

The Academy is indebted to Mr. S. Raymond Roberts for a fine crayon portrait, properly framed, of the late Geo. W. Tryon, Jr. whose long continued services to the society richly merit such a memorial.

Respectfully submitted,

EDW. J. NOLAN,

Librarian.

REPORT OF THE CURATORS.

The Curators present the following statement of the Curator-in-Charge as their report for the year 1890:—

The Curator-in-Charge respectfully reports that the collections of the Academy, in so far as their state of preservation is concerned, are in a satisfactory condition, probably more so than at any previous time in the past decade. But if satisfactory in this important respect, they suffer largely and increasingly through lack of room for their proper display. The additions to the Museum, since the occupancy by the Academy of its present building, have been so numerous and so varied that they have far outstripped the possibilities of location, and to-day it is no longer permitted to carry out that system of orderly classification and arrangement which is a necessity with every large museum of natural history. The steady growth of the collections is an encouraging sign of the increased attention that is given to the study of the natural sciences, and it cannot but be a satisfaction to all friends of the Academy, and a matter of just pride to the citizens of Philadelphia, that the institution which was the first one founded in this country for the exclusive purpose of furthering a knowledge of nature, has been able, after an existence of three-quarters of a century, to still claim the first place in the appreciation of students. That it will continue to hold its own, is amply indicated by the numerous benefits which its patrons and friends generously bestow upon it; but whether the Academy will be able to adequately respond to these benefits, will depend largely upon the helping hand which, it is hoped, an appreciative public will extend to it.

The Academy is to-day laboring to increase the capacity of its domicile. The grant of \$50,000 made by the Legislature of the State during the session of 1889, has permitted it to definitely realize a scheme of enlargement, which, when fully carried into ex-

ecution, will supply that need from which the institution at present most suffers. The contemplated new building (of which perspective view, ground-plan and section are appended to this report), will, when completed, cover a surface area of approximately 23,000 square feet. The main structure will be of rectangular form, with a frontage on Nineteenth Street of 150 feet, and on Cherry Street of 130 feet. Four tiers of galleries, each 32 feet in width, will surround an open central hall, to which unbroken illumination will be afforded by an arched glass roof, springing at a height of 80 feet above the floor. A two-story building, measuring 57 by 49 feet, and containing a lecture amphitheatre designed to accommodate 600 persons, will connect the new structure with the edifice now occupied by the Academy. Active work on this "connecting museum" is now in progress, and it is expected that the structure will be ready for occupancy in the beginning of spring. With the prospect of early carrying to completion the main building it has been deemed advisable, even in the absence of the funds needed to fully erect the structure, to begin work on it at once, and the foundation course has now been laid.

The plans, in accordance with which the new Academy building is to be constructed, were reported from the Board of Trustees of the Building Fund and the special Committee on Plans (appointed November 5th) at a meeting of the Academy held on November 26th, 1889, and were definitely approved by the Academy at the following meeting, December 3d. They are drawn by Mr. John H. Windrim, architect, and contemplate an expenditure in construction of \$239,000. The needs of the Academy make it highly important that this amount be secured, and it is sincerely hoped that the desired funds may be provided at as early a day as possible. Delay in the completion of the building must prove seriously hurtful to the institution and to the interests to which it ministers.

The new edifice will constitute one of the architectural features of Philadelphia; and it is not too much to say that it will surpass any other museum building in the country. In evidence of this, attention is called to the engraving (elevation on Nineteenth Street), in which the comparative dimensions of the present and proposed structures are clearly shown.

The routine work in the museum during the past year has been much as in previous years. As heretofore, the Academy has profited largely through the work of volunteer specialists, and is thus

placed under special obligation to those who have generously contributed their time and assistance. To Mr. John H. Redfield, the Conservator of the Herbarium, and to Mr. Thomas Meehan, the Academy is indebted for the greater part of the systematic work that is being done toward the expansion and proper distribution of the botanical collections; similarly, to the officers of the Entomological Section and the American Entomological Society, it is placed under obligation for work done in connection with the department of Entomology.

