



CORRESPONDENCE BETWEEN
SPENCER FULLERTON BAIRD
AND LOUIS AGASSIZ—
TWO PIONEER AMERICAN
NATURALISTS

Collected and Edited by

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CITY OF WASHINGTON

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Dedicated to the memory of

SPENCER FULLERTON BAIRD

whose sincerity of purpose and unblemished character have been
an inspiration to many

INTRODUCTION*

A study of some 50,000 letters among the Spencer Fullerton Baird Papers in the Smithsonian Institution Archives has revealed Louis Agassiz as one of Baird's constant correspondents. These two high-ranking 19th-century naturalists saved much of their correspondence. Parts of some of their letters and a few complete letters exchanged between them have been published in their biographies. My collection of 297 letters, mostly from the Smithsonian Archives, brings together all their known correspondence.

Spencer F. Baird and Louis Agassiz were pioneers in the development of the field of natural history and in their wake left a healthy respect for American science all over the world. Their activities in that field in this country began essentially at the same time. Their impact on the world of science and their significant contributions in an age of rapid development are vividly revealed in these letters.

In the first 75 years after the signing of the Declaration of Independence little international recognition had been given to the work of American zoologists. In fact, many foreigners actually despised Americans in general for their materialistic concerns and their lack of interest in culture and pure research. Many of the early American zoologists were interested mainly in explorations and making inventories of animals and plants. Descriptions of many species were made quickly, often from incomplete data. Scientists were often not particularly concerned with how the public at large was to be made familiar with new findings. However, the people in the United States were yearning for knowledge, were eager for mass education, and were ready to put an end to the European method of tutelage, by which many young persons were denied opportunities for enlightenment.

There was a need for real leadership in America to inspire budding scientists in true methods of research, point out unexplored areas, and challenge them to find the answers to some of the problems in natural history. Agassiz and Baird emerged as two of these leaders, the first by reason of his charm on the platform and the second by the force of his letters. They put into motion the methods of developing the science of natural history. They had deep human understanding, shrewd powers of observation, solid scientific training, and above all a

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capacity for communicating effectively a desire for knowledge. Some of the basic facets of their lives will be mentioned first.

SPENCER FULLERTON BAIRD

Born on February 3, 1823, in Reading, Pa., Baird lived there for 10 years until his father died. Our eyes now turn to Carlisle, Pa., where this fatherless child prepared himself for his life's work in natural history. Young Baird was sent to West Nottingham Academy for a little over a year and to the grammar school of Dickinson College for one more year before he became, at the age of 13, a student in Dickinson. He first showed his interest in natural history while at the Academy, where he was known as one of the "possum hunters" who made the students' tramps into the countryside interesting. In his junior year in college he began to list the trips he made around Carlisle and what he saw, how many birds he shot and stuffed, what books he read, and what letters he wrote and received. We find here, in evidence of broader interests, that he read volumes of Shakespeare, Emerson, Coleridge, Longfellow, Carlyle, Tennyson, and others. By the time he was graduated from Dickinson he was a probing naturalist who had ripened into a sharp observer and a good collector.

After graduation from college he tried the study of medicine, but this was not to his liking. He was still impelled by an insatiable curiosity to learn more about fossils, birds, frogs, snakes, turtles, and other forms of nature. His jaunts around the countryside attracted many followers, as well as some jeers, for there was at that time no general interest in research. For help and encouragement in his quest he would walk as much as 20 miles to get books, or he would travel by rail to Philadelphia, New York, Washington, or Boston to discuss vexing questions. He wrote many letters, directing them to important scientists here and abroad, offering to exchange labeled specimens. Soon he found that often his specimens did not fall within a listed description. By making accurate observations with calipers he found true identification characters, often relegating existing names to synonymy. Before long he had the confidence of such well-known men as Audubon, who gave him some of his collection of birds. At this time, when Audubon was doubtful about an identification, he asked Baird to clarify species.

In 1845, after five years of inquiry into nature around Carlisle, he

was elected honorary professor of natural history at his Alma Mater, and a year later, full professor. Within a few years he became one of Dickinson's best-loved professors, and the catalog listed his department as "abundantly supplied with numerous specimens illustrative of various productions of the globe." By this time he had published some of his early observations, and also continued the study of languages. His accuracy and clarity of descriptions impressed most scientists.

