

Newton DeLong With regards of J. Walter Hooker

Feb. 1880

ANNUAL REPORT
OF
THE CURATOR
OF THE
MUSEUM OF COMPARATIVE ZOÖLOGY
AT HARVARD COLLEGE,
TO THE
PRESIDENT AND FELLOWS OF HARVARD COLLEGE,
FOR
1878-79.

CAMBRIDGE:
UNIVERSITY PRESS: JOHN WILSON AND SON.
1879.

Ernst Mayr Library
Museum of Comparative Zoology
Harvard University
26 Oxford St.
Cambridge, MA 02138

ANNUAL REPORT

OF

THE CURATOR

OF THE

MUSEUM OF COMPARATIVE ZOOLOGY

AT HARVARD COLLEGE,

TO THE

PRESIDENT AND FELLOWS OF HARVARD COLLEGE,

FOR

1878-79.

CAMBRIDGE:

UNIVERSITY PRESS: JOHN WILSON AND SON.

1879.

ANNUAL REPORT

THE CURATOR

REPORT

MUSEUM OF COMPARATIVE ZOOLOGY

AT HARVARD UNIVERSITY

AND FELLOW CURATORS

1878-79

CAMBRIDGE

FOR THE YEAR ENDING DECEMBER 31, 1878

REPORT.

TO THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE:—

OUR most important accessions of the year are the magnificent collections of the "Blake" Expedition of 1878-79, and the large collections of Birds, Mammals, Reptiles, and Fishes made by Mr. Garman at St. Kitts, Dominica, Grenada, Trinidad, St. Thomas, and Porto Rico, after he left the "Blake." I may mention, also, our exchanges with the National Museum at Washington, and the purchases made of Professor Henry A. Ward in Birds and Mammals.

Many improvements have been made in the arrangement of the Exhibition Rooms. The galleries of the North American Faunal room, and the gallery containing the Systematic Collection of Crustacea, have been opened to the public. The room containing the Systematic Collection of Fishes and Selachians, having been provisionally arranged by Mr. Garman, is now accessible to the public. Excellent progress has been made in the completion of the new cases in the room devoted to the Systematic Collection of Mollusca, and a large part of the collections intended for exhibition have already been selected by Mr. Hamlin. Much has also been done by Mr. Allen in the selection of material for the Birds and Mammals of the Faunal collections still remaining incomplete.

The exchanges of the Library continue with regularity. To a few correspondents of the Museum, the publications have been distributed by the Smithsonian; the majority, however, have received them direct by mail or through the agency of booksellers.

To Messrs. Lyman, Cabot, and Pourtalès the Museum is in-

debted for voluntary work and other valuable assistance. To Carlile P. Patterson, the Superintendent of the Coast Survey, the Museum owes the maps accompanying my report of operations on the "Blake."

Beside the distribution of the "Blake" collections among specialists for final investigation, collections from the Entomological, Conchological, and Ornithological Departments have as usual been sent to well-known investigators, for examination. Important material has also been forwarded for study to Dr. W. K. Parker, to Professor Schiödte, and to Mr. F. M. Balfour.

The usual exchanges have been continued with our correspondents; details concerning them will be found in the special Reports of the Assistants of the Museum.

Collections for purposes of instruction have been sent to Bethel College, Kentucky, to the Boston Society of Natural History, and to the Taunton High School.

The number of visitors to the Museum is constantly increasing. This is undoubtedly due to the fact that the Museum is always open, the admission not being limited to appointed days alone. As we can give but a comparatively small exhibit of our Entomological collections, the work-rooms of the Entomological Department are open on special occasions; they have been visited by a number of specialists, and by classes desirous of seeing the Biological collections; Dr. Hagen has made great progress in their arrangement during the past year.

The instruction at the Museum has been in charge of Professors J. D. Whitney, Shaler, Dr. James, Dr. Faxon, Dr. Mark, and Messrs. Davis and Wadsworth. The special students have received the customary facilities for work in the different Laboratories.

The Sturgis-Hooper Professor of Geology, Mr. J. D. Whitney, has devoted the greater part of his time to the publication of the first part of the "Auriferous Gravels of California." Of this he has defrayed the principal cost, in addition to supplying the means, as in former years, not only for many incidental expenses, but also for the additional instruction in Lithology, given in the Department, under his supervision, by Mr. M. E. Wadsworth.

