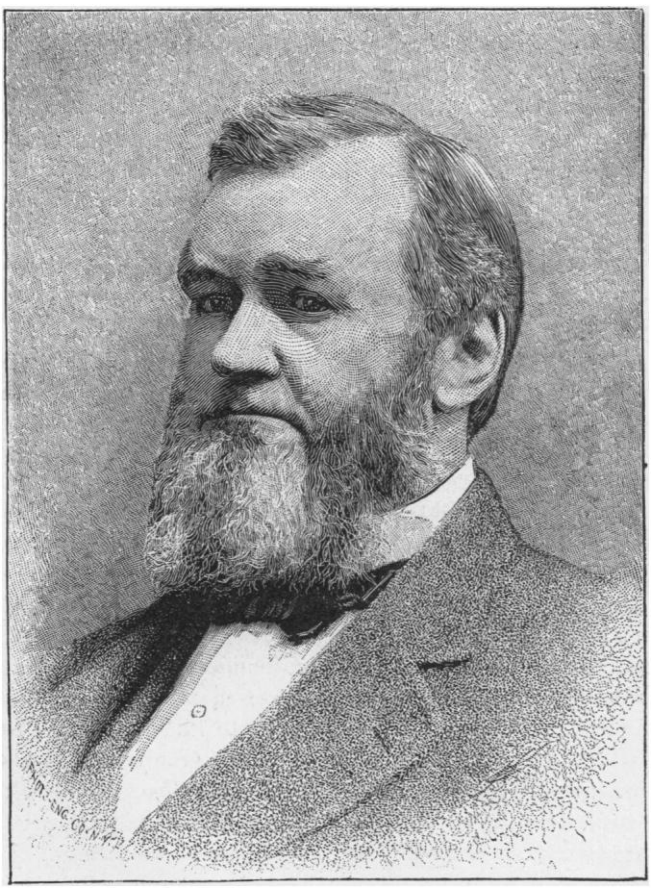
FRIDAY, MARCH 9, 1883.

SPENCER FULLERTON BAIRD.[1]

THE ancestors of the present secretary of the Smithsonian institution were of English, Scotch, and German origin. The grandparents were Samuel Baird of Pottstown, Penn., and Rebecca Potts. Their son Samuel was a lawyer established at Reading, Penn., where Spencer Fullerton Baird was born Feb. 3, 1823. His great-grandfather on his mother's side was the Rev. Elihu Spencer of Trenton, whose pulpit-eloquence during the war for independence brought him the honor of having a price set on his head by the Britis government.



Samuel Baird was a man of fine culture, a strong thinker, close observer, and lover of nature and out-of-door pursuits. He died in 1833; but his children, especially his sons William and Spencer, were largely influenced by their father's tastes, and early began the collection of specimens in natural history. They worked together; and there are still, in the museum at Washington, specimens of birds prepared by these boys forty-five years ago, by a simple process of evisceration, and then of stuffing the body-cavities with cotton and arsenical soap. The older brother entered the legal profession, and at the time of his death, in 1872, was U. S. collector of internal revenue at Reading.

The younger continued his studies and natural history pursuits without interruption. He entered Dickinson college in 1836, when only thirteen years old, and was graduated in 1840. He afterward carried on some studies in medicine, but never formally completed the course, and received his degree of M.D. *honoris causa*. His early interest in natural history was steadily encouraged and fostered. He was not compelled into a profession, but allowed to exercise the fullest freedom in researches and collections. A strong stimulus was in the friendship of Audubon, which he formed as early as 1838, while he was still a student in college. He was only prevented by ill health from accompanying Audubon as his secretary on his six-months' expedition to the Yellowstone in 1840. The older naturalist, in 1842, gave the younger the greater part of his collection of birds, including most of his types of new species. It was in these early years, also, that he formed

[1] For the portrait of Professor Baird, here given, SCIENCE is indebted to the liberality of the Photo-engraving company of New York.

lifelong friendships and associations with George N. Lawrence, John Cassin, John G. Morris, Thomas M. Brewer, and S. S. Haldeman.

In 1846 he was chosen professor of natural history in Dickinson college, and the next year accepted the additional work of chemistry. He remained in this position until 1850, declining a call, which he received in 1848, to a corresponding chair in the University of Vermont. His college-work included instruction of the seniors in physiology, of the sophomores in geometry, and of the freshmen in zoölogy; but the period was one, also, of great activity in collection and research, and in the beginning of his extensive publications. He found time to carry on the work begun in previous years, and to make, in summer, extended collecting expeditions to the Adirondacks in 1847; to Ohio in 1848, to collect, in company with Dr. Kirtland, from the original localities of the types of the fishes described by him in his work on the fishes of Ohio; to the mountains of Virginia in 1849; and to Lakes Champlain and Ontario in 1850. His fine physique and consequent capacity for work is doubtless due in part to his out-door life during these years. In 1843 he made pedestrian collecting-tours, the length of which was over 2,200 miles.