During the summer of 1847, on his collecting trip to Vermont, he talked with Congressman George Perkins Marsh, who was impressed with Baird's knowledge of natural history and suggested that he make application for a position with the newly organized Smithsonian Institution. Marsh, who became a member of the Board of Regents of the Smithsonian on December 22, 1847, also suggested Baird as a qualified editor to translate and make ready for American consumption the four volumes of the *Iconographic Encyclopedia*, published originally in German. He began this translation while teaching at Dickinson and finished it after entering upon his duties as Assistant Secretary of the Smithsonian.

In 1850 Baird was appointed to the staff of the Smithsonian Institution. Marsh's recommendation of Baird had doubtless carried weight, and the support of Louis Agassiz and Asa Gray was probably just as important. With this appointment, at the age of 27, went all the specimens he had collected for the cabinets of Dickinson. He thus began an association with the Smithsonian which lasted for 37 years, the last 10 years as its permanent Secretary.

After one more collecting expedition into northern New York the summer he joined the staff of the Smithsonian, he entered into his coveted position with unmatched zeal. He helped to equip and instruct exploring expeditions to bring in all types of material. His letters to collectors and his personal appeals brought results. Material had to be analyzed, new species described, and reports edited. Many an administrator would have been content with a normal amount of publication in connection with these expeditions, but not Baird, for he was no ordinary man. He saw that there was need for monographs, new criteria in description, and more diffusion of knowledge. His volumes relating to mammals and birds were the first exhaustive treatises in those fields in the United States. His total output was some 1,065 published articles and books, of which "The Birds of North America," consisting of a thousand pages, issued jointly with Cassin

and Lawrence, and his volume "Mammals of North America," consisting of 764 pages and 84 plates, were his best pure-research efforts. He was long considered the national authority on birds, mammals, reptiles, and fishes. His publications were standard reference works in their respective fields.

As Assistant Secretary of the Smithsonian, Baird participated in the activities of many committees and in the Congressional committee hearings concerning the purchase of Alaska. He impressed the first Secretary, Joseph Henry, with the importance of museum collections as research tools, even though Henry was averse to the odor of alcoholic specimens. With his interest in people and his voluminous letter writing, he developed the system of international exchanges, which later developed into the official exchange of scientific and governmental documents between the United States and other nations. During the summers away from Washington he began a series of researches on seashore life at various localities along the New Jersey and New England coasts. The depletion of fishes interested him very much; from that interest and subsequent discussions evolved the Fish Commission in 1871, with Baird as the first Commissioner. In this role he performed a very important service to the fishing industry of the northeastern States and incidentally established an international reputation as a fish conservationist.

After he became Secretary, following Henry's death in 1878, he was instrumental in bringing about the erection of a building to be used solely for museum purposes. The museum and its collections were reorganized, and accessions increased rapidly, especially in the realm of ethnology. To carry on his fisheries research, permanent buildings were constructed at Woods Hole, Mass. It was here that he died on August 17, 1887.

Baird was a self-taught naturalist, a great leader of men, and one of the pioneers in the study of natural history in America. His impact on American science was ably stated by G. Brown Goode: "No name occupies a more honorable place in the annals of American science than that of Professor Baird. His personal contributions to systematic biology were of great extent. His influence in inspiring and training men to enter the field of natural history was very potent. As an organizer, working at a most fortunate time, he knew how to utilize his extraordinary opportunities, and he has left his impress forever fixed upon the

scientific and educational institutions of the United States, more especially those under Government control."

LOUIS AGASSIZ

Louis Agassiz was born on May 28, 1807, in a village parsonage at the foot of the Alps, in Motier, Switzerland. Before he was 10 years old he had collected insects, fishes, and plants from a nearby lake and the countryside. Early in life he interested other village children in his dissections and showed evidences of becoming the great teacher he was destined to be. His first sustained interest was in fishes, which were often kept in a spring-fed pool in the parsonage garden. His mother imagined her son would study medicine as her father had, but the boy was sent to a school to prepare for a career in commerce. Subsequently, he was allowed to pursue a course of medical studies at the University of Zurich.