Professor N. S. Shaler has given an elementary course in Geology, consisting of lectures, and laboratory and field work; the

course has been attended by eighty-five persons. Also, courses in Palæontology and advanced Geology, attended by seven persons. Professor Shaler has also continued his usual summer course in connection with the Geological Survey of Kentucky.

Mr. Davis has this year taken charge of the elementary course in Physical Geography; this has been attended by forty-five persons. There have been no advanced students in Geology during the past year. The elementary instruction in Zoölogy was given by Dr. Mark; it consisted of lectures, three times a week, and laboratory work. This course was attended by eighteen students.

Dr. William James gave, as in former years, an elementary course of instruction in Vertebrate Anatomy and Physiology, to about ninety students belonging to the three upper classes of undergraduates.

My Laboratory at Newport was as usual opened to certain public teachers and assistants of the Museum. Mr. Faxon obtained there the bulk of the material for his papers on the development of Crustacea.

During the past summer, a number of microscopes and other apparatus have been obtained, to equip a temporary Biological Laboratory for elementary instruction. This course will be in charge of Professor Farlow and of Dr. Faxon.

Some of the classes in Natural History have now become so large that the want of proper accommodations is seriously felt. We cannot hope to remedy this evil until, in accordance with the conditions of the subscriptions to the Agassiz Memorial Fund, the next addition to the Museum is built. That is to be almost wholly devoted to laboratories, lecture-rooms, and work-rooms, and will give us all the necessary facilities for instruction in Biology and Geology.

The publications of the Museum during the past year have been more than usually important. Of the Memoirs, we have issued Part I. of No. 1 of Vol. VI., containing the Auriferous Gravels of the Sierra Nevada, by J. D. Whitney, pp. viii, 288, 10 plates, and a map. This volume has been published in connection with Professor J. D. Whitney and the Geological Survey of California; it contains an elaborate memoir on the presence of human remains in the auriferous gravels of California, with a plate of the celebrated Calaveras skull. Nos. 7 to 15 inclusive of the Bulletin have also been issued and distributed. They contain

Preliminary Reports on the Ophiurans of the "Challenger" expedition, by Theodore Lyman; two papers on the Development of Crustacea, by Walter Faxon; and Preliminary Reports of the dredging operations of the United States Coast Survey Steamer "Blake," containing articles on Sounding Apparatus in use on the "Blake," by Lieut.-Commander C. D. Sigsbee; on the Echini, Corals, Crinoids, Ophiurans, Worms, and Hydroids, by Messrs. Agassiz, Pourtalès, Lyman, Ehlers, and S. F. Clarke; also, a paper on the Classification of Rocks, by M. E. Wadsworth, and an account of the Dredging Operations of the "Blake," during the season of 1878-79, by Alexander Agassiz, addressed to Carlile P. Patterson, Superintendent of the Coast Survey; making in all pp. 250, with 32 plates.

In addition to these publications, Dr. Steindachner has continued in the Proceedings of the Vienna Academy his descriptions of new species of Fishes collected by the Thayer Expedition. Professor Alphonse Milne-Edwards has likewise continued to describe and figure the Crustacea of the "Bibb," "Hassler," and "Blake," in his great work on the Crustacea of Mexico; he also published in the "Comptes Rendus" a preliminary account of the remarkable gigantic Isopod discovered in the first "Blake" expedition, to which he has given the name of *Bathynomus giganteus*.

The first part of the final Report on the Sponges dredged by the "Blake" has been published in Germany by Professor Oscar Schmidt. It forms a beautifully illustrated quarto memoir, 32 pp., 4 plates.

The Museum has also supplied materials for the publication of the new edition of the Catalogue of the Diptera of the United States by Osten-Sacken, issued by the Smithsonian, as well as for Part VIII. of the Revision of the Trichoptera, by R. M'Lachlan. In addition to these publications, numerous papers have been written by the Professors and Assistants of the Museum for other serials than those of the Museum.

