,  
Superintendent, Buffalo Society of Natural Sciences.

## BUREAU OF ENTOMOLOGY, UNITED STATES DEPARTMENT OF AGRICULTURE.

Washington, D. C., March 16, 1912.

To The Academy of Natural Sciences of Philadelphia, Pa.

All the members of the staff of the Bureau of Entomology of the United States Department of Agriculture join in hearty congratulations to the Academy on the occasion of its celebration on its One-hundredth Birthday. No body of men appreciates more highly the high character of the work done by the Academy than does this force, and none can congratulate the Academy more heartily on its present commanding position in the field of American Science.

For the Bureau,

L. O. HOWARD,  
Chief.

## THE CANADIAN INSTITUTE.

198 College St., Toronto, March 16, 1912.

Corresponding Secretary, The Academy of Natural Science of Philadelphia.

Dear Sir:

I beg to thank you for your kind invitation to the Canadian Institute to be represented at the Centenary Anniversary of the Academy, and I greatly regret that it is impossible for me or any of my associates to be present with you.

You have had a long and successful career, and the President and Members of the Canadian Institute extend you most hearty greetings, with the hope that your future achievements may not only equal, but may far outdo, your accomplishments in the past.

Yours sincerely,

J. B. TYRRELL,  
President, Canadian Institute.

## CARNEGIE INSTITUTION OF WASHINGTON.

The Trustees and the Investigators of the Carnegie Institution of Washington extend greetings and congratulations to The Academy of Natural Sciences of Philadelphia on the occasion of the celebration of its One hundredth Anniversary.

The century of progress achieved by the Academy in the cultivation of the Natural Sciences commands admiration for the devotion of our predecessors, gives confidence in the fruitfulness of the labors of our contemporaries, and warrants sanguine expectations for continued advances by our successors.

ROBERT S. WOODWARD,  
President.

*On a beautifully engrossed and illuminated sheet.*

THE CARNEGIE MUSEUM (DEPARTMENT OF THE CARNEGIE INSTITUTE).

Pittsburgh, March 19, 1912.

To The Academy of Natural Sciences of Philadelphia:

On behalf of the Carnegie Museum, which represents at the headwaters of the Ohio the same forms of activity which are represented by The Academy of Natural Sciences upon the banks of the Delaware, we have the honor of extending our sincere congratulations upon your first Centenary, and we desire to express the hope that many centenaries, as fruitful as has been the first, may follow. We have with pride caused to be carved upon our walls, where all can read it, the name of your own honored and immortal Leidy, for whose achievements we are no less grateful than you.

GEO. H. CLAPP,  
Chairman of the Committee of the Institute upon the Affairs of the Museum,  
W. J. HOLLAND,  
Director.

*Beautifully engrossed.*

THE CATHOLIC UNIVERSITY OF AMERICA.

Office of the Rector,  
The Catholic University of America, Washington, D. C.

The Catholic University of America sends its heartiest congratulations to The Academy of Natural Sciences of Philadelphia on the occasion of the celebration of its first Centenary. The foundation of the Academy is probably the most important event in the history of American science, since it marks the initial steps in the path of intellectual and material development that has kept ever broadening until it has become one of the world's splendid highways of progress and culture. We are certain that in the century to come the Academy will continue its noble work of inspiration and encouragement in the vast province of the natural sciences; above all that it will help materially to keep them correlated to all that is truly beautiful and uplifting in the social, political, and religious life of our American mankind.

With best wishes, I remain,  
Very sincerely yours,  
THOMAS J. SHAHAN,  
Rector.

The Academy of Natural Sciences of Philadelphia.

ČESKÁ AKADEMIE CÍSAŘE FRANTISKA JOSEFA PRO VĚDY, SLOVESNOST A UMENÍ.

Imperatoris Francisci Josephi Academia Scientiarum, litterarum, artium Bohemica Societati Naturalium Scientiarum Philadelphensi S. P. D.

Centum anni peracti sunt, ex quo nata est celeberrima Societas Vestra. Per hoc omne temporis spatium sodales Societatis Vestrae multa et magna strenui laboris, studii doctissimi, acuminis admirandi ediderunt documenta scriptisque egregiis non solum de Vestrae Societatis laude et gloria, sed etiam de universi generis humani litteris et artibus optime meruerunt.

Quapropter iure ac merito memoriam originis Societatis Vestrae hoc anno recolitis et natales eius centesimos per hosce dies sollemniter celebratis. Cui sollemni cum adesse, id quod magnopere dolemus, non possimus per litteras saltem Vos, viros doctissimos salvere iubemus, vere et ex animo precantes, ut Societati Scientiarum Naturalium Philadelphensi etiam proximis temporibus cuncta prosperrime eveniant eiusque nomen et gloria per omnes gentes terrasque in dies crescat atque augeatur.

Dabamus Pragae in Bohemia Kal. Martiis MCMXII.

A. RANDA  
praeses Academiæ.

C. VRBA  
Secretarius Academiæ.

*Beautifully illuminated and engrossed on folded sheet.*



C. K. ČESKÁ UNIVERSITA KARLO-FERDINANDOVA V PRAZE.

No. 776, Sen. 1911-12.

The Imperial and Royal Czech Charles and Ferdinand University of Prague, the oldest University of Central Europe, sends to The Academy of Natural Sciences of Philadelphia, on the eve of the day on which the Academy will have completed one hundred years of its activity, the most hearty salutations and sincere congratulations. May the illustrious Academy flourish and prosper through many centuries to the advantage of Science and to the benefit of the American nation and the whole of humanity.

Dated in Prague this Fifth day of March, 1912, in the five hundred and sixty-fourth year from the foundation of the Charles and Ferdinand University.

J. CELAKOVSKY,  
Rector of the University.  
J. CECH,  
Chief Clerk of the University.

CINCINNATI SOCIETY OF NATURAL HISTORY.

Cincinnati, O., Feb. 10, 1912.

To The Academy of Natural Sciences of Philadelphia:

The Cincinnati Society of Natural History has received your invitation to be present at the celebration of your Centenary Anniversary. The Society highly appreciates the honor conferred. We certainly feel the most profound respect and admiration for your venerable institution, not only because of the illustrious students who have been associated with it, but also because of the high character of the scientific work with which you have enriched the field of natural history in America.

Accept our sincere congratulations.

CHAS. DURY,  
Secretary.

## COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The College of Physicians of Philadelphia brings greetings to The Academy of Natural Sciences of Philadelphia and presents its congratulations on this the Centenary of its Foundation.

The College is proud of the brilliant record of the Academy in these hundred years, rejoicing that among its members are a number, and some of its most distinguished, who were also Fellows of the College.

Both claim the immortal Leidy, though the College grants that the Academy was the object of his fondest love and reflected his greater glory.

The College hopes that this century of growth which finds the Academy so strong and vigorous may be succeeded by many others full of honor for itself and rich in benefits to all mankind.

RICHARD A. CLEEMAN,

Delegate from the College of Physicians of Philadelphia.

March 19, 1912.

*Engrossed.*

## CONSERVATOIRE ET JARDINS BOTANIQUES (HERBIER DELESSERT).

La Console, Route de Lausanne, 92, Ville de Genève, 1 Mars, 1912.

The Academy of Natural Sciences of Philadelphia:

Monsieur le President et Messieurs:

La distance ne nous permet malheureusement pas de répondre à l'aimable invitation que vous nous avez adressée pour le Centenaire de votre Académie.

Nous n'en tenons pas moins à vous dire votre admiration pour les beaux travaux scientifiques exécutés depuis un siècle au sein de votre Académie, et à vous présenter nos vœux les plus chaleureux pour la brillante continuation de ses efforts.

Veuillez agréer, Monsieur le President et Messieurs, l'expression de notre haute considération.

DR. JOHN BRIQUET,  
Directeur.

## DEUTSCHE GEOLOGISCHE GESELLSCHAFT.

Berlin, im März 1912.

To The Academy of Natural Sciences of Philadelphia:

Der hochverehrten Academy of Natural Sciences of Philadelphia sprechen wir für die uns ehrende Einladung zur Hundertjahrfeier unseren verbindlichsten Dank aus. Wenn wir auch nicht in der Lage sind, zu Ihrem Jubelfest einen Vertreter unserer Gesellschaft zu senden, so werden wir doch in den Tagen vom 19. bis 21. März dieses Jahres mit unseren Gedanken bei Ihnen sein und Ihnen unsere herzlichsten Glückwünsche widmen.

Die Academy of Natural Sciences of Philadelphia ist die älteste naturwissenschaftliche Gesellschaft der Vereinigten Staaten Nordamerikas und sie hat an dem großen Aufschwung, den die Naturwissenschaften in dem verflorbenen Jahrhundert erlebt haben, einen sehr bedeutenden Anteil gehabt.

Durch die Schaffung einer ausgezeichneten Bibliothek, durch die Begründung eines hervorragenden naturwissenschaftlichen Museums, durch die Veröffentlichung bedeutsamer Arbeiten, die seit dem Jahre 1817 im JOURNAL und ausserdem seit 1841 in den PROCEEDINGS erschienen sind, sowie durch die Verleihung von Stipendien an junge Gelehrte hat Ihre Gesellschaft die Naturwissenschaften in hohem Grade gefördert.

Indem wir dies dankbar anerkennen, wünschen wir Ihrer Academy für das neue Jahrhundert, in das sie nun eintritt, ein kräftiges Blühen, Wachsen und Gedeihen!

Im Namen der Deutschen Geologischen Gesellschaft zu Berlin,

F. WAHNSCHAFFE,  
Vorsitzender.

DEUTSCHER NATURWISSENSCHAFTLICH-MEDIZINISCHER VEREIN  
FÜR BÖHMEN LOTOS.

Der Deutsch. Naturwiss. Medizin. Verein für Böhmen ΛΩΤΟΣ in Prag sendet der ehrwürdigen Academy of Natural Sciences of Philadelphia anlässlich der hundertsten Wiederkehr ihres Gründungstages, würdigend die Verdienste, die sich Dieselbe in dieser Zeit als hervorragende Stütze und rastlose Pflegerin der Naturwissenschaften erworben hat, die besten Wünsche für die Zukunft und ein ebenso erfolgreiches Wirken ad aeternum!

PROF. DR. R. SPITALER,  
m. p.  
DOC. DR. L. FREUND,  
m. p.

Prag, den 5 März 1912.

*Beautifully printed on an ornamented sheet.*

ENTOMOLOGICAL SOCIETY OF LONDON.

To The Academy of Natural Sciences of Philadelphia:

On behalf of the Entomological Society of London we offer you sincere congratulations on the completion of one hundred years of distinguished and fruitful labour in the cause of Science, and assure you that we appreciate, and have accepted with gratitude, the honour of being represented at the Conference to which you have invited us.

The Centenary of a great scientific institution cannot but arouse some amount of sympathetic interest in every association of scientific workers, but we feel that, as entomologists, we have special reason to be interested in the fortunes of your Academy, since we understand that for many years our favorite branch of natural science has received from it no small share of valuable encouragement and support; that in 1875 our sister society, first known as The Entomological Society of Philadelphia, received permission to assemble under your hospitable roof; and that subsequently it became incorporated as a Section of the Academy itself.

In all sincerity, and as no mere formal compliment, we are glad to offer you this tribute to our gratitude, respect, and good will, and to express the hope that the future of your Academy may be as useful and as honorable as its past.

FRANCIS DAVID MORICE,  
 President Ent. Soc. London,  
 ALBERT HUGH JONES,  
 JNO. HARTLEY DURRANT,  
 Vice-Presidents,  
 JAMES J. WALKER,  
 GEORGE WHEELER,  
 Hon. Secretaries.

London, March 13, 1912.  
*Engrossed on parchment.*

## THE ENTOMOLOGICAL SOCIETY OF WASHINGTON,

United States National Museum, Washington, D. C., February 19, 1912.

The Academy of Natural Science of Philadelphia.

Gentlemen:

In the spirit of admiration and fraternity the Entomological Society of Washington welcomes the opportunity to present its heartiest congratulations to The Academy of Natural Sciences of Philadelphia on the occasion of the celebration of its one hundred years of activity.

Without the fostering care of the Academy, Thomas Say, the father of American entomology, could never have prepared and published his descriptions. The share of the Academy in supporting Say in his work of describing American insects in America will always be gratefully remembered by entomologists.

As an entomologist turns the pages of the early volumes of the Academy and sees the names of Say, the two Lecontes, Haldeman, Clemens, Melsheimer, Uhler, Ziegler, Osten Sacken, and Crotch, he recognizes the beneficence of the Academy in providing a medium for publication before there were any entomological journals. The appearance of these papers under the auspices of the Academy gave them an appreciation abroad that they would not otherwise have enjoyed. And today, when there are many entomological journals, the pages of the PROCEEDINGS of the Academy are freely used for the publication of entomological articles.

The Academy was the first institution in America to offer accommodations for insect collections; and now that its benign influence shelters the priceless collections of the American Entomological Society, it has become one of the few shrines that every entomologist loves to visit, and none more than the members of the Entomological Society of Washington appreciate the entomological usefulness of the Academy, and wish it a long and increasingly successful career.

Very sincerely,

A. L. QUAINANCE,

President.

S. A. ROHWER,

Corresponding Secretary.

FRANKLIN INSTITUTE OF THE STATE OF PENNSYLVANIA.

The Franklin Institute of the State of Pennsylvania, for the promotion of the Mechanic Arts, to the President, Council, and Members of The Academy of Natural Sciences of Philadelphia:

It is with intimate and sincere satisfaction that the President, Officers and Members of the Franklin Institute embrace this opportunity of extending to you their warm congratulations upon the completion of a century of brilliant and useful work in the wide domain of Natural Science. Organized twelve years later for the promotion of Physical Science and its application in the Arts, and similarly environed, this Institute has shared with you the intelligent and sustained support of the citizens of Philadelphia, and it is from this support, generously continued, that we confidently look forward to even greater successes for you in the future, than those which have marked your splendid past.

HENRY HOWSON,  
President.

