

THE "BAIRD MEMORIAL"



In mid 1903, during the annual meeting of the American Fisheries Society, AFS members, U.S. Fish Commission (USFC) staff, and other interested persons gathered at Woods Hole, Mass., to dedicate a permanent memorial to Spencer F. Baird, founder of the U.S. Fish Commission. President of the AFS that year was the USFC Commissioner George M. Bowers. Speakers were Chicago attorney E. W. Blatchford; W. K. Brooks, a professor at Johns Hopkins University, Baltimore, Md., who had conducted research at the Commission's Beaufort Laboratory; and, very briefly, the noted fish culturists Frank N. Clark of Michigan and Livingston Stone of Vermont. The following record of the dedication ceremony appeared as a two-part article in *The Fishing Gazette*, 22 and 29 August 1903.

The American Fisheries Society meeting was called to order July 22, 1903, at 2:30 p.m., on the grounds of the United States Fish Commission at Woods Hole, Mass., for the purpose of conducting memorial exercises in honor of Spencer Fullerton Baird.

The meeting was called to order by the President, George M. Bowers, who spoke as follows:

"At a former meeting of the American Fisheries Society a resolution was passed suggesting the erection of a tablet to the memory of Prof. Spencer F. Baird, an appropriate tribute and recognition of the distinguished labors in behalf of fisheries and biological science. A committee was appointed to raise the necessary funds and has faithfully performed its duty, so that we are here today to dedicate this memorial. It is certainly especially fitting that such a tablet should be erected at Woods Hole, the scene of so many of his scientific achievements, where his life's labors ended."

Following a brief invocation, the presentation continued.

President Bowers—The tablet will now be unveiled by Miss Rose McDonald, Miss Eleanor Bowers and Mr. Vinal N. Edwards.

The tablet presented by the Society was then unveiled. The President then read the inscription on the tablet as follows:

"In memory of Spencer Fullerton Baird, U.S. Commissioner of Fisheries 1871–1887, the American Fisheries So-

ciety places this tablet in appreciation of his inestimable services to Ichthyology, Pisciculture and the Fisheries. 1902."

President Bowers—It gives me pleasure to present to you Mr. E. W. Blatchford, who has been selected to deliver one of the addresses on this occasion.

Address of E. W. Blatchford

Mr. President and members of the United States Commission of Fish and Fisheries and of the American Fisheries Society, faculty and students of the Marine Biological School, ladies and gentlemen: It is three years since I had the honor of urging upon the American Fisheries Society, in response to resolutions presented by Dr. Smith, the erection of a monument to the memory of Professor Baird, and the appropriateness that such memorial should be located here, the scene of much of his most successful and distinguished scientific labor. The proposition met with an enthusiastic response, both from your society and afterwards from the United States Commission, which promptly assigned this most eligible point. A committee in charge of the work was appointed by the society with Dr. Hugh M. Smith as chairman. Under his thoughtful and efficient direction the plans were perfected, a granite boulder of worthy dimensions was found on the adjacent island of Nonnamasset, was brought and placed in position, and a commemorative tablet of bronze was designed and executed. To unveil this tablet we do meet here at this hour. Your committee would express their regret that the prosecution of important scientific investigations by the Government in the western Pacific Ocean prevents the presence with us of our honored chairman, Dr. Smith. He sends me his regrets that he cannot unite with us on this day, which was, on his suggestion, postponed a year that we might have with us the members of the American Fisheries Society.

It is due to this audience, as it is to myself, that I state that a friendship with Prof. Baird of some thirty years was the

argument that induced me to take part in these exercises. The time allotted will admit of but a slight sketch of some of this valuable life. For data in its preparation I am indebted largely to the memorial tribute of his esteemed friend and associate, George Brown Goode, and to other sources as well.