During the past winter I was again invited by the Hon. Carlile P. Patterson, Superintendent of the United States Coast and Geodetic Survey, to join the United States Coast Survey Steamer "Blake," Commander J. R. Bartlett, U. S. N., and to take charge of the dredging operations for the season of 1878-79. Three months were spent in exploring the deep-sea Fauna of the eastern part of

the Caribbean Sea, along the Windward Islands, from St. Thomas to Trinidad, and the season's work was completed at Barbadoes. Our success was great; for, thanks to the experience gained during a former season, there were none of the delays incidental to new work. The "Blake" was fitted for sea by her former commander, Lieut.-Commander C. D. Sigsbee, and it was my good fortune to find on board the majority of the officers with whom I sailed in the winter of 1877-78. Lieutenant W. O. Sharrer was the executive officer, and I have to thank him and the other officers for their cordial interest and efficient assistance. I was, as usual, accompanied by Mr. Garman. Although we spent but three months in dredging, the collections made are undoubtedly the most important and largest ever made on this coast, and, with those of former expeditions sent out under the auspices of the Coast Survey, make our deep-sea collections but little inferior to those of the "Challenger." We occupied during this season no less than 200 stations, and made over 230 hauls from the 100-fathom line to a depth of 2412 fathoms. For the details of our cruise I would refer to my Preliminary Report to the Superintendent of the Coast Survey, published in the Museum Bulletin (Vol. V. No. 14, Letter No. 3, May, 1879).

The collections have all been assorted into the groups destined for the specialists who are to work them up. The Mollusks have already been sent to Mr. Dall, the Sponges to Professor Oscar Schmidt, who will thus soon finish his monograph on the Sponges of the Gulf of Mexico, of which the first part has been issued. This memoir is to be a complete report on the Sponges collected by the "Blake" expeditions. The Corals, Echini, Alcyonoids, and Ophiurans have been submitted to Messrs. Pourtalès, Lyman, and Agassiz. The Fishes have been sent to Dr. Steindachner, and during the fall the Crustacea, Annelids, and Star-fish will be forwarded to Professors Alph. Milne-Edwards, E. Ehlers, and Perrier, who will incorporate this new material in the monographs they are preparing, based upon the collections of the first "Blake" expedition, already in their hands.

The exploration of the past winter plainly shows that we cannot expect very many novelties from the deeper waters of the Caribbean Sea and Gulf of Mexico; and although undoubtedly much remains to be done within the belt included between the 100 and 350 fathom line, the main characteristics of the deep-

water Fauna have most probably been sketched out. It now becomes extremely desirable to follow the course of the Gulf Stream to the north of the Bahamas, and, by running normals from the 100-fathom line to 2500 fathoms off the coast of the United States, to connect this isolated district with the deep-water Fauna proper of the Atlantic. This work, it is hoped, will be accomplished during the coming summer, the Superintendent of the Coast Survey having asked me to join the "Blake" for this purpose on her return from her winter's cruise.

ALEXANDER AGASSIZ.

CAMBRIDGE, September, 1879.

REPORT ON THE GEOLOGICAL DEPARTMENT.

By J. D. WHITNEY, *Sturgis-Hooper Professor of Geology.*

DURING the whole of the past year, instruction in Lithology was given, three times a week, by Mr. Wadsworth, to one special student, and to two undergraduates who had elected this subject among those offered in the post-graduate scheme of instruction, having previously qualified themselves for lithological work by special mineralogical study. As this appears to have been the first attempt in this country to give systematic instruction in Lithology, according to the modern methods, some details of the course followed may with propriety be added. The instruction consisted of lectures upon the macroscopic and microscopic characters of the rocks and their constituent minerals, and also of field and laboratory work. Besides the study of the laboratory collections, each student had assigned to him a separate district, which he was to map, studying the characters and relations of the rocks, and collecting the necessary specimens. Of the rocks thus collected, the student was required to make thin sections, and to examine them microscopically, writing a thesis upon the whole work. It was intended that the course should be sufficiently thorough to fit the student for practical field and laboratory research.

Mr. Wadsworth also continued his investigations of the Californian rocks, of which the thin sections had been made during the previous year, as mentioned in the last Report. Written descriptions of several hundred specimens were prepared, with the intention of publishing, in due time, a full account of the volcanic rocks of the Pacific coast. The chief results of this investigation, so far as the same had been completed up to February last, were embodied in an abstract published in the Bulletin of the Museum, with the title, "On the Classification of Rocks."

The larger portion of the time of the Sturgis-Hooper Professor

was given to the preparation of a work entitled "The Auriferous Gravels of the Sierra Nevada of California," which forms the first part of the first number of the sixth volume of the Memoirs of the Museum. The second number of this volume, containing a description of the fossil plants found in these gravels, by Mr. Lesquereux, was published a year earlier, and the remainder of the first number, completing the volume — which is entirely devoted to the Auriferous Gravels — will soon be issued.