R. B. OWENS,  
Secretary.

Philadelphia, March 19, 1912.  
*Beautifully engrossed on ornamented sheet.*

## K. FREDERIKS UNIVERSITET, KRISTIANIA.

To The Academy of Natural Sciences of Philadelphia:

The Royal Frederik University of Christiania, Norway, has the honor to acknowledge receipt of the invitation of The Academy of Natural Sciences of Philadelphia to be represented at the Centenary Anniversary of said Academy on the 19th, 20th, and 21st of March of this year, and to express high appreciation of the courteous attention.

Minister Helmer Bryn, LL.B. of our University, Norwegian Minister in the United States of America, Washington, D. C., has been chosen as the representative of our University to be present on the aforesaid occasion.

We also take advantage of the opportunity to convey our best wishes for the prosperity and welfare of the venerable Academy of Natural Sciences, and to express our conviction that it will be in the future, as it has been in the past, one of the justly distinguished institutions of Science of the Republic.

BREDO MORGENSTIERNE,  
Rector.

CH. AUG. ORLAND,  
Secretary.

Christiania, February 18, 1912.

*Printed on folded sheet in a crimson leather ornamented portfolio.*



ROYAL GEOGRAPHICAL SOCIETY.

1, Savile Row, Burlington Gardens, London, W., February 14, 1912.

To the President, The Academy of Natural Sciences of Philadelphia.

Sir:

On my own behalf as President, and on behalf of the Council of the Royal Geographical Society, I beg to offer you our warmest congratulations on the celebration of the Centenary of the foundation of The Academy of Natural Sciences of Philadelphia.

It reflects the highest credit on the United States of America that so early in its career as an independent State, an institution should have been established for the pursuit of natural knowledge, and as a centre of culture and enlightenment, in the midst of a population which was naturally strenuous in the development of the material resources of a great country. The Academy of Natural Sciences of Philadelphia soon achieved and has throughout maintained a position as one of the great scientific societies of the world, and its publications contain many contributions of original value in the various departments of scientific investigation, as well as of practical importance to humanity at large and to America in particular.

Our earnest wish is that the Academy may long continue to carry out with as much success as in the past, its beneficent services to science and to its country.

I have the honour to be, Sir,

Yours most sincerely,

CURZON OF KEDLESTON,  
President, Royal Geographical Society.

GEOGRAPHICAL SOCIETY OF PHILADELPHIA.

400 Witherspoon Bldg., Philadelphia, March 1, 1912.

Samuel G. Dixon, M.D., LL.D., President, The Academy of Natural Sciences of Philadelphia, Pa.

Sir:

On behalf of the Council of the Geographical Society of Philadelphia, I beg to present respectful greetings and congratulations on the occasion of the Centenary Celebration of The Academy of Natural Sciences of Philadelphia.

Recalling the fact that our own society was organized twenty-two years ago under the name of the Geographical Club by officers and members of the Academy, and had its home for years within the walls of your institution—we have viewed with filial pride the continued distinction, usefulness, and prosperity of the Academy.

In the hope that the Academy will continue to represent the best traditions of scientific scholarship and achievement in Philadelphia and may extend its field of usefulness in this community, I beg to remain, Sir,

Very sincerely yours,

EMORY R. JOHNSON,  
President, Geographical Society of Philadelphia.

K. K. GEOGRAPHISCHE GESELLSCHAFT, WIEN.

Präsidium der K. K. Geographischen Gesellschaft  
in Wien, I., Wollzeile 33.

The Academy of Natural Sciences of Philadelphia:

Das Präsidium der k. k. Geographischen Gesellschaft dankt verbindlich für die freundliche Einladung zur Feier des hundertjährigen Bestandes der sehr geehrten Akademie und bedauert mitteilen zu müssen, dass leider Niemand aus dem Collegium in der Lage sich befindet, dieser Einladung Folge zu leisten und an dieser erhebenden Feier persönlich teilzunehmen.

Das gefertigte Präsidium beehrt sich daher die verehrte Akademie zu ihrer hundertjährigen Jubelfeier schriftlich zu beglückwünschen und dem Wunsche Ausdruck zu geben, dass die Academy of Natural Sciences of Philadelphia mit gleichen Erfolgen weiter wirken möge zum Besten der Naturwissenschaften!

Der Präsident:  
PROF. EUGEN OBERHUMMER  
Der General-Sekretär:  
DR. GALLINA.

Wien, am 4. März 1912.

GEOLOGICAL SOCIETY OF AMERICA.

The Geological Society of America sends heartiest congratulations to The Academy of Natural Sciences of Philadelphia on the occasion of its Centennial Celebration.

As we recall the great services rendered by members of the Academy to geology and related branches of science, we are moved to express the hope that this close of the first century is but the beginning of your youth, and that you may long continue to contribute to the advancement of knowledge.

H. L. FAIRCHILD,  
President,  
EDMUND OTIS HOVEY,  
Secretary.

New York, 19 March, 1912.

## K. K. GEOLOGISCHE REICHSANSTALT, WIEN.

Die kaiserliche königliche Geologische Reichsanstalt begrüsst auf das herzlichste die Academy of Natural Sciences of Philadelphia zur Feier ihres hundertjährigen Bestandes und beglückwünscht dieselbe zu der Summe von Arbeit, welche während dieses Zeitraumes geleistet worden ist, in der Hoffnung, dass die Bestrebungen der Akademie in weiterer Zukunft von gleichem Erfolge begleitet sein werden.

Der Direktor,  
DR. EMIL TIETZE.

Wien, im März 1912.

*Beautifully engrossed on artistically decorated folio sheet.*

## GEOLOGISTS' ASSOCIATION OF LONDON.

University College, London.

The Geologists' Association of London which has recently celebrated its 50th Anniversary sends its cordial Greetings to The Academy of Natural Sciences of Philadelphia on the completion of a hundred years of its successful existence during the course of which its publications have made known to the world numerous and important contributions to every branch of Natural History including Palæontology in which, as is natural, this Association feels most keenly its indebtedness to the good work which the Academy has done.

JOHN W. EVANS,  
President.

9th March, 1912.

*Engrossed on parchment*

K. GEOLOGISCHE LANDESANSTALT, BERLIN.

Invalidenstrasse 44, Berlin, den 4 März 1912.

Die Königlich Preussische Geologische Landesanstalt begrüsst von ganzem Herzen die altehrwürdige Akademie der Naturwissenschaften zu Philadelphia zur Feier ihres hundertjährigen Bestehens und bringt ihr dazu die besten Wünsche dar für eine weitere erspriessliche Tätigkeit zum Nutzen der gesamten Naturwissenschaft und des von uns besonders gepflegten Zweiges der Geologie. In den langen Reihen der von der Akademie veröffentlichten PROCEEDINGS und des JOURNAL sind eine ungewöhnlich grosse Zahl von Arbeiten aus dem Gebiete der Mineralogie, Geologie und Paläontologie veröffentlicht worden und die scharfsinnigsten Geister, die feinsten Köpfe der nordamerikanischen Gelehrtenrepublik, Männer wie Cope, Leidy, Frazer, Heilprin, Osborn, Genth, und viele andere durfte die Akademie zu den ihren zählen. Durch die Gründung einer selbst für die grosszügigen Verhältnisse der Union hervorragenden Bibliothek und Sammlung hat die Akademie zur Förderung der Wissenschaft beigetragen und durch die Gewährung reicher Geldmittel manches wissenschaftliche Unternehmen, manche erfolgreiche Forschungsexpedition in die Wege geleitet. So können auch wir nur mit den grössten Sympathien der Tätigkeit der Akademie im abgelaufenen Jahrhundert gedenken und mit den lebhaftesten Wünschen ihre weitere Entwicklung in der Zukunft begleiten. Glückauf.

Der Direktor  
BEYSCHLAG

An die Akademie der Naturwissenschaften zu Philadelphia.

GEORG-AUGUST-UNIVERSITÄT, GÖTTINGEN.

DER PROREKTOR  
DER  
GEORG AUGUST-UNIVERSITÄT.

Göttingen, den 2. März, 1912.

Der Academy of Natural Sciences in Philadelphia sendet zur Feier ihres 100 Jahr-Bestehens die Georg-August-Universität in Göttingen ihre ehrerbietigen und herzlichen Glückwünsche.

Sie gedenkt dabei in aufrichtiger Sympathie der zahlreichen Fäden, welche die wissenschaftliche Forschung und Lehre in Nordamerika mit den gleichen Arbeiten in Deutschland verknüpfen, und spricht die Hoffnung aus, dass diese Fäden durch die Entwicklung des zweiten Jahrhunderts im Leben der Academy nur noch gefestigt werden möchten. Sie wünscht der Academy, die an ehrwürdigem Alter an der Spitze aller wissenschaftlichen Körperschaften der United States steht, ein weiteres jugendliches Blühen und Gedeihen zur Förderung der Wissenschaft, zu deren Dienst sich alle Kulturvölker vereinigt haben.

VOIGT.

An die Academy of Natural Sciences of Philadelphia.

K. GESELLSCHAFT DER WISSENSCHAFTEN ZU GÖTTINGEN.

Göttingen, den 6 März 1912.

Der hochansehnlichen Academy of Natural Sciences danken wir verbindlichst für die Anzeige, dass diese Academie die Jahrhundertfeier ihrer Stiftung begehen wird, und für die sehr geschätzte Einladung, mit der sie uns zur Teilnahme an dieser Feier beehrt hat.

Neben die ältere Philosophische Gesellschaft in Philadelphia trat vor einem Jahrhundert die Academie für Naturwissenschaften mit der bestimmten Aufgabe an der kräftig einsetzenden Arbeit für die Erkennung der Naturerscheinungen, die ein einigendes Band der gleichstrebenden Völker wurde, zielbewusst und erfolgreich teilzunehmen. Und wenige Jahre danach brachte sie den Erfolg solcher Arbeit mit dem ersten Bande ihrer Veröffentlichungen, deren ununterbrochene Reihe durch das Jahrhundert von dem werktätigen Leben der Genossenschaft wissenschaftlicher Männer Zeugnis gegeben hat. Durch langjährigen Schriftenaustausch mit ihr verbunden, hat unsere Gesellschaft von dort Belehrung und Anregung erhalten. Dankbar für solche Verbindung bringen wir heute der jubilirenden Akademie zu einer erfolgreichen Zukunft für die die Vergangenheit zuverlässige Bürgerschaft bietet, die aufrichtigsten Glückwünsche.

Der Vorsitzende Sekretär

E. EHLERS.

An die Academy of Natural Sciences of Philadelphia.

HEIDELBERGER AKADEMIE DER WISSENSCHAFTEN-STIFTUNG HEINRICH LANZ.

Der althehrwürdigen Akademie der Naturwissenschaften in Philadelphia, welche der erst vor wenigen Jahren durch den Edelsinn eines Badischen Grossindustriellen gegründeten Heidelberger Akademie der Wissenschaften die Ehre erwiesen, sie zu ihren Jubiläumsfestlichkeiten einzuladen, senden wir herzlichen Dank und besten Glückwunsch. Möge es Ihrer Akademie, deren hochverehrte Forscher im Laufe des vorigen Jahrhunderts so viel zu dem wunderbaren Emporblühen der Naturwissenschaften und dem rastlosen Fortschreiten genialer Technik beigetragen haben, auch ferner vergönnt sein, Ihr grosses und in seiner modernen Entwicklung bewundertes Land in enger Verbindung mit den Instituten und gelehrten Gesellschaften Deutschlands, welche in die Pflege der Naturwissenschaften ihren Stolz setzen, an der Entwicklung des Menschengeschlechts ruhmreichen Anteil nehmen zu lassen.

In Verehrung  
LEO KOENIGSBERGER,  
geschäftsführender Secretär.

Heidelberg, den 2. März 1912.

HRVATSKO NARAVOSLOVNO DRŪSTVO.

Zagreb, dne 22-II 1912.

To The Academy of Natural Sciences of Philadelphia:

We return our best thanks for your kind invitation to your remarkable festival. We are very sorry for not being able to be witnesses through our representatives of your magnificent festival of civilization and sciences, and therefore we take the liberty in this way to congratulate the Academy and express our hope that the Academy will successfully continue its useful activity for the welfare of mankind and advancement of the international sciences.

DR. L. CAR,  
President.  
IVANU KRMPOTIĆU,  
Secretary.



INSTITUT OCÉANOGRAPHIQUE.

Fondation Albert Ier, Prince de Monaco, Monaco, le 29 1 1912.

Monsieur :

Je m'empresse de vous accuser réception de l'invitation adressée au Musée océanographique de Monaco de se faire représenter à la cérémonie du centenaire de The Academy of Natural Sciences of Philadelphia. Je vous prie de vouloir bien transmettre à l'Académie les sincères remerciements du Musée océanographique pour l'honneur qui lui est ainsi fait; le Musée regrette de ne pouvoir envoyer à Philadelphie, à cette occasion, un de ses représentants, mais il vous prie de vouloir bien offrir en son nom, à l'Académie, ses meilleurs souhaits de prospérité et ses plus vives félicitations à l'occasion de son centenaire, sans oublier la manifestation du désir de voir continuer dans l'avenir, comme par le passé, les meilleures relations entre l'Académie et le Musée océanographique.

Veillez agréer, Monsieur, l'expression de mes sentiments les plus distingués.

Le Directeur

J. RICHARD.

To the Corresponding Secretary, The Academy of Natural Science of Philadelphia.

INSTITUT PASTEUR.

25, Rue Dutot, Paris, le 8 Mars 1912.

À Monsieur le Président de l'Académie des Sciences Naturelles de Philadelphia.

Monsieur le Président: Le Conseil de l'Institut est très honoré de l'invitation que vous lui adressez de se faire représenter à la célébration du centenaire de l'Académie des Sciences Naturelles de Philadelphie. Je regrette que les exigences de l'enseignement empêchent l'un de ses membres de se rendre aux Etats Unis pour porter à votre illustre Compagnie, les félicitations méritées par un siècle de dévouement à la Science. Je me charge de vous exprimer la gratitude qu'il éprouve pour une association qui s'est consacrée à la recherche de la vérité avec tant de persévérance, et de profit pour l'humanité, ainsi que les vœux qu'il forme pour la prospérité de votre Académie.