Despite his promise to complete the study of medicine, he pursued, just as Baird had done, the study of natural history and was awarded a doctor's degree in zoology one year prior to his medical degree. While studying in these two disciplines, he was anxious to be with the top scholars in each. The universities he attended included Zurich, Heidelberg, Erlanger, and Munich, where he was instrumental in forming discussion groups which probed into the theoretical and philosophical. He showed an early brilliance in zoology and paleontology, and with a mastery of these subjects and especially good linguistic ability, he published the following works before he was 37 years old: In German, "Die süßwasser Fische Mittel-europas"; in Latin, "Selecta Genera et Species Piscium" (of Brazilian fishes); and in French (his supreme effort), "Poissons Fossiles." These publications together with his "Ice Age" theory made him an international scientist of first rank. After his formal studies ended, he traveled widely, studied under Cuvier, and taught in the College de Neuchâtel. There he soon attracted a large following and organized a printing establishment which plunged him into debt. This was later sold at auction, but he remained in debt. His financial burden, together with the fact that his wife had gone back to her family, made him anxious to try to redeem his fortunes in the United States. Through the influence of Humboldt, Agassiz received a grant of \$3,000 from Frederick William IV of Prussia to

study natural history in the New World. He was warmly received in the United States and soon derived enough money from lecture fees to pay off most of his European debts.

His success in lecturing stemmed from his tremendous breadth of knowledge in zoology and paleontology and his ability to project his warm, earnest, enthusiastic nature into the hearts of his listeners. He was also determined to interest scientists and laymen in the more philosophical aspects of the study of animals, their geographical distribution, natural relationships, embryonic growth, and their relationship to fossil remains. While he did research after he came to America, much of his effort radiated around popularizing natural history and training young men to do a thorough investigation on a particular subject. This kind of training demanded many specimens, and the realization that there was no good collection at Harvard challenged him to an all-out effort to gather there one of the best collections in America. Through this effort arose the Museum of Comparative Zoology at Harvard College, which, by the 1860's, housed one of the best zoological collections in the world.

To gather the specimens, to construct a building to store these huge collections, and to pay for his assistants demanded much money and effort. He succeeded in persuading several wealthy Bostonians to cooperate in these projects, but his most amazing feat was to convince hard-headed Massachusetts legislators to appropriate public money to Harvard, a private institution. Hence, to Agassiz is given the credit for awakening public responsibility for advancement in science. To fulfill his ambitions in this connection he always used his personal income to pay for the collection of specimens. When this was not enough, he again began lecture tours and occasionally took on extra responsibilities such as interim professor at the Charleston (S.C.) Medical College or visiting professor at Cornell University.

He was much interested in the Smithsonian, lecturing there on several occasions and serving on the Board of Regents for 10 years (1863-1873). He discussed its function and future with both Joseph Henry and Baird. Although he had several offers to return to Europe to accept important appointments, he refused them all because he loved the greater freedom in America and enjoyed his fame as its greatest popularizer of natural history. He died on December 14, 1873, at Cambridge, Mass.

THEIR MUTUALITY

How these naturalists first heard about each other is not definitely known, but it is probable that Baird, who was offering duplicates of his specimens to European naturalists in his attempts to clarify species, made the same offer to Agassiz while he was still in Europe. He made this offer personally when he was first introduced to Agassiz by Samuel Haldeman in Philadelphia. Agassiz was then on his tour of American scientific institutions following his arrival from Europe on October 3, 1846, and was anxious to meet the young naturalist from Pennsylvania.

In their first recorded correspondence, April 10, 1847, Agassiz suggested that Baird could make good his offer of assistance by collecting animal and plant specimens. Baird did collect many specimens for Agassiz, and after several personal meetings it was agreed that they would cooperate in a monograph on American fishes. Baird immediately began to fulfill his part of the agreement by making plates and describing six species in 1849. This work was edited and published by David Starr Jordan in 1889, two years after Baird's death. Baird completed most of his projects, while Agassiz would often leave one unfinished in order to begin another more grandiose one.

They had much respect for each other, Baird expressing it first when he wrote to Joseph Henry on February 25, 1847, about the possibility of a position at the Smithsonian: "I have had the honor of being called on to assist in perfecting the great 'Bibliographia Zoologica' of Professor Agassiz." They kept in close touch with each other concerning the position, and on July 11, 1850, Baird thanked Agassiz. "At last," he wrote, "I am Assistant Secretary to the Smithsonian, having just received the patents. The salary is \$1,500, to be increased, I hope, thereafter. To you more than any other are due my acknowledgments for the result, and I trust I may not disappoint your expectation in recommending me to Prof. Henry." At the end of Baird's September 7 letter he signed himself "Your attached disciple." Agassiz was pleased with such worshipful expressions and appreciated Baird's assistance. On October 9, 1849, he said: "I have received your box in perfect good state and return my best thanks for all the fine things sent to me, which are equally instructive and acceptable." Some time later, after the receipt of specimens from Baird, Agassiz wrote: "The turtles have

been of essential service to me and I truly thank you, for your promptness in forwarding them." Soon after that: "The most instructive set of turtles I ever saw." Later — "I am amazed at the amount of work you have accomplished and congratulate you heartily upon your accomplishments."