For the purpose of procuring additional information in regard to certain points of importance in the California gravel region, and also to obtain a general idea of the most recent developments of the hydraulic mining interest, an arrangement was made with Professor W. H. Pettee, of the Michigan State University, to revisit the western slope of the Sierra Nevada, this gentleman having been previously employed in this same work as an assistant in the Geological Survey of California. Professor Pettee left Cambridge for that State early in July, and has been up to this time in the field visiting the most important gravel mining districts. His return may be expected early in December, and as soon thereafter as practicable the remaining portion of Volume VI. of the Memoirs will be put to press.

The Sturgis-Hooper Professor was himself in Europe from the beginning of May until the middle of September, and in the course of that time he took occasion (besides visiting a number of geological museums in Germany and France) to re-examine with care certain portions of the Alps, especially the glaciers of the Bernina Group, with reference to various points to be discussed in connection with the further description of the Californian gravels.

Mr. Wadsworth spent nearly the whole of the summer vacation on Lake Superior, studying the rocks associated with the copper and iron deposits of that region. The object of this investigation was to throw light on some of the mooted points in the geology of that most interesting and important mining district. In the course of his summer's work Mr. Wadsworth collected 846 specimens of rocks and ores. The results of this work will be published in the Bulletin of the Museum.

REPORT OF N. S. SHALER, *Professor of Palæontology.*

DURING the past academic year, the instruction in the department of Palæontology, and a part of the instruction in Geology, has been given by myself and by Mr. William M. Davis, Instructor in Geology.

The courses of instruction have been as follows, viz.: —

1st. An elementary course in Geology, consisting of lectures, and field and laboratory work. This course has been attended by eighty-five persons during the past year.

2d. An elementary course in Physical Geography and Meteorology. This course was attended by forty-five persons during the past year.

3d. A course in Palæontology, with laboratory work. This course was attended by five students during the last academic year.

4th. A course in Historical Geology, with laboratory work. This course was attended by two students.

5th. A summer course of instruction in field Geology was given in connection with the work of the Kentucky Geological Survey. The field chosen was the eastern part of Kentucky and the neighboring parts of Virginia and Tennessee. During the term of the school, over two hundred miles of measured sections were made across the most interesting part of the Cumberland region of the Appalachian mountain system.

During the last academic year, some progress has been made in the arrangement of the collections of rocks and fossils, which are set aside for the use of students. Mr. George H. Squier was employed during the winter months in bringing these collections into shape. During the autumn, he made extensive collections in Southeastern Virginia, and in the months of May and June he was similarly employed in Central New York. These collections have done much to fill up the gaps in the students' cabinet.

The rapid increase in the number of students in this department has led to a very unwholesome crowding of the lecture-room. With the present average attendance of the largest class, there are but one hundred and seventy cubic feet of space to each person. Unless more room can be provided it will be necessary to remove the elementary classes to some other University building, — a change which will be very undesirable, as it will separate the students from the collections.

REPORT ON THE MAMMALS AND BIRDS.

By J. A. ALLEN.

DURING the past year the additions to the departments of Mammals and Birds have been numerous and important. A few small lots have been obtained by exchange, but by far the greater part have been purchased, and are the gift of Mr. Agassiz. The collection of Mammals has been increased by the addition of some one hundred and thirty mounted skins, and by nearly the same number unmounted, representing about one hundred and fifty species, nearly all of which were new to the collection. The mounted specimens embrace many large and expensive pieces, among which may be mentioned a Narwhal, an adult Atlantic Walrus, a Camel, a Zebra, a Lion, a pair of Saiga Antelopes, Sea Lions, Seals (including the Crested Seal and the Sea Leopard), an Orang-Outang, and some twenty species of Monkeys and Lemurs. A considerable number of skins previously in the collection have also been mounted. There have been added to the osteological series twenty-six mounted and nearly the same number of unmounted skeletons, about thirty skulls, and nearly twenty skeletons, the principal bones of which have been mounted separately for the comparative series.