Veillez agréer, Monsieur le Président, l'hommage de ma considération très distinguée,

DR. ROUX.

KANSAS ACADEMY OF SCIENCE.

Topeka, Kansas.

Corresponding Secretary of The Academy of Natural Sciences of Philadelphia.

My dear Sir:

Through the Kansas Academy of Science I have the honor of receiving an official appointment as delegate to the One-Hundredth Anniversary of The Academy of Natural Sciences of Philadelphia.

As an old Philadelphian, nothing would give me greater pleasure than to be present at this gathering and to participate in the most worthy celebration. But recent accumulation of work connected with the University has compelled me, very reluctantly, to abandon the idea of personally attending and to forego the pleasure of listening to the various addresses that will be delivered as part of the proposed celebration.

The Kansas Academy of Science extends to the Academy its hearty congratulations. I have the honor to express the wishes of our members that this important occasion will be a delightful and happy one. We trust that the Academy will receive an assurance of even greater support for its future, as its existence has been an inspiration for numerous subordinate organizations in this country. The Academy of Natural Sciences of Philadelphia is looked up to as the Mother-organization.

Sincerely yours

L. E. SAYRE,

Dean, School of Pharmacy, University of Kansas,  
Representing the Kansas Academy of Science.

KOSMOS GESELLSCHAFT DER NATURFREUNDE STUTTGART.

Am 24. Februar 1912.

The Academy of Natural Sciences of Philadelphia,  
Sehr geehrte Herren:

Erlauben Sie uns, Ihnen zu der Hundertjahrfeier vom 19. bis 21. März d. Jhrs. unsern herzlichsten Glückwunsch auszusprechen.

Mit Freuden haben wir das stete Wachsen Ihrer Academy und ihr erfolgreiches Arbeiten, das demselben hohen Zwecke diene, in dessen Dienst auch wir uns gestellt haben, verfolgt.

Wir fügen noch unsern verbindlichsten Dank für Ihre liebenswürdige Einladung bei und bedauern nur, dass die Wasserfläche des Atlantischen Ozeans uns von Ihnen trennt und es uns unmöglich macht, den Festlichkeiten beizuwohnen.

Dass die Academy of Natural Sciences of Philadelphia auch im zweiten Jahrhundert ihres Bestehens weitere schöne Erfolge zu verzeichnen habe, das ist unser Wunsch.

Mit Vorzüglicher Hochachtung  
"Kosmos" Gesellschaft der Naturfreunde,  
W. KELLER,  
E. NEHMANN.

LABORATOIRE MARITIME DE CONCARNEAU, FINISTÈRE.

Concarneau, le 20 Mars 1912.

Monsieur le Président, The Academy of Natural Sciences of Philadelphia.

Cher Monsieur:

J'ai l'honneur de vous adresser tous mes remerciements pour l'aimable invitation que vous avez adressée au Laboratoire de Concarneau à l'occasion du centenaire de la fondation de votre illustre Académie et de vous exprimer en même temps tous mes regrets de ne pouvoir assister, vu la distance qui nous sépare, aux cérémonies qui marqueront cet important événement; mais je me fais un devoir de vous adresser, en même temps que le témoignage de mon admiration pour les services rendus à la science par votre Institution, l'expression de mes sentiments confraternels et tout dévoués à la cause désintéressée pour laquelle nous travaillons tous, et qui me font vivre aujourd'hui de tout coeur avec vous.

En vous priant, Monsieur le Président, de faire part à tous vos collaborateurs de mes sentiments de très haut estime, je vous prie d'agréer personnellement l'expression de mes sincères hommages et de mes distinguées civilités.

Votre entièrement dévoué

DR. F. GUERIN-GANIVET.

LEHIGH UNIVERSITY.

South Bethlehem, Pennsylvania, March 19, 1912.

Lehigh University tenders hearty congratulations to The Academy of Natural Sciences of Philadelphia on the celebration of the One Hundredth Anniversary of the Foundation of the Academy, and all Lehigh men wish long life and increasing success to the Institution that has in this past century of progress done such infinitely great things for the enlightenment and scientific advancement of our people.

By HENRY S. DRINKER,  
President,  
C. L. THORNBURG,  
Secretary.

## K. LEOPOLDINISCH-CAROLINISCHE DEUTSCHE AKADEMIE DER NATURFORSCHER.

Der Academy of Natural Sciences of Philadelphia sendet die Kaiserlich Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher zur Feier ihres 100jährigen Bestehens herzlichen Gruss.

Vom 19 bis 21 März dieses Jahres soll der Tag festlich begangen werden, an dem die Academy of Natural Sciences of Philadelphia auf ein Jahrhundert eines ruhmvollen Bestehens zurückblicken kann. Die Kaiserlich Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher nimmt der freudigsten Anteil an diesem Ehrentage der ältesten naturwissenschaftlichen Gesellschaft der Vereinigten Staaten und sendet ihr dazu die herzlichsten Glückwünsche. Seit am 16 April 1812 die sieben Naturforscher G. Troost, N. S. Parmentier, John Shinn, John Speakman, Jacob Gilliams, Thomas Say, und Camillus MacMahon Mann die Akademie begründeten, ist sie ständig emporgeblüht und hat durch ausgezeichnete Mitglieder auf allen Gebieten der Naturwissenschaften: der Ethnologie, der vergleichenden Anatomie und Zoologie, der Botanik, der Paleontologie, Mineralogie und Geologie hervorragendes geleistet. Namen wie Say, Godman, Harlan, Morton, und viele andere, die in JOURNAL und in den PROCEEDINGS der Akademie die Früchte ihrer Forschungen veröffentlichten und ihr Museum und ihre Sammlungen zur höchsten Blüte brachten, werden in der Geschichte der Naturwissenschaften unvergessen bleiben. Möchte die Academy of Natural Sciences of Philadelphia noch viele Jahrhunderte lang bestehen und weiter blühen und gedeihen.

Der Präsident und das Adjunkten-Kollegium der Kaiserlich Leopoldinisch-Carolinischen Deutschen Akademie der Naturforscher.

A. WANGERIN.

Halle a. S. den 19 März 1912.

*Finely engrossed.*

KIR. MAGYAR TERMÉSZETTUDOMÁNYI TÁRSULAT, BUDAPEST.

VIII, Eszterházy-Utca 16 Szám. 71/1912.

The President, The Academy of Natural Sciences of Philadelphia.

Sir:

The Royal Hungarian Society of Natural Sciences desires to thank you for the cordial invitation to participate in the festivities on the occasion of the 100th Anniversary of your Academy and regrets that it cannot send representatives to personally express its heartiest congratulations.

Kindly accept the felicitations of our Society for the splendid successes which have attended the efforts of your Academy in the past, and warmest wishes that the Academy may enjoy prosperity in the future.

Yours very truly,

DR. LENGYEL BELA,  
President.

MAGYAR TUDOMÁNYOS AKADÉMIA.

To the Corresponding Secretary, The Academy of Natural Sciences of Philadelphia:

The Magyar Tudományos Akadémia feels deeply honoured at the kind invitation extended to it by The Academy of Natural Sciences of Philadelphia to attend the celebration of its Centenary Anniversary, but regrets to say that, owing to the distance and the shortness of the time available, it will be unable to send any delegate to represent it in person at the said celebration.

The Magyar Tudományos Akadémia, however, begs to claim its share in the congratulations offered to your distinguished Academy on the attainment of the first centenary of its existence and to tender its tribute to the splendid services rendered by your Academy to the cause of science and scholarship. This tribute must unfortunately be tendered in writing, owing to the reasons aforesaid, but it is offered in a spirit of the most heartfelt appreciation and esteem for the services your distinguished Academy has rendered to humanity.

The Magyar Tudományos Akadémia begs to couple its tribute of homage and its message of congratulation with the fervent hope that your distinguished Academy may continue for many a century to be such a bulwark of science and scholarship and foremost outpost of human progress as it has been during the past hundred years.

A. BERZEVICZY,  
President.

Budapest, 10. March, 1912.

## IMP. MOSKOFSKOIE OBSHCHESTVO IESTESTVO-ISPYTATELEI.

Moscou le 20 February, 1912.

To The Academy of Natural Sciences of Philadelphia:

The Imperial Society of Naturalists of Moscow, founded in 1805, has had the pleasure to see the development of The Academy of Natural Sciences of Philadelphia at the beginning to the present time and is able to fix the great success of the Academy during the past hundred years in cultivation of the natural sciences. Our Society very much regrets that the great distance makes it impossible to be represented at the celebration of the Centenary Anniversary of the Academy.

On behalf of the Imperial Society of Naturalists of Moscow, I take the opportunity of offering sincere and hearty congratulations, and of expressing our deep appreciation of the great services that the Academy at Philadelphia has rendered to natural sciences during the last hundred years, and our hope that its activity may long continue in the future.

President:  
PROF. DR. N. UMOFF,  
Secretaries:  
PROF. DR. E. LEYST,  
V. DEINEGA.

## IMP. MOSKOVSKIJ UNIVERSITET.

Moscow, February 26, 1912.

No. 756.

To The Academy of Natural Sciences of Philadelphia,  
Gentlemen:

The oldest of the Russian universities, the Imperial University of Moscow, has directed us, in its behalf, to offer to the oldest of American learned institutions for natural sciences, The Academy of Natural Sciences of Philadelphia, most sincere and hearty congratulations on the auspicious occasion of the Hundredth Anniversary of its scientific birth. In the past hundred years the professors, lecturers, and assistants of our University have followed with great interest the valuable records of the old JOURNAL and the PROCEEDINGS, containing so many memoirs important to natural sciences not only in America, but in all the civilised world. Your PROCEEDINGS are known and valued wherever natural sciences are cultivated.

Much regret is felt that no member of this University can be present as a Delegate at your celebration, to express in terms befitting the occasion the sentiments of high esteem constantly held by us, and the ardent wishes we have for your success in future in every undertaking. We most cordially express confident hope that the future of The Academy of Natural Sciences of Philadelphia will be as brilliant as its past.

Rector  
M. LUBAWSKY  
Vice-Rector  
ERNST LEYST  
Pro-Rector  
A. ELISTRATOR  
Secretary  
S. PREOBRASHENSKY.



## MUSÉUM NATIONAL FRANÇAISE D'HISTOIRE NATURELLE.

Le Muséum National français d'Histoire Naturelle à l'Académie des Sciences Naturelles de Philadelphie:

L'Assemblée des Professeurs du Muséum national d'Histoire naturelle de France adresse toutes ses félicitations à l'Académie des Sciences Naturelles de Philadelphie à l'occasion de son Centenaire.

La jeune Amérique a su se faire une place d'honneur dans la culture des sciences naturelles; elle s'est signalée par des publications qui comptent parmi les plus belles et les plus importantes, et ses Musées ont pris un développement qui fait l'admiration du Vieux Monde. L'Académie des Sciences Naturelles de Philadelphie a pris la plus grande part à ce mouvement. Elle a toujours été unie par des liens d'étroite sympathie avec le Muséum d'Histoire naturelle, et les Professeurs du vieil établissement trois fois centenaire, héritiers d'un passé glorieux, sont heureux d'offrir leurs vœux à leurs Confrères du Nouveau Monde.

Au nom des Professeurs du Muséum d'Histoire Naturelle de France:

Le Directeur,  
EDMUND PERRIER.

Noms des Professeurs:

Ph. Van Tieghem	Marcellin Boule
A. Chauveau	L. Joubin
A. Arnaud	Louis Mangin
Stanislas Meunier	E. Trouessart
A. La Croix	H. LeComte
L. E. Bouvier	Jean Becquerel
L. Maquenne	René Verneau
J. Costantin	Louis Roule

Louis Laticque

*Folded folio sheet in cover with ornamental border and vignettes, beautifully printed by the Imprimerie Nationale.*

## 'S RIJKS MUSEUM VAN NATUURLIJKE HISTORIE.

Leiden, 17 February, 1912.

The Rijks Museum van Natuurlijke Historie received with the greatest interest the most important information by your Secretary, that your Academy will have completed in March, 1912, one hundred years of active devotion to the cultivation of the Natural Sciences, that for the adequate celebration of its Centenary Anniversary, the Academy will call in convention at its Hall the learned men and institutions of the world—its collaborators, and finally that the Academy invites the Rijks Museum van Natuurlijke Historie to be represented at this event which will take place at Philadelphia on Tuesday, Wednesday, and Thursday, the nineteenth, twentieth, and twenty-first of March, nineteen hundred and twelve.

Now the high scientific rank occupied by your Academy is plain to all students of Nature and we all are impressed by the amount of scientific work done and provided by its members, so pray to accept of the officers of the Rijks Museum van Natuurlijke Historie at Leiden the most hearty congratulations on the great event, and their best wishes for the prosperity of your adult but not old institution!

May in the year 2012 the then living generation state the great fact that your Academy still is flourishing and in the very strong condition that it is now in March, 1912.

It is with the greatest regret that we can not come over to follow the kind invitation with which you honored us; our sincere congratulations may represent us at your Centenary Festival!

Vivat, floreat, crescatque Academia Scientiarum Naturalium Philadelphiensis!

F. A. JENTINK,

Directeur van 's Rijks Museum van Natuurlijke Historie.

To the Academy of Natural Sciences of Philadelphia.

## NATURAL HISTORY SURVEY OF MINNESOTA.

The University of Minnesota, Minneapolis, February 28, 1912.

Corresponding Secretary of The Academy of Natural Sciences of Philadelphia.

Dear Sir:

I regret that it will be practically impossible for the Zoological Survey of Minnesota to be represented at the celebration of the Centenary Anniversary of The Academy of Natural Sciences of Philadelphia on March nineteenth, twentieth, and twenty-first, nineteen hundred twelve.