The first printed paper which bears his name is a description of two new species of fly-catchers, which was published in the Proceedings of the Philadelphia academy of natural sciences in 1843. As early as 1846 he was engaged in the preparation of a synonymy of North-American birds; and the next year he met Agassiz, just arrived from Switzerland with Desor and Girard. Then, or shortly after, was projected the work of Agassiz and Baird on The fresh-water fishes of the United States, which was, however, never published; although a number of illustrations, and some pages of text, were elaborated. Just before leaving Dickinson college, he undertook his first considerable literary work, — that of translating and editing the text for the Iconographic encyclopaedia, which was an English version of Heck's Bilder-atlas, published in connection with Brockhaus's Conversations-lexikon.

The work which he had already done had called attention to his scientific qualifications; and in 1850, upon the urgent recommendation of the late George P. Marsh, he was invited to Washington as assistant secretary of the Smithsonian institution, where he has ever since remained, succeeding to the secretaryship in May, 1878, upon the death of Professor Henry. The institution was then just issuing the first volume of its Contributions, and was in the first years of its organization. The main duty of the assistant secretary was the development of the natural-history collections. The only specimens in possession of the institution at the time of Professor Baird's arrival were a few boxes of minerals and plants. Professor Baird deposited his own already extensive collections, and these formed the nucleus of the Smithsonian museum. The collections of the Wilkes exploring expedition, which constitute the legal foundation of the United States national museum, were at that time under the charge of the National institute; and although, by the act of incorporation, the Smithsonian institution was the legal custodian of the 'National cabinet of curiosities,' it was not until 1857 that the regents finally accepted the trust, and the national museum was definitely placed under the control of the Smithsonian institution, and transferred to its building. Until this time, Congress had granted no funds for the support of the Smithsonian cabinets, and the collections had been acquired and cared for at the expense of the endowment fund. They had, however, become so large and important in 1857, that the so-called national collections at that time acquired were small in comparison.

The national museum, then, had a double origin. Its actual, though not its legal, nucleus was the collection gathered in the Smithsonian building prior to 1857. Its methods of administration, which were, in fact, the very same that had been developed by Professor Baird as early as 1845, when forming a cabinet in Carlisle, are those which are still in use, and

have stood the test of thirty years without any necessity for modification. In all this work Professor Baird and Professor Henry worked in harmony; and Professor Baird, since his succession to the secretaryship, has carried forward the same general system.

The growth of the museum has been very largely due to the scientific explorations which have been organized by the Smithsonian institution. The first grant ever made by the institution for scientific exploration and research was in 1848, to S. F. Baird, for the exploration of the bone-caves and the local natural history of south-eastern Pennsylvania. The direction of these explorations came at once under the duties of the assistant secretary, and remained throughout under his immediate care. In his reports to the secretary, published year by year in the annual reports of the institution, will be found the only systematic record of government explorations which has ever been prepared. The policy of the institution has, as is well known, always been to do such work as no other institution was able or willing to undertake. From 1850 to 1860 several extensive government expeditions were sent to the western territories; and it became the duty of Professor Baird to enlist the sympathies of the commanders of these expeditions in the objects of the institution, to supply them with all the appliances for collecting, as well as the instructions for their use. In most cases, also, he organized the natural-history parties, nominated the collectors, employed and supervised the artists in the preparation of plates, and in many instances edited the zoölogical portions of the reports. The fitting-out of such expeditions was only a small part of the work. From the beginning until now there have been thousands of private collectors who have derived their materials, their literature, and, to a considerable extent, their enthusiasm, from the Smithsonian institution. The Smithsonian 'instructions to collectors,' which has passed through several large editions, and many specific circulars of a similar character, were prepared by Professor Baird in connection with this department of his work.