The collection of Birds has been increased by the addition of over four hundred and fifty mounted skins, representing some four hundred and twenty-five species, nearly all new to the collection. There have also been added about one thousand unmounted skins, representing over four hundred species, two thirds of which were new to the collection. Fifty-five skeletons, about one half of them mounted, have been added; also thirty skulls, seventy-five sterna, and about twenty separately mounted pelves. To the Oölogical Department have been added the nests and eggs of twenty-six species, all North American, and

mostly rarities. About six hundred skins previously in the collection have been mounted, making the total number of mounted birds added during the last year something over one thousand.

Among the noteworthy special collections added by purchase may be mentioned a collection of skins and skeletons of both Mammals and Birds from San Luis Potosi, Mexico, numbering seventy-three mammals and three hundred and thirty birds; two hundred and five bird-skins (forty-five species) from the island of Santa Lucia, W. I.; sixty-seven bird-skins (thirty-three species) from Yucua, Venezuela; one hundred and forty-five bird-skins (twenty-five species), and sixteen skins of Mammals, from the island of Grenada, W. I. By exchange there have been added one hundred and twenty-five bird-skins (eighty species) from Australia; forty-two bird-skins (thirty-eight species) from New Caledonia and Loyalty Islands; fifty species of bird-skins from Cochin China; and a small collection of mounted birds from Porto Rico, W. I.

The mounted specimens, both of Mammals and Birds, have been selected mainly to complete the North American Faunal collection, and to supply material for the South American and Australian Faunal collections, which are now both well advanced. The additions have been duly catalogued, and the collections continue in a satisfactorily safe condition.

REPORT ON THE REPTILES, BATRACHIANS, SELACHIANS,
AND FISHES.

By S. W. GARMAN.

REPTILES AND BATRACHIANS.

THE largest addition to these departments for the year comes from the West India collections made during the "Blake" expeditions and subsequently. They contain many species new to the Museum, some of them new to science, and a large number of desirable duplicates for exchanges. By purchase, important representatives of the faunæ of the East Indies and Australia were obtained, and a skeleton of the Matamata Tortoise, *Chelys mata-mata*. A collection made in Borneo by W. T. Hornaday, Esq., adds several genera and a large number of species not previously in our collection. Some of the species are undescribed. Dr. Edward Palmer's collection contains some valuable Mexican species. The Kentucky Geological Survey, under Professor Shaler, contributes a valuable lot of specimens collected by Professor C. J. Norwood. A number of Massachusetts species were obtained from N. Vickary. A large lot of type specimens of North American Reptiles and Batrachians has been received through Professor Baird, from the United States National Museum. Thirty species, represented by series of specimens, from Algeria, Spain, and Southern France, have been secured in exchange for North American species from Mr. Fernand Lataste.

Mrs. C. N. Willard sends a fine collection of Florida Reptiles, and Professor John T. Humphreys another from North Carolina.

Richard M. Kemp, Esq. has made several additions to his donations from the Florida Keys.

Messrs. Bullard, Goodrow, and R. Woodward are to be credited with contributions of duplicates of Massachusetts Reptiles.

A box intended for the Museum, shipped from India in 1873 by Rev. M. M. Carleton, was discovered in the Custom-House a short time ago. The greater portion of its contents belong to this department. About half of them are in tolerable condition.

The collections of the Rev. B. G. Snow, from the Marshall Islands, were received this season; they contain a few specimens of Saurians. F. Lagois, Esq., Dr. Aug. Stahl, James Gall, Esq., George S. Johnson, David Morgan, and Amedé Gasquet, Esq., have contributed generously to the collections from the West Indies. A number of Batrachians were sent to Dr. W. K. Parker. With one exception, all the collections received during the past year have been identified. In the exhibition rooms a number of changes and additions have been made, and a large part of the collection in store has been overhauled and put in fresh alcohol.

SELACHIANS AND FISHES.

In importance and size, the deep-sea collection of the "Blake" expedition stands first among the acquisitions of the year. Soon after their arrival these were catalogued and a series sent to Dr. Steindachner to work up with those of last year's dredgings.

Among the in-shore and fresh-water fishes taken while collecting the Reptiles of the West Indian Islands there are some valuable specimens of new species. Professor Baird sends, from the United States National Museum, a large number of types taken by the members of the Fish Commission in their operations in the deeper water off the eastern coast of the United States and British Provinces.

Various North American fresh-water fishes have been received from Professor C. J. Norwood, Dr. William A. Hudson, and Dr. Palmer. R. M. Kemp, Esq. forwarded several rare forms, thrown on the beaches of the Keys during the "epidemic" of October, 1878.