The natural sciences have been and are being advanced by The Academy of Natural Sciences of Philadelphia, and I feel impelled to congratulate in particular the officers of the Academy and the citizens of Philadelphia on the splendid record of the past and wish the Academy continued prosperity in the new century.

Sincerely yours,

HENRY F. NACHTRIEB,

Zoologist of the Geological and Natural History Survey of Minnesota,

Professor of Animal Biology and Head of the Department.

## NATURFORSCHENDE GESELLSCHAFT IN GÖRLITZ.

Görlitz den 18 März 1912.

The Academy of Natural Sciences of Philadelphia:

Die Naturforschende Gesellschaft zu Görlitz hat aus Ihrer freundlichen Einladung mit grossem Interesse ersehen, dass auch Sie in diesem Jahre auf ein hundertjähriges Wirken im Interesse unserer Naturwissenschaften zurückblicken.

Indem wir für die freundliche Einladung zu diesem Feste, an dem wir uns leider durch kein Mitglied vertreten lassen können, danken, wünschen wir Ihnen viel Glück und Gedeihen für die Zukunft.

Im Namen des Präsidiums

DR. WILLY MEYER,  
I. Sekretär.

## NATURHISTORISCHE GESELLSCHAFT NÜRNBERG.

Nürnberg, den 7 März 1912.

An die Academy of Natural Sciences of Philadelphia:

Die Naturhistorische Gesellschaft Nürnberg entbietet der Academy of Natural Sciences zu ihrer Jahrhundertfeier die allerherzlichsten Glückwünsche. Die verflossenen hundert Jahre waren für die Entwicklung der Naturwissenschaften ungemein segensreich und fruchtbringend; die Academy hat durch die Arbeiten ihrer Gelehrten in hohem Masse dazu beigetragen, die Erfahrungen der Wissenschaft in weite Kreise zu tragen. Seit 56 Jahren stehen unsere beiden Institute in wechselseitigem Verkehr. Möge der rege Austausch der geistigen Kulturgüter, alte und neue Welt eng und freundschaftlich aneinander knüpfend, auch in Zukunft das gleiche erhebende Bild zeigen, das die Vergangenheit ausgezeichnet hat.

Für die Naturhistorische Gesellschaft, Nürnberg

I. Sekretär  
PROFESSOR DR. KÜSPERT.

K. K. NATURHISTORISCHES HOFMUSEUM, WIEN.

K. und K. Intendanz des K. K. Naturhistorischen  
Hofmuseums, Wien, 27. Februar 1912.

The Academy of Natural Sciences of Philadelphia:

Der ergebenst Gefertigte erlaubt sich, der hochansehnlichen Akademie der Naturwissenschaften anlässlich der Feier Ihres Einhundertjährigen Bestandes im Namen des k. k. naturhistorischen Hofmuseums in Wien die herzlichsten und ergebensten Glückwünsche darzubringen.

Mit gerechtem Stolze und voller Befriedigung kann die hohe Akademie auf ihre Einhundertjährige erfolgreiche Tätigkeit auf dem weiten Gebiete der Naturwissenschaften zurückblicken. Zu Ihren Gründern und Mitarbeitern zählen ja die grössten amerikanischen Gelehrten des vergangenen Jahrhunderts, deren Namen unsterblich fortlebt in der Geschichte der Naturwissenschaften.

Möge es der hohen Akademie in Philadelphia gegönnt sein, noch viele Jahrhunderte in gleicher segensreicher Weise zu wirken zum Ruhme Ihres grossen Vaterlandes und zur Förderung des Wissens der gesammten gebildeten Welt.

“Vivat, floreat, crescat Academia.”

Die Intendanz des k. k. naturhistorischen Hofmuseums bedauert sehr, wegen der Grösse der Entfernung und der ungünstigen Jahreszeit keinen Delegierten nach Philadelphia zu dieser seltenen, erhebenden Feier entsenden zu können.

DR. FRANZ STEINDACHNER,  
Intendant des k. k. naturhistorischen Hofmuseums.

NATURHISTORISCHES MUSEUM ZU HAMBURG.

Der Academy of Natural Sciences of Philadelphia, der hochverdienten Pflegerin und Förderin wissenschaftlicher Forschung, sendet zur Feier ihres hundert-jährigen Bestehens herzlichsten Glückwunsch.

Das Naturhistorische Museum zu Hamburg,

KRAEPELIN.

Hamburg, den 20 Februar 1912.

*A fine specimen of chirography.*

## NATURHISTORISCH-MEDIZINISCHER VEREIN HEIDELBERG.

Heidelberg d. 1 März 1912.

An die Academy of Natural Sciences of Philadelphia:

Der Naturhistorisch-medizinische Verein zu Heidelberg bedauert ausserordentlich keinen Vertreter zu Ihrem Feste entsenden zu können; aber er beauftragt mich Ihnen seine herzlichsten Glückwünsche zu übermitteln. Er kennt wohl die Bedeutung, welche Ihre ausgezeichnete Academy für die Ausbreitung und Entwicklung naturwissenschaftlicher Kenntniss in den Vereinigten Staaten gehabt hat; er beglückwünscht Sie zu Ihren grossen Erfolgen und wünscht, dass Sie auch im zweiten Jahrhundert nicht weniger segensreich werden mögen. In ausgezeichneter Hochachtung und Verehrung

der Schriftführer  
 PROF. DR. WILHELM SALOMON.

## DEN NATURHISTORISKE FORENING: KÖBENHAVN.

Feb. 28, 1912.

To the Corresponding Secretary of The Academy of Natural Sciences of Philadelphia.

Sir:

On behalf of the Naturhistoriske Forening i Köbenhavn, I wish to express our best thanks for the great honour of being invited to be represented at the celebration of the Centenary of The Academy of Natural Sciences of Philadelphia.

We deeply regret not to be able to send a delegate at this event; we must confine ourselves to sending our most hearty congratulations on the completion of the first hundred years of successful work in promoting science, and to express the hope that the Academy may continue to grow and flourish for ages to come.

Believe me, Sir,

Yours respectfully,

HECTOR F. E. JUNGENSEN,  
 President of Naturhistorisk Forening.

NATURWISSENSCHAFTLICHER VEREIN, HAMBURG.

Der Academy of Natural Sciences zu Philadelphia sendet der naturwissenschaftliche Verein in Hamburg in freudiger Anerkennung der Verdienste der Akademie um die Förderung der Naturwissenschaften zu der Feier ihres hundertjährigen Bestehens am 19, 20, und 21 März 1912 seinen aufrichtigsten Glückwunsch.

Der derzeitige 1. Vorsitzende  
PROF. DR. G. GÜRICH.

*Folded sheet in cover with seal of society.*

NATURWISSENSCHAFTLICHER VEREIN FÜR SCHLESWIG-HOLSTEIN.

An die Akademie der Naturwissenschaften in Philadelphia

Hochgeehrte Herren:

Zu der bevorstehenden Feier Ihres 100 jährigen Bestehens beehren wir uns die herzlichsten Glückwünsche zu übersenden.

Wenn wir uns es auch versagen müssen, der freundlichst an uns ergangenen Einladung durch Entsendung eines Vertreters zu entsprechen, so wissen wir uns doch eins mit Ihnen in der Freude über die bedeutsamen Erfolge Ihres Wirkens und in der Wertschätzung derjenigen Bedeutung, welche innerhalb der gesammten Cultur der Pflege naturwissenschaftlicher Kenntnisse zukommt.

Wir wünschen und hoffen, dass dem Ruhmeskranze, den sich Ihre Akademie durch ernste und fruchtbare hundertjährige Arbeit verdient hat, ungezählte neue Blätter fernerhin hinzugefügt werden.

HENSEN,  
L. WEBER.

Kiel, den 10 März 1912.

## NATURWISSENSCHAFTLICHER VEREIN FÜR STEIERMARK IN GRAZ.

To the Corresponding Secretary, The Academy of Natural Sciences of Philadelphia:

Der Naturwissenschaftliche Verein für Steiermark dankt Ihrer Academy für die freundliche Einladung zum hundertjährigen Jubiläum ihrer Gründung.

Durch ein Jahrhundert an der Spitze aller der seither in Amerika entstandenen jüngeren gelehrten Gesellschaften stehend, welche sich die naturwissenschaftliche Erforschung Ihres grossen und mächtigen Vaterlandes zur Aufgabe machten, hat die Academy of Natural Sciences of Philadelphia in dieser für die Wissenschaft kurzen Zeit Erfolge erzielt, die mit Recht die Bewunderung der gelehrten Welt erregten. Unser Naturwissenschaftlicher Verein, dem Sie die Ehre erwiesen, ihn zu Ihrer Feier einzuladen, sendet Ihnen die herzlichsten Glückwünsche für ein gleich ruhmreiches Wirken in vielen weiteren Jahrhunderten.

## NEDERLANDSCHE DIERKUNDIGE VEREENIGING.

To The Academy of Natural Sciences of Philadelphia:

The Nederlandsche Dierkundige Vereeniging has the honour to acknowledge the receipt of the kind invitation from The Academy of Natural Sciences of Philadelphia, to be represented at the celebration of its Centenary Anniversary.

The Vereeniging regrets to be obliged to inform the Academy that it will not be able to attend this no doubt very successful meeting.

It therefore forwards by way of this letter its best wishes for the flourishing of the institution, that has already done so exceedingly much for the advancement of the Natural Sciences.

May the Academy in future be able to carry on this noble task with juvenile strength!

P. P. C. HOEK,  
President,  
R. HORST,  
Secretary.

Haarlem  
Leiden, 21st February, 1912.



## NEDERLANDSCHE ENTOMOLOGISCHE VEREENIGING.

Rotterdam, the 7th of February, 1912.

To The Academy of Natural Sciences of Philadelphia.

Dear Sirs:

Our Society, though greatly honoured by your kind invitation to send a representative to the celebration of the Centenary Anniversary of your Academy, regrets much to be unable to accept it, as the travel to Philadelphia is too far.

The Board of our Society takes the liberty to offer you the best wishes for the future prosperity of your Academy and hopes that it will be able to continue with the same devotion and success the scientific labor, which is highly appreciated also by the members of our Society.

I remain, Dear Sirs,

Yours faithfully,

D. VAN DER HOOP,  
Secretary.

## NEW YORK ACADEMY OF SCIENCES.

The New York Academy of Sciences sends most hearty greetings to The Academy of Natural Sciences of Philadelphia on the occasion of the latter's celebration of the One Hundredth Anniversary of her founding.

Next younger in age among such institutions in the country, the New York Academy feels an especial right to congratulate her sister Academy upon rounding out the first century of an existence that has been honorable for work accomplished along several lines, but particularly in conchology and geology. Now that there are so many centers of scientific work and thought in America there is danger of overlooking the claims to recognition of the great original source of inspiration. May Philadelphia maintain for centuries to come the front rank in this regard that has been hers for more than the century now closing.

EMERSON McMILLAN,  
President.EDMUND OTIS HOVEY,  
Recording Secretary.

*Beautifully engrossed on parchment with illuminated initials.*

## NORTHWESTERN UNIVERSITY, EVANSTON-CHICAGO.

Northwestern University offers congratulations to The Academy of Natural Sciences of Philadelphia on the arrival of its One Hundredth Anniversary, and takes pleasure in paying a tribute to its helpful and uplifting influence on the progress of the natural sciences.

Through its museum exhibits and public lectures, as well as through the personal influence of its distinguished members, the Academy has promoted a widespread interest in the natural sciences. At the same time, it has stimulated research by providing means of publication for many notable scientific investigations that have been produced by its members and correspondents.

This activity establishes between the Academy and the Universities a bond of sympathy, based on similarity of aims and purposes in promoting the spread of education among the people, and in offering encouragement to gifted investigators.

In recognition of this high service to the cause of scientific learning, Northwestern University not only offers felicitations for past achievements, but also wishes for The Academy of Natural Sciences of Philadelphia continued prosperity and success in the prosecution of its noble work.

Chicago, Illinois, March fifteenth, nineteen hundred and twelve.

A. W. HARRIS,  
President.

## PHILADELPHIA COLLEGE OF PHARMACY.

145 North 10th St., Philadelphia, March 14, 1912.

Samuel G. Dixon, M.D., President, The Academy of Natural Sciences of Philadelphia.

Dear Sir:

The Philadelphia College of Pharmacy, which is approaching its Ninety-second Anniversary, desires to extend to your Academy her heartiest greetings upon this felicitous occasion of its Centenary Anniversary.

The College recalls with pride the fact that the first President of your Organization, Gerard Troost, M.D., a man highly esteemed by all, afterwards became associated with her as Professor of Chemistry.

The Academy of Natural Sciences of Philadelphia and the Philadelphia College of Pharmacy have been so closely allied during the lifetime of the latter, that she feels it a great honor to have this opportunity of extending to the older sister institution her heartiest good wishes for a continuance of such an honored career. And it is her hope that the most excellent work which the Academy has so nobly and heroically carried on during the past one hundred years may continue through future centuries.

Very truly,

Attest: HOWARD B. FRENCH,

President.

C. A. WEIDEMANN, M.D.,

Secretary.

## THE PHILADELPHIA PATHOLOGICAL SOCIETY.

To The Academy of Natural Sciences of Philadelphia, 1812-1912, Greeting!

The Philadelphia Pathological Society extends to The Academy of Natural Sciences cordial greetings upon the completion of one hundred years of active, productive life, congratulating the Academy upon its notable record of past achievements, and earnestly wishing for it long continuance of life, prosperity and success.

By Delegates: ALLEN J. SMITH,  
President,  
DAVID RIESMAN,  
Past President,  
W. M. L. COPLIN,  
Past President.

Philadelphia, Pa., March 19, 1912.  
*Beautifully engrossed.*

## PHILADELPHIA HIGH SCHOOL FOR GIRLS.

Greetings of the Philadelphia High School for Girls to The Academy of Natural Sciences of Philadelphia (1812, March 21, 1912).

