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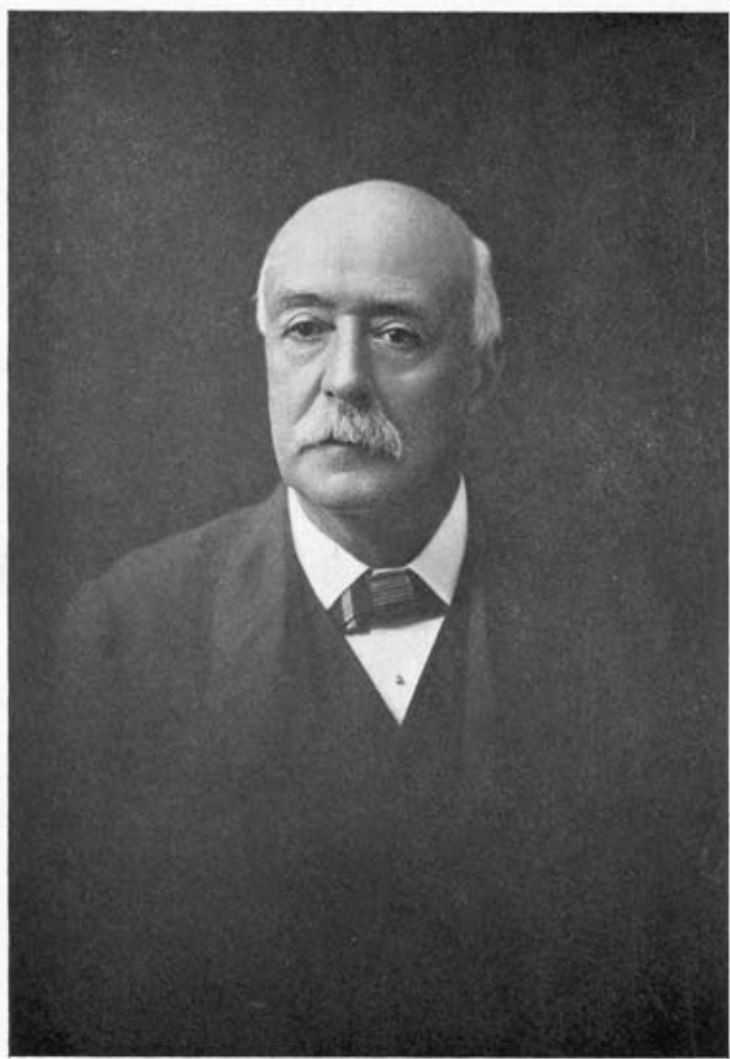
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*A. Agassiz*

## ALEXANDER AGASSIZ.

BY GEORGE LINCOLN GOODALE.

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An exhaustive memoir of Alexander Agassiz should consider his achievements in three distinct fields, namely, mining-engineering and administration, oceanographic research, and zoölogical investigation. His power of mental concentration and his economy of time enabled him to accomplish results which might fairly be regarded as full measure of activity for three men. To specialists in engineering, oceanography, and zoölogy must be entrusted the appreciation of the results attained; to one who has no claim to authority in any one of these fields of thought has been given the task of tracing in outline the principal dates in the career of Alexander Agassiz.

A large part of the energy of Agassiz was devoted for almost half a century to the enlargement of the Natural History Museum created by his father, and to the realization of his father's dream. The zoölogical section of this museum, known as the Museum of Comparative Zoölogy, was early placed in the hands of a small body of trustees, termed its faculty, and of this faculty Mr. Agassiz, after his father's decease, was always an active member. The present writer has had the privilege of membership in that faculty for nearly thirty years, and this affiliation brought him into intimate relations with its moving spirit. This unbroken intimacy constitutes the only apology which the writer can offer for having dared to accept the command from our president to prepare the present sketch.

Alexander Agassiz was born at Neuchâtel, Switzerland, December 17, 1835. His father, Louis Agassiz, was an instructor in the newly founded academy there, and had already secured a wide reputation as a naturalist. His mother, a sister of Prof. Alexander Braun, a distinguished botanist, possessed remarkable talent as an artist, and aided her husband greatly by the exact illustrations with which she enriched his scientific publications. The zeal for research and the artistic tempera-

ment which characterized father and mother descended to the son.

Alexander's early studies were conducted at Neuchâtel, a city where French is the spoken language. But as his mother was a German, he had at his services, from his earliest youth, the two languages, German as well as French. When he was eleven years old, he went to Freiburg in Baden, where he came into touch with his uncle, Alexander Braun, for whom he was named, and with Prof. K. Theo. v. Siebold. In a private manuscript dated 1907, he says that it was from them that he "imbibed his first notions of natural history."

At the age of thirteen, after the death of his mother, he came to the United States to join his father, Louis Agassiz, who had accepted a professorship of zoölogy and geology in the Lawrence Scientific School, which had been recently established. At once he began his studies in the high school in Cambridge, and after two years of preparation entered Harvard College, graduating in arts in 1885, at the age of nineteen. Since his earliest years had been passed in French and German-speaking countries, he always found it a little difficult to pronounce certain English words, but his mastery in the construction of English sentences and his felicity in the choice of words were remarkable. When he wrote slowly his writings were models of clearness and precision.