In a collection of twenty-seven specimens, Mrs. C. N. Willard sent species belonging to twenty-five genera, several of these representing species rare along our southeastern coast. Several desirable specimens were received from Samuel Powel, Esq., whose experience in collecting and knowledge of the species themselves enable him to select the most valuable.

F. Lagois, Geo. S. Johnson, and Jens Peterson, U. S. N., made welcome additions to the West Indian collection. A collection was sent from the Marshall Islands by the Rev. B. G. Snow.

From Newport, R. I., Mr. Agassiz sent young fishes of several species. Mr. J. W. Fewkes brought with him from the Mediterranean sixty specimens of small species, and young in perfect condition.

Absence in the field during the earlier half of the year has crowded its work into the six months just ended. In that time more than nine tenths of the collections for the Synthetic and the North American rooms have been selected and placed on the shelves; the entire collection on exhibition receiving new alcohol and labels. The collections received have been well cared for; many specimens have been identified, and about three thousand numbers have been added to the catalogue from collections previously on hand.

A number of adult Lepidostei were sent to Mr. Balfour of Cambridge. A great deal of work will be necessary to put this enormous collection in fair condition, as well as the greater part of the collection of the younger stages.

REPORT ON INSECTS.

 By DR. H. A. HAGEN.

ADDITIONS to the Collection of Insects:—

- Mr. A. Danforth. A *Belostoma*, from Lynn.
- Mr. H. Edwards. Several biological specimens from California.
- Mr. E. Law, from Malden. Biological specimens.
- Mr. S. Dimmock. Neuroptera.
- Mr. E. Austin. A lot of United States Coleoptera, new to the collection.
- Mr. F. Pourtalès. A complete set of Silkworms and Silk, from Milan, Italy; biological specimens.
- Mr. Dury, Cincinnati, O. U. S. Lepidoptera.
- Mr. N. S. Shaler. Cave insects from Mammoth Cave, Kentucky.
- Mr. F. W. Putnam. Insects from Nicaragua in alcohol.
- Mr. H. H. Lyman, Montreal, Canada. Neuroptera.
- Mr. L. Avery. Myriapods from Camargo, Mexico.
- Mr. H. I. Bowditch. Parasites of man.
- Mr. B. Neumoegen. Lepidoptera from Arizona.
- Mr. A. Agassiz. Insects collected by Mr. S. W. Garman in the West Indies.
- Mr. H. K. Morrison. A large lot of Neuroptera and Pseudo-neuroptera from Nevada and Colorado (bought).
- Mr. Palmer. A large lot of biological specimens from Mexico.
- Mr. H. Moody, Malden. Biological specimens.
- Mr. C. A. Dohrn, Stettin, Germany. A large lot of Staphylinidæ and Cave Insects.
- Mr. A. Fish, Maine. United States Pterophoridæ.
- Mr. Fr. Mueller, Itajahy, Brazil. A large lot of Neuroptera and biological specimens.
- Mr. R. M'Lachlan, London. A valuable species of Neuroptera.
- Mr. A. Willitson, New Haven, Conn. *Amblycheila* from Kansas.

Mr. A. Menge, Danzig, Prussia. Types of the spiders described in his monograph.

Miss E. Sargent, Worcester, Mass. Biological specimens.

Mr. H. A. Hagen. Biological specimens, raised Insects.

The additions to the collection by Mr. C. A. Dohrn, Fr. Mueller, A. Menge, and H. Edwards are very important, and fill prominent gaps of the collection.

Scientific publications, based entirely or in part on the collection of the Museum, consist of the new edition of the Catalogue of the Diptera of the United States, by Osten-Sacken, published by the Smithsonian Institution, and Part VIII. of the monographic revision of the European Trichoptera by R. M'Lachlan, published in London, and several papers by Dr. H. A. Hagen.

The work done by the assistant in charge of the Entomological Department consists in the arrangement of the biological collection of the Hymenoptera, of the Cave Articulates (the collection of which begins to be quite important), and of the Chernetidæ, the monograph of which is nearly completed. The Termitina, lately arrived, have been studied, and several parts of their anatomy and embryology are nearly ready for publication.

The large collection of Trichoptera is rearranged, and fills forty boxes. The Biological Collection, to which most of the time was given, is so far advanced, that it will be possible to finish the arrangement during the next two years.