All institutions whose object is the pursuit of exact knowledge rejoice with The Academy of Natural Sciences of Philadelphia on this the celebration of the One hundredth Anniversary of its foundation.

The Philadelphia High School for Girls is glad at this time to extend its sincere congratulations and to have the opportunity of expressing its deep sense of obligation to the Academy. Situated as the school is, almost in the shadow of the walls of this famous institution, it has found the Academy a helpful neighbor. Teachers and pupils have derived inspiration from its unique collections, from the clear and comprehensive lectures arranged to meet the special interests of the school, and from the willing aid received many times in the effort to solve difficult problems connected with the work.

May the Academy of Natural Sciences of Philadelphia flourish in the future as it has in the past, may it continue in its honest devotion to the development of science, in its attainment of end for the betterment of mankind, in its world-wide reputation for members of sterling qualities and of great achievement.

J. EUGENE BAKER,  
Principal,  
KATHERINE E. PINNCHON,  
Assistant to Principal,  
IDA A. KELLER,  
Head of Department of Biology.

PONTIFICIA ACCADEMIA ROMANA DEI NUOVI LINCEI, ROMA.

Palazzo della Cancelleria, Roma, 13 Febbraio, 1912.

Monsieur le Président :

J'ai l'honneur de vous exprimer au nom de l'Académie Pontificale des "Nuovi Lincei" les sentiments de la plus vive et fraternelle sympathie pour votre honorable Academy of Natural Sciences of Philadelphia à l'occasion des fêtes centenaires qui auront lieu le mois prochain à Philadelphie.

Nous souhaitons à votre glorieuse Institution un avenir digne du passé, pour le plus grand avantage des sciences que vous cultivez si noblement, et dont vous vous intéressez si largement du progrès.

Nous formons en même temps les vœux les plus sincères pour la prospérité de tous les Académiciens.

Veillez agréer, Monsieur le Président, l'expression de ma haute considération.

DR. PIERRE DE SANCTIS,  
Secrétaire.

M. le Président de la Academy of Natural Sciences of Philadelphia.

DIE PHYSIKALISCH-OEKONOMISCHE GESELLSCHAFT ZU KÖNIGSBERG I. PR.

Königsberg i. Pr., 6 März 1912.

An der Centenarfeier der Academy of Natural Sciences of Philadelphia nimmt die Physikalisch-oekonomische Gesellschaft zu Königsberg i. Pr. der es leider nicht möglich ist, einen Vertreter über den Ocean zu entsenden, herzlichen Anteil und erlaubt sich, wenigstens schriftlich ihre besten Glückwünsche darzubringen.

Wer die mit 1817 beginnende Reihe der Veröffentlichungen der Akademie einsieht, stösst auf eine stattliche Zahl über Amerika hinaus bekannt gewordener Namen, deren Arbeiten einen dauernden Gewinn für die Wissenschaft darstellen. Wie aber zu einem Gebäude ausser den Grund- und Eckpfeilern viele grössere und kleinere Bausteine notwendig sind und ohne solche ein Bau nicht errichtet werden kann, so verhält es sich auch mit der Wissenschaft, die ohne oft minutiöse Detailarbeit nicht bestehen kann. Auch hieran hat es der Academy nicht gefehlt, und so bilden ihre bisherigen Leistungen das beste Prognosticon für die Zukunft.

Die Physikalisch-oekonomische Gesellschaft

Der Schriftführer

M. LÜHE

Der Präsident

M. BRAUN.

ROEMER MUSEUM.

Hildesheim, den 15. 2. 12.

Sehr geehrter Herr:

Für die lebenswürdige Einladung zu dem Hundertjährigen Stiftungsfeste der Academy of Natural Sciences of Philadelphia sagt der Vorstand des Roemer-Museums ehrerbietig seinen Dank. Leider ist er nicht in der Lage einen Delegierten zu senden, um seine herzlichen Glückwünsche zu überbringen. Er hat mich beauftragt, diese Glückwünsche hiermit Ihnen aus vollem Herzen darzubringen:

Vivat! Floreat! Crescat! Academia Scientiæ Naturalis Philadelphiæ!  
In æterum!

Mit ausgezeichnete Hochachtung

PROF. DR. R. HAUTHAL.

## ROYAL SOCIETY OF EDINBURGH.

To The Academy of Natural Sciences of Philadelphia:

The Royal Society of Edinburgh takes with great pleasure the opportunity of expressing to The Academy of Natural Sciences of Philadelphia, its congratulations upon the celebration of the Academy's Centenary.

Sharing as it does the proud duty of advancing and diffusing knowledge, the Society recognises the debt due to those who, under the aegis of the Academy, have so zealously and so successfully laboured with the same end in view, to the benefit not of one country only but of mankind.

The Society feels it a peculiar pleasure to convey upon so auspicious an occasion, by the hands of its personal representatives, these sincere congratulations to an Academy of a country with which Scotland has had such long and intimate connections, and with cordial greetings expresses its confident hope for a continuance of the Academy's distinguished career.

(Seal)

WM. TURNER,  
President,  
C. G. KNOTT,  
Secretary.

Edinburgh, March, 1912.

*Beautifully printed on folio sheet*



## RUSSKOJE ENTOMOLOGICĚSKOJE OBŠĚSTVO.

To the President, The Academy of Natural Sciences of Philadelphia.

On the occasion of the Centennial Jubilee Celebration of The Academy of Natural Sciences of Philadelphia the Russian Entomological Society welcomes the remembrance that the Academy has always paid much attention to entomology.

In order to appreciate the enormous significance of the part the Academy has played in the study of the branch of zoology which is so dear to our Entomological Society, it is sufficient to quote the names of the following famous savants, whose works appeared in the publications of the Academy: B. Clemens, E. T. Cresson, S. S. Haldeman, N. M. Hentz, G. H. Horn, J. Leconte, J. L. Leconte, F. E. Melsheimer, Miss M. Morris, W. F. Rogers, Baron R. Von Osten-Sacken, Th. Say, Ph. R. Uhler, D. Ziegler, and many others.

The Russian Entomological Society presents its heartiest congratulations on the Centennial Anniversary of The Academy of Natural Sciences of Philadelphia and wishes that it may continue in future its useful work and to flourish for many years to come.

P. SEMENOV-TJAN-SHANSKIJ,  
President.

ANDREA SEMENOV-TJAN-SHANSKIJ,  
Vice President.

G. JACOBSON,  
Secretary.

O. JOHN,  
Corresponding Secretary.

## K. SÄCHSISCHE GESELLSCHAFT DER WISSENSCHAFTEN.

Leipzig, den 8 März 1912.

The Academy of Natural Sciences of Philadelphia:

Der Academy of Natural Sciences of Philadelphia spreche ich meinen warmen und ehrerbietigen Dank für die Einladung zur Teilnahme an der Feier des 100-jährigen Bestehens aus.

Wenn ich auch nicht in der Lage bin, persönlich an der Feier teilzunehmen, so möchte ich doch nicht verfehlen, der Akademie meinen aufrichtigen Glückwunsch darzubringen, und die Hoffnung auszusprechen, dass von ihr auch weiterhin segensreiche wissenschaftliche Anregungen ausgehen möchten.

Wenn ich an mein Spezialgebiet, die Zoologie, denke, so darf ich wohl darauf hinweisen, dass der 1817 erschienene erste Band des JOURNAL OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA eine Reihe ausgezeichneter zoologischer Abhandlungen enthält, von denen die erste keinen geringeren als LeSueur zum Verfasser hat.

Seit jener Zeit hat die Akademie eine solche Fülle ausgezeichneter Untersuchungen und hervorragender Entdeckungen auf dem Gebiete der beschreibenden Naturwissenschaften veröffentlicht, dass sie schon lange einen Ehrenplatz unter den wissenschaftlichen Vereinigungen der neuen und alten Welt einnimmt.

Vivat, crescat, floreat!

Der Sekretär der mathem.-physischen Klasse:

CARL CHUN.

## K. SÄCHSISCHE GESELLSCHAFT DER WISSENSCHAFTEN.

Leipzig, den 9. März 1912.

Die Königlich Sächsische Gesellschaft der Wissenschaften spricht der Academy of Natural Sciences of Philadelphia ihren warmen Glückwunsch aus Anlass der 100jährigen Jubelfeier aus.

Unter den wissenschaftlichen Vereinigungen Amerikas ist sie nicht nur eine der ältesten, sondern auch bis heute eine der angesehensten, deren segensreiche Tätigkeit auf das geistige Leben der Vereinigten Staaten und des Auslandes einen deutlich erkennbaren Einfluss ausübte. Durchmustert man die Liste ihrer Mitglieder, so findet man in ihr die stolzesten Namen amerikanischer Gelehrter: begreiflich, dass man im Auslande es sich zur besonderen Ehre anrechnete, zu der Academy of Natural Sciences of Philadelphia persönliche Beziehungen zu gewinnen.

Seit dem Jahre 1817, in dem der erste Band des JOURNAL OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA erschien, hat die Akademie eine solche Fülle bedeutsamer Arbeiten und Entdeckungen veröffentlicht, dass ihre Publikation an innerem Gehalt mit den ehrwürdigsten Zeitschriften der alten Welt wetteifern kann. Ihr Leitmotiv waren die Worte von Montagu: "By withholding individual information general knowledge is suspended. Science is materially advanced by the promulgation of the sentiments of individuals, and poor indeed must be the resources of those from whom nothing is to be learned."

So erkennen wir denn mit der gesamten wissenschaftlichen Welt dankbar an, dass der vor 100 Jahren in bescheidener Form gepflanzte Baum wissenschaftlicher Erkenntnis herrliche Früchte getragen hat, und wünschen der Academy of Natural Sciences of Philadelphia auch weiterhin ein segensreiches Gedeihen.

Die Königl. Sächs. Gesellschaft d. Wissenschaften.

Der Sekretar d. mathem.-phys. Klasse:

CARL CHUN

Der Sekretar d. phil.-hist. Klasse:

ERNST WINDISCH.

## SCHWEIZERISCHE NATURFORSCHENDE GESELLSCHAFT.

Genève, le 13 Mars 1912.

La Société Helvétique des Sciences Naturelles à The Academy of Natural Sciences of Philadelphia.

Monsieur le Président et très Honoré Confrère:

Par suite d'une erreur de l'Administration des Postes, l'invitation que vous nous avez fait l'honneur de nous adresser pour nous faire représenter aux belles cérémonies par lesquelles vous célébrez le Centenaire de votre savante société, nous parvient trop tard pour que nous puissions y prendre part.

Nous tenons néanmoins à venir vous exprimer les sentiments de vive admiration que nous éprouvons à la pensée que votre savante Compagnie puisse célébrer cette année, le centième anniversaire de sa fondation, et nous venons vous prier d'agréer tous les voeux les plus sincères que nous formons pour sa prospérité dans le second siècle d'activité qui s'ouvre devant elle.

Veillez agréer, Monsieur le Président et très Honoré Confrère, l'assurance de notre considération la plus distinguée.

Pour Le Comité Central  
Le Président  
ED. SARASIN  
La Secrétaire  
PH. A. GUYE.

## SMITHSONIAN INSTITUTION.

The Smithsonian Institution sends greetings and congratulations to The Academy of Natural Sciences of Philadelphia on the occasion of the One hundredth Anniversary of its Foundation.

Recognizing the importance of the influence which, for a century, the Academy has exerted on the development of American science and the value of the contributions which it has made to natural history, the Institution desires to express the hope that its beneficent activities may long continue.

CHARLES WALCOTT,  
Secretary.

March the Nineteenth, One Thousand Nine Hundred and Twelve.

*Exquisitely engrossed and illuminated.*

LA SOCIEDAD ARAGONESA DE CIENCIAS NATURALES.

La Sociedad Aragonesa de Ciencias Naturales en el primer decenio de su existencia se congratula con la Academia de Ciencias Naturales de Filadelfia en su Centenario 1812-1912.

SECLARI ACADEMIÆ SCIENTIARUM PHILADELPHIANÆ GRATULATIO.

Ferte, leves venti, mea munera, ferte salutem  
Ad Philadelphinos fluctibus oceani.  
En celebrat primum sapiens Academia seclum.  
Gaude, dumque volent tempora progredere.

Colegio de Salvador  
Cæsarangustæ, Febr. 1912.

LONGIN NAVÁS, S.J.

SOCIEDAD MALAGUENA DE CIENCIAS.

Malaga, Febrero 1912.

The Secretary the Academy of Natural Sciences of Philadelphia:

La Sociedad Malagueña de Ciencias tributa á su homóloga de Philadelphia felicitación entusiasta al conmemorar ésta su primer Centenario de brillante existencia.

Nos honrariamos concurriendo al certamen que vais á celebrar con tan fausto motiva, mas ya que ello no nos sea posible, recibid nuestro saludo sincero y nuestros fervientes votos por vuestra prosperidad creciente para bien de la Ciencia y de la Humanidad.

Al trasmitiros estos acuerdos os damos expresivas gracias por vuestra invitación y nos ofrecemos vuestros afectuosos colegas.

El Secretario,  
El Presidente,  
Z. RODRIQUES SPITERI.

## SOCIETÀ DEI NATURALISTI E MATEMATICI IN MODENA.

Modena, 28 febbrajo 1912.

The Academy of Natural Sciences of Philadelphia:

Un secolo di vita scientifica hanno dato alla Vostra Accademia tutto lo splendore che molte delle vostre Consorelle hanno raggiunto durante un tempo più che doppiamente secolare; e accanto a Voi e per la vostra influenza esercitata in mezzo alle attive e giovani popolazioni dell'America del Nord, vi sono cresciuti attorno sodalizi e istituzioni scientifiche largamente fruttuose.

È con la più sentita gioja intellettuale che noi prendiamo parte alle vostre feste giubilari; il tempo e anche la distanza non permettono alla Società dei Naturalisti e Matematici di Modena di inviare un rappresentante alle vostre adunanze solenni; ma lontani, saremo con Voi in quei giorni con l'animo nostro, e vi auguriamo, non senza un certo egoismo scientifico che ormai i lavori dei singoli sulla terra sono a beneficio di tutti, una indefettibile vita per la grandezza del vostro Paese, per il benessere dell'umanità.

il Presidente  
DANTE PANTANELLI  
il Segretario  
GIACOMO G. BASSOLI.