In the early part of the year the Curator-in-Charge was designated as the head of a scientific expedition to Yucatan and Mexico, having for its special purpose the exploration—geological, zoölogical, and botanical—of much of the still unexplored sections of the Mexican Republic. The party as organized consisted of, besides the Curator-in-Charge, Messrs. J. E. Ives, Witmer Stone, Roberts Le Boutillier, and Frank C. Baker. The greater part of four months was passed in exploration, and a rich harvest of facts and material was secured for the Academy. A special report covering the general results of the expedition is herewith appended. Attention has already been called in previous reports to the value of this form of scientific research, and too much emphasis cannot be laid upon the advisability of endowing a moderate zoögeographical research fund, the interest from which should be annually applied to exploration of the numerous regions which still await investigation. In no better way, it is believed, could the good of science be subserved, and the general interests of the Academy promoted.

As in previous years, the entire collection of alcoholics has been carefully examined and overhauled, and it is a satisfaction to be able to state that but few removals were found to be necessary. The same satisfactory condition characterizes the collection of birds, which has received much attention from Mr. Witmer Stone, Jessup Fund beneficiary. The Conchological department continues to receive the energetic services of Mr. H. A. Pilsbry, its Conservator, and it is encouraging to know that, despite the comparatively small expenditure of money which its maintenance involves, it still retains its position as the first collection of the kind in the world. The number of trays of mounted specimens in this department is now upwards of 61,000. Through the hearty co-operation of the American Conchologists' Association, and the special endeavors of the President of that Association, Mr. John H. Camp-

bell, much new material, intended to illustrate the complete malacological fauna, fossil as well as recent, of the United States, has been received, and the hope is held out that before very long this important series may be fully established.

The department of the Academy which is to-day perhaps most deficient is that of Mammalogy. This department has been in a practically stationary condition for a number of years past; but latterly the generosity of the Zoological Society of Philadelphia, acting under the authority of its able Director, Mr. Arthur Erwin Brown, has permitted a number of important lacunæ to be filled by the contribution of much important material that could be furnished only by an institution of its kind. Through its assistance the Academy has added very largely to the collections of osteology and comparative anatomy, which are now in a fair way to become leading features of the museum.

Among the donations which it has been the pleasure of the Academy to receive during the past year, is the highly valuable collection of fresh-water sponges made by one of its members, Mr. Edward Potts—without doubt the most comprehensive collection of the kind in the world. It comprises specimens of all the species that have heretofore been discovered or described, and is doubly valuable as being presented by the principal expounder in this field of zoölogical inquiry.

The type microscopic slides (several hundred in number), prepared by Mr. Potts in the course of his investigations, are a part of this donation.

In departments of the Academy not previously specified, the work done has been mainly of a general character. It is a pleasure, in this connection, for the Curator-in-Charge to express his obligations to his able assistant, Mr. J. E. Ives, who continues to render valuable service in the general care and management of the museum.

Specimens for study have been loaned during the year to Prof. W. B. Scott, of Princeton; to Dr. G. Baur, of the Clark University, Worcester, and to Mr. Daniel Giraud Elliot, of New York.

With the view of bringing the Academy into closer contact with its friends and patrons, and to more freely illustrate the nature of its work, it has been thought desirable by many to inaugurate a series of evening gatherings or receptions, at which the representatives of different professions and walks of life might meet in social converse. Two such receptions, under the direction of a specially-

appointed Reception Committee, were held in the early part of the year, and one in December, and their success fully testifies to the wisdom of the course suggested, and justifies the continuance of the same in the coming year. No expense is entailed upon the Academy as a body, the subscriptions to the Reception Fund being borne individually by such members of the institution as wish to participate in the meetings.

Respectfully submitted,

JOSEPH LEIDY,

ANGELO HEILPRIN,

Ch'n Curators.

Curator-in-Charge.

REPORT ON THE OPERATIONS OF THE EXPEDITION TO YUCATAN
AND MEXICO.

The Chief of the expedition, organized under the auspices of the Academy, for the exploration of Yucatan and Mexico, presents the following brief *résumé* of the operations which were conducted under his charge. The expedition, consisting of the undersigned, and of Messrs. J. E. Ives, Roberts Le Boutillier, Witmer Stone and Frank C. Baker, sailed from New York on February 15th, arriving at Progreso, Yucatan, on the 22d of the same month. A full month was spent in the exploration of the northern portion of the peninsula, the operations of the party extending to Calcehtok, on the southwest, to Labna, on the south, to Tunkas, on the east, and to the Port of Silam, on the north. The wonderful caves (Calcehtok, Loltun) and ruins (Uxmal, Labna) of the first range of mountains were incidentally visited, and collections of various kinds made at almost all points touched by the expedition; some little dredging was also done off the coast at Progreso. Headquarters were established for ten days in the railroad camp of Col. John W. Glenn, constructing engineer of the railroad connecting Tekantó with Izamal, where the most liberal hospitality was extended to the members of the party, and facilities furnished for the prosecution of their work. To the generosity and courtesy of Colonel and Mrs. Glenn the expedition is largely indebted for the success of its Yucatan explorations.