The Library of the department has been rearranged, the Catalogue completed, and the numerous duplicates exchanged for works not represented. The Entomological Library contains about 2,000 volumes and above 3,000 pamphlets.

I may state that during the past year we have had a larger number of visits than usual from scientific students, both native and foreign, to study the biological as well as the systematic part of our Entomological Collections.

REPORT ON THE CRUSTACEA.

 By WALTER FAXON.

THE most valuable additions to the collection during the past year have come from the dredgings of the "Blake" expedition. These have been sent to M. Alphonse Milne-Edwards, Paris. All of the Cymothoids of the Museum (over 100 jars) have been loaned to Professor Schiödte, of Copenhagen, who is engaged upon a monograph of that group of Isopods. A collection of dry *Crustacea*, selected to illustrate the morphology of the class, has been presented to Bethel College, Kentucky.

A general systematic collection, and one illustrating the Crustacean Fauna of North America have been placed on exhibition.

LIST OF DONATIONS.

"Blake" Expedition. *Crustacea* dredged in the Gulf-Stream, by A. Agassiz.

Gardiner, E. G. *Tanaïs* from Annisquam, Mass.

Putnam, F. W. *Cambarus* and *Palæmonetes exilipes* from Kentucky (collected in 1874-75).

Kentucky Geological Survey (N. S. Shaler, Director). *Cambarus* and *Palæmonetes exilipes* from Kentucky (collected by S. W. Garman).

Smith, S. I. *Pinnixa* from Buzzard's Bay, Mass.

REPORT ON THE WORMS.

By E. L. MARK.

THE collection of Worms has been increased since my last report by a large number of species from the "Blake" expedition of 1878-79 to the Caribbean Islands, and a few specimens have also been received from Mr. J. H. Blake.

The work upon the collection has been limited to the care necessary to prevent loss from evaporation of alcohol, my time having been wholly consumed with lectures and laboratory work on elementary zoölogy.

The instruction given by me during the past year consisted of three lectures per week, delivered to about eighteen students, and the supervision of the laboratory work of the same students.

REPORT ON THE CONCHOLOGICAL DEPARTMENT.

By CHARLES E. HAMLIN.

SINCE the last annual report, the selection, mounting, and arrangement of shells for the North American Faunal Collection, previously begun, have been finished; and progress has been made in the preparation of specimens for the Systematic Collection, in readiness for the new exhibition cases, now approaching completion. In connection with this work, and mainly as a part of it, a review has been made of several important families of Marine and Land Shells, involving the determination of many species.

The exchanges of the department having last year necessarily fallen into arrears on our part, much time was given during the winter and spring to the making up of suites of specimens for several American and foreign correspondents. More labor of the same kind still remains to be done.

We have sent to Dr. W. D. Hartman, of West Chester, Penn., a full series of *Partulæ*, selected for his use in preparing a descriptive and analytical catalogue of the species of that perplexing and much neglected genus. This has required an examination (heretofore deferred) of the great stock of *Partulæ* acquired through purchase of the Pease Collection.

In the spring some two thousand specimens of shells, from our abundant duplicates, were furnished to Professor Hyatt, for illustrating a portion of his course of lectures to the Boston teachers.

A collection of shells belonging to Mount Holyoke Seminary has, by request, been named and returned, and work of like character has been performed for several individuals.

Miss Anthony has been busily and faithfully engaged throughout the year in cleaning specimens and mounting them for exhibition.

The transactions in exchange have been as follows:—Seventeen packages of Mollusca have been received, containing five thousand nine hundred specimens of six hundred and seventy species. Eleven packages have been sent to as many correspondents, including three thousand seven hundred specimens of six hundred and ninety species.

The most important receipts have come from Count Emil Körnis of Hungary, and Messrs. A. M. de Cisneros of Cuba, C. E. Beddome of Tasmania, F. L. Button and O. N. Sanford of California, and Sanderson Smith of New York.

REPORT ON RADIATA AND PROTOZOA.

By L. F. POURTALÈS, *Keeper of the Museum.*

THE most valuable accessions probably ever received in this department are the collections made by Mr. Agassiz, in the dredging expedition of the United States Coast Survey Steamer "Blake," of which fuller mention is made in his Report. It is of course premature to enter into details, as the sorting has been only commenced, but an idea of the size of the collection may be conveyed by comparison with those which are at least partly determined. The deep-sea corals, with which I have been more particularly occupied, have been sorted according to locality and species, so that every species from one locality is kept separate from the same species of another locality, in order to trace the vertical and horizontal distribution. Of these lots, for the true Corals there are 471, representing from thirty to forty species.