## SOCIETÀ ZOOGICAL ITALIANA.

Roma, li 23 Febbraio, 1912.

Illmo Signor Presidente:

Riceviamo con piacere il cortese annunzio della prossima celebrazione del Centenario di codesta illustre e benemerita Accademia scientifica. Dispiacenti di non poter intervenire personalmente alla festa commemorativa, Vi preghiamo, illustrissimo Signor Presidente, di voler rappresentare la nostra Società Zoologica Italiana. Vogliate accettare, da parte di tutti i membri di questa Società, i più caldi e sinceri augurî affinchè il vostro Istituto possa continuare per l'avvenire nel suo nobile compito, così degnamente e felicemente adempito finora, di giovare al progresso delle scienze naturali, che è anche progresso della civiltà dei popoli.

Con devozione e stima

Il Presidente  
PROF. ANTONIO CARRUCCIO  
Il Segretario  
PROF. GIUSEPPE LEPRI

All' ill. Sig. Presidente dell'Accademia di Scienze Naturali in Filadelfia.

## REGIA SOCIETAS SCIENTIARUM BOHEMICA.

Prag am 5 März 1912.

An die Academy of Natural Sciences of Philadelphia:

Die Königlich Böhmisches Gesellschaft der Wissenschaften in Prag hat mit innigstem Dank die Einladung zu Festtagen empfangen, an welchen die Academy of Natural Sciences ihr hundertjähriges Bestehen zu feiern gedenkt, bedauert jedoch, dass es ihr nicht möglich ist, ihren Vertreter zur Feier selbst entsenden zu können.

Die Gesellschaft schliesst sich jedoch mit Freuden allen jenen an, die nah und fern in diesen Tagen des ruhmreichen, dem Fortschritte der Wissenschaft gewidmeten hundertjährigen Wirkens der Academy mit Dank gedenken und entbietet der Academy ihre schlichten, aber aufrichtigen Worte der Bewunderung für all die bisher der Wissenschaft geleisteten Dienste und die besten Glückwünsche für ihre Fortsetzung in den kommenden Jahrhunderten. Academia scientiarum naturalium Philadelphiensis vivat, floreat, crescat!

Für das Präsidium der Königlich Böhmisches Gesellschaft der Wissenschaften

K. VRBA

Präsident,

JOSEF ZUBATY

General-Sekretär.

## SOCIÉTÉ BOTANIQUE DE FRANCE.

Rue de Grenelle, 84, à Paris (VII.<sup>e</sup>) Paris, le 4 Mars 1912.

A Monsieur le Président et à Messieurs les Membres de l'Académie des Sciences naturelles de Philadelphie:

Messieurs:

Au moment où votre savante Académie célèbre le 100<sup>e</sup> anniversaire de sa fondation, la Société Botanique de France tient à vous exprimer ses plus vives félicitations.

Vos importants travaux ont assuré à l'Académie des Sciences naturelles de Philadelphie une place d'honneur parmi les sociétés savantes d'Amérique.

Nous formons le voeu que votre activité scientifique, toujours en éveil, continue à enrichir l'histoire naturelle d'importantes découvertes qui contribueront heureusement à illustrer à la fois, votre Académie et la science américaine.

Le Président de la Société Botanique de France,

R. ZEILLER.

## SOUTHERN CALIFORNIA ACADEMY OF SCIENCES.

Los Angeles.

The Southern California Academy of Science gratefully acknowledges the invitation to attend the celebration of the One-hundredth year of the establishment of The Academy of Natural Sciences of Philadelphia.

We extend to The Academy of Natural Sciences of Philadelphia our most hearty congratulations for its phenomenal success, and for the many discoveries in the several branches of science which have been made through its encouragement and liberality, and which have tended to the advancement of the human race during the last one hundred years.

We, upon this distant Pacific Coast, a very young sister Academy, born but twenty-one years ago, are glad to be able to place upon record, at this auspicious event, our appreciation of the work of The Academy of Natural Sciences of Philadelphia and the good that has resulted from its labors.

W. A. SPALDING,  
President.  
HOLDRIDGE O. COLLINS,  
Secretary.

STATE OF CALIFORNIA }  
COUNTY OF LOS ANGELES } ss.

I, Holdridge Ozro Collins, Secretary of the Southern California Academy of Sciences, do hereby certify that at the regular meeting of said Academy, held in the City of Los Angeles, County and State aforesaid, on the 29th day of February, 1912, the foregoing Memorial was unanimously adopted.

WITNESS my hand and the Seal of said Academy at said City of Los Angeles, this fourth day of March, 1912.

HOLDRIDGE OZRO COLLINS,  
Secretary.



STOCKHOLMS HÖGSKOLA.

To the President of The Academy of Natural Sciences of Philadelphia:

The University of Stockholm—Stockholm's Högskola—wishes to send to The Academy of Natural Sciences of Philadelphia on its Centenary Anniversary, the most hearty congratulations on the admirable evolution of Natural Science in North America, which has taken place during the past seculum, and in which your Academy has taken such an active part.

Having unfortunately no opportunity of accepting your kind invitation to send a representative, we must confine ourselves to send you in this way our very best wishes.

On behalf of the Senate of the University of Stockholm,  
IVAR BENDIXSON.

Stockholm 11/3/1912.

SVENSKA SÄLLSKAPET FOR ANTROPOLOGI OCH GEOGRAFI.

To The Academy of Natural Sciences of Philadelphia:

The Swedish Anthropological and Geographical Society begs to acknowledge the receipt of your invitation to the Centenary Celebration of the founding of your Academy.

We very heartily rejoice at the occasion for congratulating your Academy, the oldest institution of its kind in America for the pursuit of natural history researches. We send this message to you with all the more eagerness and ardour from the circumstance that your society originated and has flourished in a district of America where fellow-countrymen of ours of an earlier day were among those who first sowed the seeds of civilization.

EMIL EKHOF.

J. G. ANDERSSON	E. W. DAHLGREN	GERARD DEGEER
E. NORDENSKIÖLD	EDW. JÄDERIN	AXEL LAGRELIUS
OSCAR MONTELIUS	A. G. NATHORST	SVEN HEDIN
LOUIS PALANDER	BERNHARD SALIN	HENRIK SANTESSON

AXEL WALLÉN GUNNAR ANDERSSON.

Stockholm, February 22, 1912.

*In a beautiful blue crushed levant ornamented portfolio.*

K. SVENSKA VETENSKAPSAKADEMIEN.

To The Academy of Natural Sciences of Philadelphia:

On the occasion of your esteemed Academy celebrating the One Hundredth Anniversary of her existence, the Royal Swedish Academy of Sciences desires to join the various other scientific societies both in the New World and the Old, who just now direct their congratulation to you.

The connection of scientific interests which exists between your country and our own dates back into the past. Peter Kalm, a pupil of the great Linnæus and a member of our Academy, devoted his researches to the virgin fields, which the people of the United States have converted into one of the world's richest civilized countries. Our published transactions and our archives contain many contributions giving us information concerning the natural productions and conditions of America. Among the thousands of emigrants which our country send you, not a few have made themselves known as scientific students and have thus in their adopted country done credit to the education they have received in the homeland.

The work of American scientists has, here in Sweden, always been studied and appreciated, and has had a most beneficial effect on Swedish scientific work.

For the part your Academy has taken in our efforts we, therefore, desire to express our gratitude, and to wish you continued success in the great field of natural science from which modern culture has reaped such rich harvests.

E. W. DAHLGREN,  
President.

CHR. AURIVILLIUS,  
Secretary.

Stockholm, 28th February, 1912.

*Superbly printed on folio sheet.*

TSENTRALNAIA FIZICHESKAIA OBSERVATORIA NICOLAS.

To The Academy of Natural Sciences of Philadelphia:

The Central Physical Observatory of Nicolas at St. Petersburg begs The Academy of Natural Sciences of Philadelphia to accept the sincerest congratulations of the Observatory on the occasion of the completion of one hundred years of most active devotion to the cultivation of the natural sciences, one branch of which forms the task of the Observatory.

We wish most heartily that the Academy, the oldest institution of the United States for the study of the natural sciences, which has so much contributed to the progress of these sciences, may in the next centuries of activity continue its work with the same success.

Director:  
M. RYKATCHEW  
Vice Director:  
ED. STELLING  
Scientific Secretary:  
E. HEINTZ.

St. Petersburg, 19 March, 1912.

TOKYO GEOGRAPHICAL SOCIETY.

Tokyo, March 9th, 1912.

The Academy of Natural Sciences of Philadelphia:

We return our hearty thanks for your kind letter, inviting us to send a delegate to attend the glorious celebration of the Centenary Anniversary of your Academy. Your Academy, born as it was in the days when Geography was in its cradle, has ever since rendered great services to the progress of the natural sciences in the world. As the celebration assumes the double importance on that account, we should feel very anxious to be present at the celebration if we could. We, however, greatly regret to have to inform that various circumstances hinder us from sending you a delegate of our own.

Again with many thanks for your kind invitation and with our heartfelt wishes that the celebration will prove a great success,

We have the honour to remain, Sir,

KINOSUKE INOUE,  
General Secretary.

R. UNIVERSITÀ DEGLI STUDI, BOLOGNA.

Universitas Litterarum et Artium Bononiensis Academiae Disciplinarum Naturalium quæ abhinc Annos C Philadelphæ condita est, in urbe præclara cuius ipsum nomen et gentes hominum et doctrinas de sororio vinculo monere videtur, modo felicem illum natalem est rite celebratura de expletis ante muneribus partaque laude gratulatur, uberrimos industriæ fructus in posterum exoptat.

LEO PESCI

Rector Universitatis.

X. Kal. Mart. MCMXII.

*Superbly engrossed and decorated on folio parchment sheet.*

UNIVERSITÀ DI TORINO.

Torino, Addì I Marzo, 1912.

Illmo Signor Presidente:

Ho ricevuto il gentile invito da cotesta Accademia di Scienze naturali rivolto alla nostra Università di farsi rappresentare alle Feste che avranno luogo prossimamente in Filadelfia nella ricorrenza del Centenario della fondazione della Accademia stessa.

A nome anche del corpo insegnante di questo Ateneo, che ho l'onore di presiedere, ringrazio vivamente per così delicato pensiero la gloriosa Accademia di Filadelfia, la quale, assai apprezzata anche in Italia, giustamente si propone di celebrare, con la maggiore solennità, la sua secolare esistenza, tuta dedicata al progresso delle Scienze Naturali.

Ma poiché, per la grande distanza, non sarà possibile inviare uno speciale delegato, prego la cortesia della S. V. Illma di voler rappresentare a tali Feste la R. Università di Torino.

Con il maggiore ossequio

Il Rettore

N. RUFFINI

All' Illmo Signor Presidente dell'Accademia di Scienze Naturali Filadelfia.

UNIVERSITÄT HEIDELBERG.

Heidelberg, den 7, März 1912.

Für die freundliche Einladung zu Ihrer Jubelfeier sagen wir herzlichen Dank. Es ist uns zu unsrem lebhaften Bedauern nicht möglich, einen Vertreter unsrer Hochschule zur Ueberbringung unsrer Glückwünsche zu entsenden. So entbietet die älteste Universität des Deutschen Reiches, die Ruperto-Carola, der altherwürdigen Akademie der Naturwissenschaften zur Feier des hundertjährigen Bestehens hiermit die besten Wünsche: Möge es der Akademie vergönnt sein, wie im abgelaufenen Jahrhundert so auch fernerhin die Naturwissenschaften zu pflegen und zu fördern.

Namens der Universität Heidelberg  
v. DUHN  
d. Zt. Prorektor.

The Academy of Natural Sciences of Philadelphia.

K. K. UNIVERSITÄT, WIEN.

AKADEMISCHER SENAT  
DER K. K. UNIVERSITÄT  
WIEN  
Z. 884 ex 1911/12.

Wien, am 23. Februar 1912.

Euer Hochwohlgeboren hatten die Freundlichkeit, die Universität Wien zur Teilnahme an der am 19., 20. und 21 März 1912 stattfindenden hundertjährigen Bestandfeier der Akademie einzuladen.

Leider ist infolge anderweitiger bereits übernommener Verpflichtungen der in Betracht kommenden Persönlichkeiten die Entsendung eines Vertreters zu dem Feste unmöglich geworden und ich muss mich daher begnügen, auf diesem Wege zugleich mit dem Danke der Wiener Universität für die freundliche Einladung auch die besten Glückwünsche zu dieser Feier zu übermitteln.

Der Rektor k. k. Universität:  
REDLICH

To The Academy of Natural Sciences of Philadelphia.

UNIVERSITÄT, ZÜRICH.

Zürich, den 1. März 1912.

Das Rektorat der Hochschule Zürich an die Academy of Natural Sciences of Philadelphia:

Empfangen Sie verbindlichen Dank des unterzeichneten Rektors und des Senates der Universität Zürich für die freundliche Einladung zu dem bevorstehenden 100jährigen Jubelfest Ihrer Academie.

Leider ist es uns nicht vergönnt, uns durch eine persönliche Abordnung an dem Feste vertreten zu lassen; um so mehr drängt es uns, Ihnen unsere besten Glückwünsche darzubringen für die Anerkennung, welche Ihre Academie durch ihre wissenschaftliche und erzieherische Wirksamkeit sich erworben hat. Wir verbinden damit den Ausdruck unseres herzlichen Wunsches und unserer zusehrenden Hoffnung, dass Ihre Academie in gesegneter Weise weiter wirken möge für die Erkenntnis der Wahrheit und für das Wohl des Volkes.

In diesem Streben wissen wir uns mit Ihnen verbunden zu einer von den nationalen Grenzen nicht gehemmten Einheit des Geistes.

Zugleich wünschen wir Ihrem Feste einen glücklichen Verlauf.