After receiving his degree in arts, he carried on studies in the Lawrence Scientific School, and took a degree of bachelor of science, in engineering, in 1857. It should be mentioned in connection with this fact that he later pursued a course of studies in natural history in the same school, while he was assistant in the museum, and was given a second degree of bachelor of science, in 1862. The years 1858 and 1859 were in part devoted to teaching and to chemical work.

In 1859 he went to California as an aid in the United States Coast Survey, and passed a year in active service in the northwest. On his return to Cambridge, in 1860, he accepted a position as assistant in the Museum of Comparative Zoölogy, then just founded. In the same year he married Miss Anna Russell, a sister-in-law of Col. Theodore Lyman, his classmate in college and an associate in the museum.

Three years later he became interested in coal mining in Pennsylvania, but he still continued active work in zoölogy. In 1865 he undertook the exploitation of an unprofitable copper mine in Michigan, in which he detected great possibilities. By uniting this mine with an adjoining one and by the application of improved methods of ore treatment, he placed the consolidated properties upon a productive basis. From this time on, he had no further dread of the narrowness of means which had hitherto hampered him and his father; moreover, he could henceforth liberally aid his father in the furtherance of plans for the symmetrical expansion of the museum, and form for himself generous projects for exploration as well as for museum study. In spite of the too serious drafts made by the mining enterprise upon his time and strength, he did not at any time relinquish his interest in its management. He served successively as superintendent, treasurer, and president.

In 1869 his health gave way under the protracted strain of the management of the mine in Michigan, and he was forced to suspend all work in connection with that undertaking. With his wife and children he sailed for Europe in the autumn of that year, and his rest soon found him convalescent. With returning strength he journeyed to various points where he could examine collections of his favorite objects of study, and thus he spent his vacation in the most pleasurable scientific activity.

The titles of the scientific papers noted at the end of this sketch exhibit the wide range of his investigation and the steadfastness of his purpose. At this period he was devoting himself with singleness of aim to embryology and certain phases of systematic zoölogy. In this work and in his devotion to the museum, he must have given great satisfaction to his father, who always regarded him as his earliest student in the museum. His methods of study were largely those of his father, and his avoidance of the polemics of Darwinism at this time was an added gratification. This period is regarded by those best qualified to judge as the happiest and most productive of the years which he gave to zoölogy proper.

Toward the close of 1873 his father died. Before the end of the year his wife also passed away. The effect of this loss

upon a strong personality, endowed with a highly sensitive temperament, has been told in touching words by his intimate friend Sir John Murray. It is enough for us to say that no change of scene or of work ever seemed to lessen the sense of that bereavement.

Even when a youth he had been much attracted to the study of the sea itself, and the distribution of its animals. In this study and in far journeying he now sought distraction from his loss. He began to give to exploration and oceanography a part of the time he had formerly devoted to embryology and systematic zoölogy.

His first expedition was to South America. He explored certain portions of the coast regions of Chili and Peru, and gave special attention to Lake Titicaca. He charted the lake and determined its chief biological features, making collections illustrating its flora and fauna. He brought home also much archæological material. It is interesting to note that he gave a certain amount of attention to important geological aspects, especially to the question of land elevation.

In all of the numerous expeditions conducted after this date he continued his survey on a broad basis, neglecting nothing which might throw light on the relations of the lands explored.

For each of his expeditions, ample preparations were made long beforehand with regard to arrival at ports of call, selection of favorable seasons, adequate provision of coal, and requisite appliances for deep-sea work. The whole course of each expedition was marked out accurately before he left Cambridge, and every precaution was taken to guard against misadventure. Hence he never met with any serious detentions. He was able to prosecute his work without interruption. In the exact records of these expeditions, the reader will find that the narrative itself is devoid of anything of a personal nature, and nowhere will be detected the fact that in a large part of each sea voyage, the leader of the survey was often completely prostrated by seasickness. His strength of will overcame all obstacles.

In his youth Agassiz made with his father, and later by himself, excursions along the Atlantic coast, and he early became familiar with the technique of dredging. In 1877, as

director of the scientific staff of the United States Coast Survey steamer "Blake" he became specially interested in oceanographic problems. In this steamer he made three cruises in the Gulf of Mexico, the Caribbean Sea, and along the lower east coast of the United States. In subsequent expeditions, he gave attention to the pelagic fauna of the Gulf Stream.

His voyages in the Pacific were made partly in the Fish Commissioner's steamer "Albatross," and in steamers chartered by himself. He left practically no important locality unvisited. The accounts which he gives of the coral and other islands examined by him, together with the results of his thalassographic researches, are embodied in illustrated quarto volumes and in the numbered publications of the museum which are noted in the bibliography accompanying this sketch. Many of the photographs reproduced in the numerous works were taken by his son Maximilian, who was his constant companion.