On the 23rd of March the expedition sailed from Progreso to Vera Cruz, the remainder of the explorations, extending into June, being conducted in major Mexico.

The route of travel embraced the principal sites of (recent) volcanic activity in the Republic, and thus permitted of a close ex-

amination of the physiographical and biological features of some of the most gigantic volcanic summits on the surface of the earth. The four highest mountains of the Republic were ascended by two or more members of the party within the limited period of three weeks, and thus a good opportunity was afforded for testing relative (altitude) values by means of the barometer. The order of the ascents was as follows: The peak of Orizaba, 6th and 7th of April; Popocatepetl, 16th and 17th of the same month; Nevado de Toluca, on the 21st, and Ixtaccihuatl, on the 26th and 27th. The determinations of altitude have been recorded in a paper published in the October issue of the Proceedings of the Academy.

Some little exploration was made of the lake and valley region of the capital city; but the most important work was accomplished along the eastern and southern face of the central plateau, or in the great contour comprised between Jalapa and the volcano of Jorullo, on the Pacific slope. The edge of the plateau was crossed and recrossed at several points, and it was thus possible to fix definitely the structural relations of one of the most remarkable orographic features on the American continent. The quarries of the famous Mexican onyx, lying in the mountain fastnesses southwest of Tehuacan, were visited, and the geological relations of the peculiar marble ascertained. The ten days immediately preceding the departure from Mexico were devoted to a zoölogical reconnoissance of the ocean-front about Vera Cruz, and to the exploration of the outlying coral reefs.

It is not yet possible to recite fully the scientific results of the Academy's expedition, inasmuch as a considerable part of the material and data obtained by it still awaits study and examination. But it is certain that they have fully met the expectations of the principal promoters of the enterprise, even if it cannot be said that the success was equal in all the special departments which the expedition attempted to cover. Among the more important results obtained may now be mentioned:

1. The determination of the geological features of Yucatan.
2. The discovery (at least to science) of the existence of extensive coral reefs in the western waters of the Gulf of Mexico.
3. The determination of the culminating point of the Mexican Republic, which is also the culminating point of the North American Continent.

4. The determination of the principal geological features of the Republic.

Much of the zoölogical and botanical material obtained by the expedition is new either to science or to the Academy's collection, and thus makes most valuable additions to the museum. The elaboration of this material has been confided to special investigators, whose reports (some of them already either printed or in preparation) will appear in the Proceedings of the Academy, and in a final publication dealing with the explorations generally.

The following papers have already been issued by the Academy:

"Birds collected in Yucatan and Southern Mexico." By Witmer Stone.

"Barometric Observations among the High Volcanoes of Mexico, with a Consideration of the Culminating Point of the North American Continent." By Angelo Heilprin.

"The Corals and Coral Reefs of the Western Waters of the Gulf of Mexico." By Angelo Heilprin.

"Echinoderms from the Northern Coast of Yucatan and the Harbor of Vera Cruz." By J. E. Ives.

"The Geology and Paleontology of the Cretaceous Deposits of Mexico." By Angelo Heilprin.

"Notes on a Collection of Shells from Southern Mexico." By Frank C. Baker.

Other papers now in course of preparation will appear during the early part of the year.

Respectfully submitted,

ANGELO HEILPRIN.

REPORT OF THE BIOLOGICAL AND MICROSCOPICAL SECTION.

During the year 1890 this Section has held fifteen meetings.

Dr. Samuel G. Dixon has been elected a member.

Several papers of interest have been read at the joint sessions with the Academy, and interesting verbal communications have been made by Messrs. Sharp, Ryder, Rex, Wingate, Sudduth and others.

The officers elected to serve for the ensuing year are as follows:—

<i>Director</i> ,	Dr. Benjamin Sharp.
<i>Vice-Director</i> ,	John C. Wilson.
<i>Recorder</i> ,	Harold Wingate.



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