The Hydrocorallinæ sorted in the same way form 332 lots, but the number of species I am not quite prepared to state. New forms are not very numerous, as the West Indian deep-sea Fauna has been quite thoroughly investigated in late years, thanks to the opportunities offered by the Coast Survey; but very fine specimens of some of the species obtained by the "Challenger" expedition have been dredged by the "Blake," and added to our collections. Of other species which we had already, a larger number of specimens, or better-preserved ones, have enabled me to correct or complete former determinations.

The Alcyonoid Polyps are also very numerous and very fine; and I hope to be able soon to work them up, together with those of my former collection, which has been returned by Professor Koelliker, who much to my regret has not found time to study them.

Among the Echinoderms, the most abundant are the Ophiuridæ and Astrophytidæ, which, sorted on the same principle mentioned

for the Corals, by Mr. Lyman assisted by Miss Clark, fill about eight hundred bottles.

The Echini and Star-fishes are not so numerous, but are represented by very interesting forms.

Of Crinoids, a very large collection of *Pentacrinus* was obtained, of all ages, and probably at least two species; also a few specimens of *Rhizocrinus*, one imperfect *Holopus*, and a considerable number of *Comatulæ* of several species. The *Holothuriæ* are also numerous and well preserved.

The new forms in the large collection of Sponges have been sent to Professor Oscar Schmidt of Strassburg, who has worked up the former collections.

In the exhibition rooms, I have only added during the past year a small collection of Foraminifera, partly represented by models, and part of the systematic collection of *Acalephs*. Also, part of the Echinoderms, Polyps, and *Acalephs* for the North American Faunal Collection.

REPORT ON THE LIBRARY.

By Miss F. M. SLACK.

DURING the year ending September 1, 1879, the Library has received 1,089 volumes, 884 parts, and 3,600 pamphlets, from the following sources:—

	VOLUMES.	PARTS.	PAMPHLETS.
Library of Dr. H. A. Hagen	762		3000
Gift of A. Agassiz	170	152	474
Purchase	110	385	11
Exchange or gift	47	347	115
	1089	884	3600
Also added by binding parts and pamphlets	267		
	1356		1356
Number of volumes at close of last year			11,970
Number of volumes now in the Library			13,326

[A.]

INVESTED FUNDS OF THE MUSEUM

IN THE HANDS OF THE TREASURER OF HARVARD COLLEGE, SEPT. 1, 1879.

Sturgis-Hooper Fund,	\$70,142.52
Gray "	51,750.00
Agassiz Memorial "	{ 297,933.10
Teachers and Pupils' Fund,	{ 7,564.01
Permanent "	117,469.34
Humboldt "	7,740.66
Agassiz Building "	2,197.05
	<u>\$554,796.68</u>

[B.]

FACULTY OF THE MUSEUM.

CHARLES W. ELIOT, *President.*
 ALEXANDER AGASSIZ, *Curator.* THEODORE LYMAN.
 JOSIAH D. WHITNEY, *Secretary.*

OFFICERS.

ALEXANDER AGASSIZ, *Curator.*
 JOSIAH D. WHITNEY, *Sturgis-Hooper Professor of Geology.*
 HERMANN A. HAGEN, *Professor of Entomology.*
 NATHANIEL S. SHALER, *Professor of Palæontology.*
 WILLIAM JAMES, *Assist. Prof. of Physiol. and Comp. Anat*
 L. F. POURTALÈS, *Keeper.*
 THEODORE LYMAN, *Assistant in Zoölogy.*
 CHARLES E. HAMLIN, *Assistant in Conchology and Palæontology.*
 JOEL ASAPH ALLEN, *Assistant in Ornithology.*
 WALTER FAXON, *Assistant in Zoölogical Laboratory.*
 W. M. DAVIS, JR., *Assistant in Geological Laboratory.*
 S. W. GARMAN, *Assistant in Herpetology and Ichthyology.*
 E. L. MARK, *Assistant in Zoölogical Laboratory.*
 M. E. WADSWORTH, *Assistant in Lithology.*
 PAULUS ROETTER, *Artist.*
 MISS F. M. SLACK, *Librarian.*