Im Namen der Universität Zürich

i. A. Der z. Rektor:

ARNOLD MEYER

Prof. publ. ordin. S.S. Theologiæ Doctor.

UNIVERSITÉ CATHOLIQUE DE LOUVAIN.

Louvain, le 24 fevrier 1912.

Monsieur le Secrétaire:

Je suis chargé d'exprimer à l'Académie des Sciences naturelles de Philadelphie, les remerciements de l'Université de Louvain, pour sa gracieuse invitation aux fêtes du Centenaire de cet illustre Corps savant.

L'Université de Louvain regrette vivement que l'époque choisie pour la célébration de ces fêtes ne permette pas à ses professeurs de s'absenter, et forme ainsi obstacle à l'envoi d'un délégué. Force lui est donc de se borner à s'associer de loin, mais de tout cœur, aux félicitations et aux vœux qui, en ces jours, seront adressés à l'Académie de Philadelphie.

Veillez agréer, Monsieur le Secrétaire, l'assurance de ma haute considération.

Pour le Conseil Rectoral

Le Secrétaire

J. VAN BIERVLIET

A Monsieur le Secrétaire de l'Académie des Sciences Naturelles de Philadelphie.

UNIVERSITÉ DE LYON.

Lyon, le 27 Février 1912.

La jeune Université de Lyon est heureuse d'adresser par delà l'Atlantique son salut le plus cordial à l'Académie des Sciences Naturelles de Philadelphie et d'exprimer à sa sœur aînée Américaine ses sentiments d'affectueuse confraternité et ses félicitations les plus vives à l'occasion des fêtes du Centenaire de cette illustre Compagnie.

Tous les naturalistes d'Europe qui ont visité la grande cité de Philadelphie connaissent, pour les avoir longuement admirées la magnifique bibliothèque de l'Académie des Sciences Naturelles et ses remarquables collections dues à l'initiative et aux travaux de deux savants illustres entre tous dans les annales de la science paléontologique, Jos. Leidy et Edw. Cope. C'est sous les auspices de ces deux hommes éminents que l'Université de Lyon désire placer cette adresse destinée à apporter aux naturalistes de Pennsylvanie, à défaut d'un représentant attitré l'hommage de sa sincère admiration, et de sa plus profonde sympathie.

Le Recteur,

Président du Conseil de l'Université,

P. JOUBIN.

R. UNIVERSITEIT, LEIDEN.

Academiæ Disciplinarum Physicarum Philadelphiensi S. p. d. Universitatis  
Lugduno-Batavæ Rector et Senatus.

Quod nos ad ferias sæculares mense Martio Vobis celebrandas invitatis  
insigni nos a Vobis affectos honore penitus sentimus. Quo magis dolemus quod  
magnum terrarum mariumque spatium quominus humanissima illa invitatione  
utamur obstat. Sed quamquam lactis illis diebus e nostro munero nemo istuc  
legari poterit, tamen omnes mente animoque tunc Vobiscum gaudebimus. Et  
iam nunc pro illustri Vestra Academia ex animi sententia vota suscipimus  
solemnia.

Vivat, crescat, floreat et facem humanitatis præferre omnibus pergat quibus  
bonæ artes cordi sunt!

Lugd. Batav. die XXVII Menis Februarri MCMXII

F. PIJPER  
Rector magnificus.  
B. D. ERDMANS,  
Actuarius.

*On folio sheet with seal of University.*

UNIVERSITY OF CAMBRIDGE.

Registry of the University of Cambridge, England, 14 March, 1912.  
To the President of The Academy of Natural Sciences of Philadelphia.

Sir:

I have the honor to inform you that the Senate of the University at a  
congregation held this day in the Senate House appointed Ernest William  
Brown, Doctor of Science, formerly Fellow of Christ's College, Professor of  
Mathematics in the University of Yale, to represent the University at the  
Centenary Anniversary of the Academy of Natural Sciences of Philadelphia in  
March, 1912.

I have the honor to be, Sir,

Your obedient Servant

JOHN NEVILLE KEYNES,  
Registrar.

*Seal.*



## UNIVERSITY OF CINCINNATI.

Office of the President.

The President and Faculties of the University of Cincinnati acknowledge, with much appreciation, the invitation to be represented at the celebration of the One hundredth Anniversary of the Academy of Natural Sciences of Philadelphia. They regret that it is not possible to send a delegate to convey to the members of the Academy their hearty congratulations upon the completion of one hundred years of noble service, and their cordial good wishes for the successful continuation of its important work.

The twentieth of March, Nineteen Hundred and Twelve.

## UNIVERSITY OF COLORADO.

The University of Colorado begs to convey to The Academy of Natural Sciences of Philadelphia its most sincere congratulations on the occasion of the Centenary of the Academy. At a time when our State was a wilderness unvisited by scientific men, the Academy was laying the foundations of American Biological Science. During the past century its unceasing activities have contributed enormously to the knowledge of the fauna and flora of the West. We hope that the Academy will enjoy even greater prosperity in the future than it has in the past, and that the coming century will see active cooperation between it and our developing western institutions.

*Beautifully engrossed.*

UNIVERSITY OF EDINBURGH.

20th March, 1912.

Dear Sir:

On behalf of the Senatus Academicus of the University of Edinburgh, I beg to convey cordial thanks to The Academy of Natural Sciences of Philadelphia for the invitation to be represented at the Celebration of the Academy's Centenary Anniversary. I am to say that the Senatus greatly regret that the invitation did not reach them in sufficient time to enable them to arrange for the attendance of Delegates.

The Senatus send their warm congratulations to the Academy on the auspicious occasion and their best wishes for the Academy's future prosperity, and they trust the Celebrations are being carried through with the greatest success.

Yours faithfully,

L. J. GRANT,

Sec. Sen. Acad.

Corresponding Secretary, The Academy of Natural Sciences of Philadelphia.

UNIVERSITY OF NOTRE DAME.

Notre Dame, Indiana, June 1, 1912.

TO THE SECRETARY OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

*Sir:* The Centenary of The Academy of Natural Sciences of Philadelphia offers an appropriate and most welcome occasion to express the admiration which the University of Notre Dame has always entertained for the work of that distinguished body. The history of its activities during the hundred years of its existence shows its connection with so many of the great achievements and its services to individuals and causes have been so great and so many that the story of the Academy must have an important place in any history of scientific development in the nineteenth century.

Its work has been done unselfishly and in a spirit of high devotion to the advancement of learning and the profit of humanity. For this reason the world of learning acclaims it in its centenary year and wishes it continued power in its beneficent mission.

The University of Notre Dame feels it an honor to associate itself with the great schools that pay tribute to this venerable Academy.

Very truly yours,

JOHN CAVANAUGH, C.S.C.,  
*President.*

UNIVERSITY OF PENNSYLVANIA.

The Provost, Trustees, and Faculties of the University of Pennsylvania cordially congratulate The Academy of Natural Sciences of Philadelphia on its Centennial Celebration to be held upon March 19th to 21st, and extend their best wishes upon this auspicious occasion.

The Provost has commissioned Josiah Harmar Penniman, Ph.D., LL.D., the Vice Provost of the University, to represent it at the ceremonies and to be the personal bearer of its congratulations.

(Seal)

EDWARD ROBINS,  
Secretary to the Board of Trustees.

Philadelphia, Pa., March 19th, 1912.

UNIVERSITY OF PITTSBURGH.

The University of Pittsburgh extends its greetings and congratulations to the Academy of Natural Sciences of Philadelphia upon the completion of one hundred years of its honorable and useful career and expresses its best wishes for greater prosperity and an enlarged sphere of achievement during the coming years in the important field which it occupies.

Samuel Black McCormick, Chancellor, William Jacob Holland, former Chancellor, and George Hubbard Clapp, President of the Board of Trustees, are appointed delegates of the University at the Centennial Anniversary and are authorized to present these greetings.

SAMUEL BLACK McCORMICK,  
Chancellor.

S. B. LINHART,  
Secretary.

Pittsburgh, Pennsylvania, March Eighteenth, Nineteen Hundred and Twelve.

UNIVERSITY OF VIRGINIA.

University of Virginia, March 12, 1912.

The President and Faculty of the University of Virginia desire to present to The Academy of Natural Sciences of Philadelphia their hearty congratulations on the completion of a century of scientific activity and achievement. Founded at a time when the study of nature in this country was followed by but few students, and organized societies for the advancement of such study were in existence at but two or three widely separated points, the Academy has held an honorable place and has contributed largely to the results of scientific research in America. May the second century of its existence be marked by as vigorous and fruitful life as that which closes so auspiciously.

EDWIN A. ALDERMAN,  
President.

## C. K. UNWERSYTET IMIENIA CESARZA FRANCISZKA I LEMBERG.

The Rector and the Senate of the Unwersytet imienia cesarza Franciszka I in Lemberg have the honor hereby to transmit their sincere congratulations and the expressions of highest esteem and respectful friendship to The Academy of Natural Sciences of Philadelphia, on the day when the Academy is celebrating the joyful event of its Centenary Anniversary.

The University of Lemberg is one of the only two surviving Polish universities, while the places of learning in other parts of Poland have been destroyed by foreign tyrannic force and oppression.

The University sympathizes deeply with the Academy, as one of the most ancient and most renowned scientific institutions of the New World, not only because of the common bond of affinity, uniting the learned societies and institutions of all countries and all nations, but also because the Academy is a representative of the Country of Freedom.

May the Academy continue the scientific work which has made famous its name all over the world, and may Science contribute towards raising of mankind from tyrannic barbarism to real humanity.

Lemberg, March 10th, 1912.

L. FINKEL,  
Rector of University.

The Academy of Natural Sciences of Philadelphia.

VEREIN FÜR VATERLÄNDISCHE NATURKUNDE IN WÜRTTEMBERG.

Stuttgart, den 16 Februar 1912.

Academy of Natural Sciences of Philadelphia:

Indem ich für die ehrenvolle und freundliche Einladung zur 100-Jahrfeier Ihrer Gesellschaft meinen verbindlichsten Dank ausspreche, möchte ich mir erlauben, namens des Vereins für vaterländische Naturkunde in Württemberg Ihrer Akademie die wärmsten Glückwünsche zu dieser Feier auszudrücken. Mit Stolz kann Ihre Akademie auf die hundertjährige Tätigkeit zurückblicken, in welcher sie für die wissenschaftliche Durchforschung der Vereinigten Staaten so Ausserordentliches geleistet hat. Seien Sie überzeugt, dass auch unsere Gesellschaft Ihre Bestrebungen im vollsten Maasse anerkennt und Sie zu Ihren Erfolgen beglückwünscht.

Leider ist es mir nicht möglich, persönlich unsere Glückwünsche zu überbringen, und ich bitte deshalb, dieselben auf diesem Wege anzunehmen.

Mit dem Ausdruck vorzüglicher Hochachtung  
Der Vorsitzende des Vereins  
für vaterländische Naturkunde in Württemberg

PROFESSOR DR. E. FRAAS.

VEREIN ZUR VERBREITUNG NATURWISSENSCHAFTLICHER KENNTNISSE  
IN WIEN.

IV., k. k. technische Hochschule.

An die Academy of Natural Sciences of Philadelphia:

Der Verein zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien sendet The Academy of Natural Sciences of Philadelphia zur 100 Jahrfeier die besten Glückwünsche.

In den ersten Jahrzehnten des Bestandes der Vereinigten Staaten, als erste naturwissenschaftliche Gesellschaft daselbst gegründet, hat The Academy of Natural Sciences of Philadelphia bis heute in ausgedehntem Masse die naturwissenschaftliche Erkenntnis in ihrem Vaterlande gefördert und sich dadurch grosse Verdienste erworben. Dass diese bedeutende Tätigkeit der Academie noch recht lange andauern möge, wünscht unser Verein aufrichtigst.

HOFR. PROF. DR. FRANZ TOULA,  
1st Vice Präsident.

Wien, am 23. Februar 1912.

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, PHILADELPHIA.

To the Academy of Natural Sciences of Philadelphia:

The Wistar Institute of Anatomy and Biology extends its felicitations and congratulations to The Academy of Natural Sciences of Philadelphia and, owing to the close affiliation which exists between the two institutions, joins with special satisfaction in the celebration of the Centenary Anniversary.

On this occasion, The Wistar Institute delegates its Director as the Representative to take part in these festivities.

EDGAR F. SMITH,  
President  
MILTON J. GREENMAN,  
Secretary.

March 19, 1912.

K. K. ZOOLOGISCH-BOTANISCHE GESELLSCHAFT, WIEN.

111/3, Mechelgasse Nr. 2.

To The Academy of Natural Sciences of Philadelphia:

The K. K. Zoologisch-Botanische Gesellschaft sends by the present her cordial congratulations for the honourable commemoration to the Academy of Natural Sciences of Philadelphia.

On this occasion she thinks thankfully on the great merits which the Academy has acquired for the advancement of the science in general and the organization of scientific works in North America and joins in the sincere wishes for the future and begs of continuation of the cordial relations.

Vienna, the 8th March, 1912.

Das Präsidium der K. K. Zoologisch-Botanischen Gesellschaft.

PROF. DR. R. v. WETTSTEIN,  
Praesident.  
DR. FRANZ OSTERMEYER  
Vice Praesident.



ZOOLOGISCHE GESELLSCHAFT, HAMBURG.

Hamburg, den 15 Febr. 1912.

Mit dem Ausdruck verbindlichsten Dankes bestätigt die Zoologische Gesellschaft in Hamburg die Einladung zur Beteiligung an der Feier des hundertjährigen Jubilaeums der Academy of Natural Sciences of Philadelphia,—Die Zoologische Gesellschaft wird leider nicht in der Lage sein durch einen Vertreter an diesem Ehrentage teilzunehmen und der Jubilarin ihre aufrichtigsten Glückwünsche zu übermitteln. Sie bittet dies zu entschuldigen und auf diesem Weg die Versicherung entgegenzunehmen, dass ihre besten Wünsche für ein ferneres Blühen und Gedeihen die Academy in das zweite Jahrhundert ihres Bestehens begleiten.