In addition to this, the assistant secretary had from the outset the charge of certain departments of the routine work of the institution. The system of international exchanges, for instance, which had been one of the leading objects of the Smithsonian institution, was organized by him in its main details. Already, in connection with his private enterprises, he had developed a somewhat extensive system of exchanges with European and American correspondents; and the methods thus developed were expanded for the wider needs of the institution. His first task, after entering upon his duties, was to distribute the second volume of the 'Smithsonian contributions to knowledge;' and his hand may be seen in all the subsequent operations of this department; for the active oversight which he gave to the collecting and distributing work of the institution has not prevented him from continuous literary work. The extent of his contributions to science and scientific literature will be more readily seen after the publication of a bibliography of his writings, which is now in press, and will soon be issued as one of the bulletins of the national museum. The list of his works is complete up to the end of the year 1882, and contains 1,063 titles. Of this number, 775 are brief notices and critical reviews contributed to the Annual record of science and industry while it was under his editorial charge, 31 are reports relating to the work of the Smithsonian institution, 7 are reports as commissioner of fisheries, 25 are schedules and circulars officially issued, and 25 are volumes or papers edited. Out of the remaining 200, the majority are original contributions to scientific literature. Among the most elaborate of his original memoirs are the Catalogue of North-American serpents (1853), the Mammals of North America (1854), the Birds of North America (1858), the Review of North-American birds (1864–66), the Distribution and migrations of North-American birds (1865), and a History of North-American birds, in connection with Thomas M. Brewer and Robert Ridgway (1874). From 1870 to 1878 he was scientific editor of the periodicals

published by Harper & Brothers, and also edited their yearly cyclopaedia of science entitled the Annual record of science and industry.

Some idea of the scope of Professor Baird's work appears from the fact, that, of the total number of papers enumerated in the forthcoming bibliographical list, 73 relate to mammals, 80 to birds, 43 to reptiles, 431 to fishes, 61 to invertebrates (chiefly in the form of reviews), 16 to plants, 88 to geographical distribution, 46 to geology, mineralogy, and paleontology, 45 to anthropology, 31 to industry and art, 109 to exploration and travel. While the number of new species described does not necessarily afford any clew to the value of the work accomplished, it may be referred to as an indication of the pioneer work it was necessary to do, even in so prominent a group as that of the vertebrates. Among mammals there may be noted 49; birds, 70; reptiles, 186; fishes, 56. Forty-nine of two hundred and twenty, or nearly one-fourth of the mammals discussed in the Mammals of North America, were then described for the first time.

In 1871 Professor Baird was appointed by President Grant to the position of U. S. commissioner of fish and fisheries, — an unsalaried office, to the duties of which, for eleven years, he has devoted a large portion of his time. The literary product may be seen in the seven volumes of reports, and two of bulletins, issued by the commission; but the scientific results in research, and the economic results in stimulating a great industry, are difficult to measure. There has been a systematic investigation of the waters of the United States, and the biological and physical problems which they present; an examination of the methods of fisheries, past and present, and the statistics of production and commerce of fishery products; and an introduction and multiplication of useful food-fishes throughout the country, especially in waters under the jurisdiction of the general government, or those common to several states. The commission is an admirable illustration of the application to practical purposes of sound science.

The value set upon Professor Baird's scientific attainments is indicated by the various positions of trust to which he has been called, and the recognition which he has received from learned bodies. In 1850 and 1851 he served as permanent secretary of the American association for the advancement of science. In 1876 he served as one of the Government board of commissioners to the international exhibition at Philadelphia, and was also a member of the international jury. In 1877 he was present as advisory counsel at the sessions of the Halifax fishery commission, and, since 1878, has been one of the trustees of the Corcoran gallery of art in Washington; he has been president of the Cosmos club, and for many years a trustee of Columbian university. In 1856 he received the degree of doctor of physical science from Dickinson college, and in 1875 that of doctor of laws from Columbian university. He was, in 1878, awarded the silver medal of the Acclimatization society of Melbourne; in 1879, the gold medal of the Société d'acclimatation of France; and, in 1880, the 'erster ehrenpreis' of the Internationale fischerei ausstellung at Berlin, the gift of the emperor of Germany. In 1875 he received from the king of Norway and Sweden the decoration of 'knight of the royal Norwegian order of St. Olaf.'

He was one of the earliest members of the National academy of sciences, and has for many years been a member of its council. Besides honorary relationship to many scientific societies in the United States, he holds a foreign membership in the Linnaean society and the Zoölogical society of London, and a corresponding membership in the K.-k. zoologisch-botanische gesellschaft (Vienna), the Sociedad de geographia (Lisbon), the New-Zealand institute, the Koninklijke natuurkundige vereeniging in Nederlandsch-Indië (Batavia), the Magyar tudomanyos akademia (Budapest), the Société nationale des sciences naturelles (Cherbourg), the Academia Leopoldino-Carolina naturae curiosorum (Jena), the Naturforschende gesellschaft (Halle), the Naturhistorische gesellschaft (Nuremberg), the Geographical society of Quebec, the Deutsche fischerei verein (Berlin).