Mr. Agassiz passed the greater part of every winter in some climate milder than that of Cambridge, and he so planned his journeys as to make every month tell. In this manner he was able to accomplish an enormous amount of geographical examination without disappointment or disaster. On his return to the United States, after these long journeys, he would devote a certain amount of time to the mines in Michigan and then resume his zoölogical and other studies at the museum in Cambridge, but chiefly at the laboratory in Newport. His friends in Cambridge, Boston, and Newport were not infrequently permitted to hear from Mr. Agassiz a preliminary and familiar account of his latest wanderings and achievements. It is much to be regretted that none of these instructive untechnical reports of great accomplishments have been preserved. They possessed the charm which is associated with the remembrance of his father's lectures.

As has just been said, Mr. Agassiz conducted his laboratory studies based on the material gathered from his numerous expeditions, mainly at his home at Castle Hill, Newport. Near his residence he established in 1877 a sea-side laboratory well equipped with all requisite appliances. This laboratory was

indirectly an outcome of an experiment on the island of Penikese. Louis Agassiz, a year before his death, had been offered the use of this island, together with a certain sum of money, for the founding of a summer-school for instruction and research in marine zoölogy. Alexander did not favor the acceptance of the offer, but he gave his loyal assistance, after the experiment had begun. Prof. Asa Gray rightly called the enterprise "the fatal gift of Penikese." Louis Agassiz was not at the time sufficiently strong to bear the additional burden of a doubtful experiment, and his death soon followed. But his son fully appreciated the desirability of having some place for research on the south shore, and he therefore established a laboratory near his home in Newport. This laboratory was opened to instructors and students from Harvard and other colleges, under most charming and hospitable conditions, and remained active until 1897, when the neighboring waters were not wholly favorable for its further activity. Moreover, the establishment of a marine biological station at Woods Hole under the auspices of the Fish Commission rendered the maintaining of a public laboratory unnecessary.

Mr. Agassiz had also a home in Cambridge. This was presided over by his father's second wife, Elizabeth Carey Agassiz, a lady of gracious presence and wide accomplishments. Her active interest in all things pertaining to the life of her husband and step-son was shown by her earnest work in conducting a school for young women, in order to add to the slender means of the family, in the early days. Her interest in the museum never slackened. She herself was an enthusiastic student of natural history, particularly on the instructional side, and, at a period when good handbooks were uncommon, assisted Alexander in preparing a useful treatise, known as *Sea-Side Studies*, a work which passed through two editions. Every move in every expedition, from the moment when Mr. Agassiz left Cambridge until his return, was watched by her with intelligent interest.

The Museum of Comparative Zoölogy, to which frequent reference has been made in this sketch, was founded by Louis Agassiz upon a plan which is not at all adequately described by its name. What he had in mind, as indicated by hints in



his reports and other communications, was a museum for research and illustration in all departments of what was then called natural history. It was intended to comprise everything from minerals, through the kingdom of plants, to the highest animals. It was to include also man regarded from an archaeological and ethnological point of view. The first section of this comprehensive museum was erected in 1859.

The staff at the outset consisted of a curator, Louis Agassiz, and numerous assistants, each in charge of a department of zoölogical investigation.

In the capacity of assistant, Alexander Agassiz served until 1875, when he was made curator. A second section of the museum, devoted to zoölogy, was added to the structure in 1871-1872. In 1876, the section known as the Peabody Museum of American Archæology and Ethnology, was erected at the southeast corner of the great quadrangle, where its apparent isolation gave little hint of the comprehensive plan which makes it an integral part of the whole edifice.

By the close of 1882, the building had been extended to the extreme northwest corner. Practically all of these additions were made from gifts by Mr. Agassiz. In 1888 and 1889, further extensions were made to accommodate mineralogy and a part of the botany, and to provide more room for zoölogy. At this period another section was also added to the Peabody Museum. It was largely through the active influence and the direct gifts of Mr. Agassiz that these additional sections were constructed. The facade fronting on Oxford Street still lacked an important element, namely, the southwest corner. In 1901-1902, this was filled by the commodious sections devoted to geology, the gifts of Mr. Agassiz and his two sisters, Mrs. Shaw and Mrs. Higginson. In other words, the children had effectively carried out their father's original plan, and the great museum is now approaching completion. During this whole period Mr. Agassiz served the museum as an officer: 23 years as curator, 10 as director of the Museum of Comparative Zoölogy, and from 1902, until his death, as director of the University Museum, comprising all the sections. His gifts to the museum and to other departments of Harvard University considerably exceeded a million dollars.

It might naturally be thought that so busy a man, and one who had devoted to much of his time, energy, and means to the museum of the university, might fairly be excused from any further demands by the university itself. But his services were sought and freely given as overseer and as fellow of the corporation.

Mr. Agassiz took a deep interest in the scientific societies which have their headquarters within reach of the museum, and for one of them, the American Academy of Arts and Sciences, he has made by his will a liberal allowance for a permanent home.

Of his fondness for the National Academy of Sciences there is no need that one should speak here. All can appreciate what he has done for it and for its future development. There is hardly a scientific society which does not carry his name on its rolls. There is not one which does not value his contributions to science as among the most important in their libraries.

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