Die Zoologische Gesellschaft in Hamburg. Der Vorstand.

PROF. DR. F. VOSSELER.

The Academy of Natural Sciences of Philadelphia.

K. ZOOLOGISCHES UND ANTHROPOLOGISCH-ETHNOGRAPHISCHES MUSEUM.

Dresden A, Zwinger, 13 Februar 1912.

An die Academy of Natural Sciences Philadelphia:

Mit Interesse habe ich davon Kenntnis genommen, dass die Academy, eine der ältesten Pflanzstätten der Naturwissenschaften in der Neuen Welt, demnächst die Feier ihres 100jährigen Bestandes begehen wird. Wenn ich auch nicht in der Lage bin, die Glückwünsche der von mir geleiteten Anstalt selbst zu überbringen, so benutze ich doch die mir gütigst übermittelte Einladung dazu, um Ihrer Körperschaft meine Freude über die Vollendung jenes Zeitabschnittes auszusprechen, zugleich mit dem Ausdrucke meiner wahren Verehrung für die währenddem von ihr zutage geförderten grossen Leistung auf unserem gemeinsamen Arbeitsgebiete. Ich knüpfe daran den aufrichtigen Wunsch, dass die weitere Entwicklung der Academy ihr jederzeit erlauben möge, ihren selbstgesteckten Zielen mit gleicher Tatkraft und mit denselben schönen Erfolgen nachzustreben, wie es im verflossenen Jahrhundert der Fall war.

In aller Hochschätzung

A. JACOBI  
Direktor.

Other letters were received from the following:

R. ACADEMIA DE CIENCIAS Y ARTES DE BARCELONA. Louis M. Vidal, President.

ACADEMIA NACIONAL DE HISTORIA, BOGOTÁ. Pedro M. Haüer.

ACADÉMIE D'ARRAS. G. Acrement, President.

ACADÉMIE DES SCIENCES INSCRIPTIONS ET BELLES-LETTRES DE TOULOUSE. Henri Duméril, Secrétaire perpétuel.

R. ACCADEMIA DEI FISIOCRITICI, SIENA. Prof. Dominico Barduzzi, President.

ACCADEMIA SCIENTIFICA VENETO-TRENTINO-ISTRIANA, PADOVA. Prof. G. Dal Piaz, President.

R. ACCADEMIA DELLE SCIENZE DI TORINO. Charles Sedgwick Minot.

R. ACCADEMIA DI SCIENZE, LETTERE ED ARTI, MODENA. Francesco Nicoli, President.

AMERICAN ACADEMY OF ARTS AND SCIENCES, BOSTON. Edwin H. Hall, Corresponding Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY. S. J. Meltzer, President; A. J. Carlson, Secretary.

K. ANATOMISCHES INSTITUT, HALLE A S. W. Roux.

ANTHROPOLOGICAL SOCIETY OF BOMBAY. Jivanji Jamshedji Modi, Hon. Secretary.

ARCHÆOLOGICAL INSTITUTE OF AMERICA, Pennsylvania Society. George Barton, Secretary.

ASIATIC SOCIETY OF BENGAL, CALCUTTA. G. H. Tipper, Hon. Secretary.

Lord Avebury, London.

Ayers, Howard, Cincinnati.

Baltzer, A., Bern.

Barrois, Charles, Paris.

BATAAFSH GENOOTSCHAP DER PROEFONDERVINDELIJKE WIJSBEGEERTE TE ROTTERDAM. Dr. R. H. van Dorsten, 1st Secretary.

K. BAYER. JULIUS-MAXIMILIANS-UNIVERSITÄT, WÜRZBURG. Karl Bernhard Lehman, Rector.

K. BAYER. OBERBERGAMT, MÜNCHEN. Ludwig v. Ammon.

Bedel, L., Paris.

BERLINER ENTOMOLOGISCHER VEREIN. Paul Schulz, Secretary.

BILTMORE HERBARIUM. C. D. Beadle, Director.

BIOLOGISCHE VERSUCHSANSTALT IN WIEN. H. Przibram, Director.

R. BOTANIC GARDEN, CALCUTTA. A. T. Gage, Superintendent.

R. BOTANIC GARDENS, KEW. D. Prain, Director.

R. BOTANIC GARDENS, PERADENIYA, CEYLON.

Boulenger, G. A., London.

Brady, Dr. G. S., Sheffield.

Branner, John Casper, Stanford University.

Britton, N. L., New York.

BROWN UNIVERSITY, PROVIDENCE. W. H. P. Faunce, President.

Brunton, Sir Lauder, London.

BUREAU OF SCIENCE, MANILLA. Richard P. Strong.

CALIFORNIA STATE MINING BUREAU, SAN FRANCISCO. W. H. Storms, State Mineralogist.

Capellini, Prof. Giovanni, Bologna.

CARDIFF NATURALISTS' SOCIETY. William Sheen, President.

CARNEGIE INSTITUTE OF PITTSBURGH. W. N. Frew, President; S. H. Church, Secretary.

CARNEGIE INSTITUTION OF WASHINGTON, STATION FOR EXPERIMENTAL EVOLUTION, COLD SPRING HARBOR.

Cartailhac, Emile, Toulouse.

CENTRO DE CIENCIAS, LETRAS E ARTES, CAMPINAS.

Chantre, Ernest, Fontville, par Ecully, Rhône.

CLUB ALPIN DE CRIMÉE ET DU CAUCASE, ODESSA. E. Molthanoff, Vice-President; A. Alexejev, Secretary.

CLUB ALPIN SUISSE. Charles Maerky, Secretary.

Cockerell, Theo. D. A., Boulder, Colorado.

Collett, R., Christiania.

COLORADO COLLEGE, COLORADO SPRINGS. Jonathan A. Rorer, Ph.D.

Cooke, M. C., London.

DANISCHE LABORATORIUM FÜR SÜSSWASSER BIOLOGIE. D. Wesenburg-Lund, Director.

DANSK BOTANSK FORENING, KOBENHAVN. L. Kolderup Rosenvinge, President.

DANSKE BIOLOGISK STATION, KOBENHAVN. C. G. Joh. Petersen.

K. DANSKE VIDENSKABERNES SELSKAB, KOBENHAVN. H. G. Zeuthen, Hon. Secretary.

DAVENPORT ACADEMY OF SCIENCES. J. H. Paarman, Secretary.

DELAWARE VALLEY ORNITHOLOGICAL CLUB. Samuel C. Palmer, Sec. pro tem.

DEPARTMENT OF AGRICULTURE, CAPE TOWN.

DEPARTMENT OF AGRICULTURE, KINGSTON. H. H. Cousins, Director.

DEPARTMENT OF AGRICULTURE, TRINIDAD AND TOBAGO. W. G. Freeman, Asst. Director.

DEPARTMENT OF COMMERCE AND LABOR, BUREAU OF FISHERIES, WASHINGTON, D. C. George M. Bowers, Commissioner.

DEPARTMENT OF COMMERCE AND LABOR, COAST AND GEODETIC SURVEY, WASHINGTON, D. C. O. H. Tittmann, Superintendent.

DEPARTMENT OF MINES, PERTH. H. L. King, Secretary.

DEUTSCHE MIKROLOGISCHE GESELLSCHAFT, MÜNCHEN. Rl. Francé.

DEUTSCHER VEREIN ZUM SCHUTZE DER VOGELWELT, GERA-REUSS. Dr. Hennicke.

DEUTSCHER UND OESTERREICHISCHER ALPENVEREIN, WIEN. Dr. Duges.

cxxxvi PROCEEDINGS OF THE CENTENARY MEETING.

ÉCOLE NATIONALE D'AGRICULTURE DE MONTPELLIER. Paul Ferrouillat, Director.

ENTOMOLOGICAL SOCIETY OF ONTARIO. F. M. Webster.

ESSEX INSTITUTE, SALEM. George Francis Dow, Secretary.

FIELD NATURALISTS' CLUB, BRISBANE. C. W. Holland, Hon. Secretary.

Forel, Dr. A., Yverne.

FRIEDRICH WILHELMS-UNIVERSITÄT, BERLIN. M. Lenz, Rector.

Fürbringer, Max., Heidelberg.

Geikie, Archibald, London.

GEOLOGICAL SOCIETY OF SOUTH AFRICA, JOHANNESBURG. W. W. R. Jags, Asst. Secretary.

GEOLOGICAL SOCIETY OF TOKYO. N. Yamasaki, Hon. Secretary.

GEOLOGICAL SURVEY OF INDIA, CALCUTTA.

R. GEOLOGISCH-MINERALOGISCH MUSEUM, LEIDEN. K. Martin.

GESELLSCHAFT FÜR ERDKUNDE, BERLIN. Alb. Penck, Vorsitzender.

GESELLSCHAFT FÜR ERDKUNDE ZU LEIPZIG. Herm. Reishauer, Secretary.

GESELLSCHAFT VON FREUNDEN DER NATURWISSENSCHAFTEN, GERA-R. Fr. Moos, Anton Renz, With. Israël, Franz Weise, Ernst Kretschmer, Alfred Auerbach.

GESELLSCHAFT FÜR MORPHOLOGIE UND PHYSIOLOGIE, MÜNCHEN. Ludwig Neumayer, M.D., President.

GESELLSCHAFT FÜR NATUR- UND HEILKUNDE ZU DRESDEN. Prof. Dr. Rietschel, Secretary.

GESELLSCHAFT FÜR VOELKER- UND ERDKUNDE ZU STETTEN. G. Buschan, President.

Gill, Dr. Theo. N., Washington, D. C.

Godman, F. D., Horsham.

GÖTEBORGS MUSEUM. Carl Lagerburg, Director.

Goldschmid, V., Heidelberg.

Gosselet, J., Lille.

GOVERNMENT FISHERIES BUREAU, TUTICORIN. James Hornell, Superintendent.

GOVERNMENT MUSEUM, MADRAS.

Graff, L. v., Graz.

Grant, Sir James, Ottawa.

GUERNSEY SOCIETY OF NATURAL SCIENCE. T. W. M. de Guerin, President.

Haeckel, Ernst, Jena.

Herculais, Jules Künckel d'.

Hertwig, Richard, München.

Hirase, Y., Kyoto.

HIRNANATOMISCHES INSTITUT, ZÜRICH. Constantin v. Monakow, Director.

Hochstetter, A., Wien.

Hoernes, Moritz, Wien.

Hoyle, William Evans, Cardiff.

Hubrecht, A. A. W., Utrecht.

HYGIENIC LABORATORY, WASHINGTON, D. C. John F. Anderson, Director.

INDIAN MUSEUM, CALCUTTA. N. Annandale, Secretary.

INSTITUT GÉNÉRAL PSYCHOLOGIQUE, PARIS.

INSTITUT NATIONAL GENEVOIS. B. P. C. Hochreutiner, Secretary.

INSTITUTE OF JAMAICA, KINGSTON. Frank Cundall, Secretary.

INSTITUTO GEOLOGICO DE MEXICO. José G. Aguilera, Director.

INSTITUTS SOLVAY, BRUXELLES. Emile Wexweiler, Director.

INSTITUTUL GEOLOGIC AL ROMÂNIEI, BUCUREȘTI. V. Popovici-Hatzeg,  
Director.

IOWA ACADEMY OF SCIENCE, DES MOINES.

R. IRISH ACADEMY, DUBLIN.

JARDIN IMPÉRIAL DE BOTANIQUE DE ST. PÉTERSBOURG. A. Fischer de  
Waldheim, Director.

Judd, John W., Kew.

JUGOSLAVENSKE AKADEMIJE ZNANOSTI I UMJETNOSTI, ZAGREB. Dr. A.  
Musić, Secretary.

K. K. KARL FRANZENS-UNIVERSITÄT, GRAZ. Franz Hauke, Rector.

KJOBENHAVNS UNIVERSITET. F. Buhl, Rector.

Lang, Arnold, Zürich.

Lankester, Sir Ray, London.

K. LEOPOLDINISCH-CAROLINISCHE DEUTSCHE AKADEMIE DER NATURFOR-  
SCHER, HALLE. A. Wangcrin, President.

Libbey, William, Princeton.

LUNDS UNIVERSITET, LUND. Axel Koch, Principal.

K. LYZEUM HOSIANUM ZU BRAUNSBURG. Jos. Kolberg, Rector.

A. MAGYAR NEMZETI MÚZEUM IGAZGATÓSÁGA, BUDAPEST. v. Szálay  
Imre, Director.

A. M. NEMZETI MÚZEUM, ZOOLOGICAL SECTION. Geza Horváth, Director.

KIR. MAGYAR TUDOMÁNY-EGYETEM, BUDAPEST. I. Fröhlich, Rector.

MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY. R. F. Hinson, Asst.  
Sec.

MARLBOROUGH COLLEGE NATURAL HISTORY SOCIETY. Edward Meyrich,  
President.

Martin, K., Leiden.

MINERALOGICAL SOCIETY, LONDON. George T. Prior, Hon. General Secre-  
tary.

MIRAMICHI NATURAL HISTORY ASSOCIATION, CHATHAM, N. B. J. Baxter,  
Corresponding Secretary.

Monterosato, Marchese de, Palermo.

Montgomery, Thomas L., Harrisburg.

Morgan, C. Lloyd, Bristol.

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ZOOLOGISCHE STATION, NAPLES.

Acknowledgment of these communications was made as follows, embodying the action of the Academy taken at the meeting of April 16, 1912:

*Resolved:* That THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA finds much encouragement and stimulus in the expressions of cordial congratulation and recognition of its labors that reached it on the occasion of the celebration of the Centenary Anniversary of its Foundation.

*Resolved:* That the Corresponding Secretary be instructed to convey to corresponding institutions and members an expression of the Academy's warm gratitude for their appreciation and courtesy.

SAMUEL G. DIXON,  
President.

J. PERCY MOORE,  
Corresponding Secretary.  
EDWARD J. NOLAN,  
Recording Secretary.

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