In 1873 while Agassiz was planning his final project, the summer school of biology on Penikese Island in Buzzards Bay, opposite New Bedford, Mass., he asked Baird to give some lectures upon his experiences "concerning fisheries & Economic ichthyology." Baird tentatively consented, but he never lectured there because his fisheries research station was in Maine that summer. However, he did help in facilitating the collection of specimens for use at Penikese.

While Baird never wavered in his regard for Agassiz, the same cannot be said of Agassiz for Baird. First came the Charles Girard affair. Girard was employed by Agassiz in Switzerland for some time and in Cambridge until 1850, when he decided to work for Baird and the Smithsonian. This shift in loyalty infuriated Agassiz to the degree that it was impossible for him to have anything to do with Girard. Perhaps this was the prime reason for Agassiz's lashing out at Baird on June 27, 1853, over his *Catalog of Serpents*, which Agassiz called "very crude." Agassiz wrote Baird: "To tell the truth of my impression I do not believe that you have had much to do with it and I hope sincerely for the sake of your scientific reputation that it will turn out so. But why did you not at least look it over? If you had been willing to listen to my advice before, you should have known that Girard though capable of sustained work and endowed with considerable ability in distinguishing the peculiarities of animals has no judgment, and is utterly unable to trace original researches without supervision."

But Baird was ready and able to answer effectively in a firm letter dated June 30, in which he explained why certain names were chosen. Baird showed that he had read the literature, had examined the specimens carefully, and had given priority credit where it belonged. Baird vindicated himself, but Agassiz never conceded it. About 10 years later Agassiz tried, in a haughty manner, to block the election of Baird to the National Academy of Sciences. Agassiz contended that Baird was interested mainly in the descriptive phase of zoology and not enough in the theoretical and philosophical phases. Baird was nevertheless elected.

This defeat for Agassiz and his clique, called the Lazzaroni, was

probably maneuvered by Asa Gray, a professor at Harvard and the foremost botanist of his day. Gray had been a friend of Baird's before Baird was associated with the Smithsonian, when he collected for Gray important stages in the life cycle of the rare box huckleberry *Gaylussacia brachycera* near Carlisle, Pa. Agassiz's loss of power so concerned him that he questioned Henry about it. A long letter was sent by Henry to Agassiz explaining to him that had Baird not been elected, many of the other members of the Academy would have resigned. Henry also advised him not to try to dominate the whole world of American science. This loss of prestige was a blow to Agassiz; nevertheless his popular appeal remained universally high.

TWO GREAT MUSEUM BUILDERS

At an early age Baird had begun to make collections, especially of bird skins. His diary, begun at the age of 15, at first listed field trips around the countryside. He would shoot, collect, and skin as many as 45 birds in one day. Soon he found himself accompanied by a group of students eager to hear his enthusiastic discussions of the differences in snakes, of a strange fossil, or perhaps of the characteristic markings of a new bird.

Agassiz, as a youth in Switzerland, had kept fishes in the family pool and had collected and probed into almost everything he saw. He also had had enthusiastic followers on his collecting excursions. Thus Agassiz and Baird independently fostered the field-trip method of studying nature at first hand, one in Europe and the other in America.

Besides his extensive bird collections, which afforded him opportunities for numerous exchanges, Baird started collecting fishes, reptiles, amphibians, and mammals. He then began to formulate ideas on how to organize collections in a museum. Before Baird was selected as Assistant Secretary, he outlined to Joseph Henry, the Secretary, his aims for the Smithsonian should he be appointed to the office: "My object is to make the Smithsonian Museum eminent above all others American for the value of its vertebrate fossil remains, a department in which everything remains to be done, although of the very highest zoological and geological interest. The collections I have made already under this head far outweigh all others of a similar character in all the American collections combined." Two freight-car loads of specimens collected while at Dickinson went to the Smithsonian Institution at the time of