Spencer Fullerton Baird was born in Reading, Pennsylvania, February 3, 1823. His ancestry on the one side was English, upon the other Scotch and German. His great grandfather on the mother's side was the Reverend Elihu Spencer, of Trenton, New Jersey, one of the war preachers of the Revolution, whose patriotic eloquence was so influential that a price was set on his head by the British Government. His father, Samuel Baird, who died when his son was ten years old, was a lawyer, a man of fine culture, a strong thinker, a close observer, and a lover of nature and of out-of-door pursuits. His traits were inherited by his children, but especially by his sons Spencer and William. The early education of Spencer was obtained at a Quaker boarding school at Port Deposit, Maryland, and at the Reading grammar school. In 1836 he entered Dickinson College, and was graduated at the age of seventeen. After leaving college, his time for several years was devoted to studies in general natural history, to long pedestrian excursions for the purpose of observing animals and plants and collecting specimens and to the organization of a private cabinet of natural history, which a few years later became the nucleus of the museum of the Smithsonian Institution. The inheritance of a love of nature and a taste for scientific classification, the companionship of a brother similarly gifted, tended to the development of the young naturalist, and a still more important element was the encouragement of a judicious mother by whom he was permitted to devote the five years immediately following his graduation to his own plans instead of being pushed at once into a profession. In 1841, at the age of eighteen, we find him making an ornithological excursion through the mountains of Pennsylvania, walking 400 miles in twenty-one days, the last 60 miles between daylight and rest. The following

year he walked more than 2,200 miles. His fine physique and consequent capacity for work were doubtless due in part to his outdoor life during these years.

During this period he published a number of original papers on natural history. He also read medicine with a physician, attending a winter course of lectures at the College of Physicians and Surgeons in New York in 1842. His medical course was never formally completed, although in 1848 he received the degree of M.D., honoris causa, from the Philadelphia Medical College. In 1845 he was chosen "Professor of Natural History" in Dickinson College, which I find included the strange combination of "teaching the seniors in physiology, the sophomores in geometry, and the freshmen in zoology." His summers, however, were devoted to 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, 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. In 1848 he declined a call to the professorship of natural science in the University of Vermont. In 1849 he undertook his first extensive literary work, translating and editing the text for the "Iconographic Encyclopedia," an English version of Heck's *Bilder-Atlas* published in connection with Brockhaus' *Conversations-Lexikon*.

A large field now opened before Professor Baird. On the urgent recommendation of the late George P. Marsh he was elected an officer of the Smithsonian, and on July 5, 1850, he accepted the position of assistant secretary of this institution, and on October 3, at the age of twenty-seven years, he entered upon his life work, pursued with indefatigable earnestness in connection with that beneficent national foundation. Its aim, as well as the key to the consecrated life of Professor Baird, is found in the motto of the institution and of its generous founder, James Smithson, "The increase and diffusion of useful knowledge among men." He brought with him to Washington methods of work developed in his own personal

experience, which became at once the methods of the establishment. His scientific enterprise, however, was not unknown to the Smithsonian authorities, for we find that "the first grant made by the institution for scientific exploration and field research was in 1848 to Spencer F. Baird, of Carlisle, for the exploration of the bone caves and the local natural history of southeastern Pennsylvania." The thorough preparation and influential position in the world of science with which he entered upon these duties is evidenced by the friendships and partnerships he had during these early years already formed with leading naturalists on both continents, and the system of exchanges which in connection with his private enterprises he had developed with European and American correspondents. I have spoken of his connection with the eminent Dr. Kirtland in 1848. Ten years before that he had met Audubon and had felt the stimulus of his friendship, proved by Audubon's gift to his young friend in 1842 of the greater part of his collection of birds, and most of his types of new species. It was a keen disappointment to both that the illness of Baird prevented his accompanying Audubon as his secretary on his six months' trip to the Yellowstone in 1840. The early correspondence with such men as George N. Lawrence in 1841; with Cassin and John G. Morris in 1843, and with Brewer, and Haldeman in 1845 influenced Baird's after life. In 1847 he met Agassiz just arrived from Switzerland in company with Desor and Girard. How natural was the sympathy immediately developed between these congenial spirits is shown by the fact that within a year was projected the work of Agassiz and Baird on "The Freshwater Fishes of the United States." In 1843 he translated Ehrenberg's "Corals of the Red Sea" for the Prof. J. D. Dana, then preparing his reports for the United States Exploring Expedition, and in 1846 we find him in Boston consulting the libraries of Amos Binney and the Boston Society of Natural Sciences for preparing a "Synonymy of North American Birds."

Before this audience I need not dwell upon the signal influence of Professor

Baird in the encouragement of scientific enterprise from the time of his entering upon his official connection with the Smithsonian. The Department of Explorations from the start was under his charge. What that meant of laborious but enthusiastic work in organization of the extensive government expeditions, selecting commanders, nominating collectors, employing artists, and often editing the zoological portions of the reports, with the immense home and foreign correspondence involved, can only be estimated by an examination of the voluminous and systematic records of the institution. Thus have I gathered what seems a very meager sketch of the development of the life of Prof. Baird up to the time when in 1874 the office of Commissioner of Fish and Fisheries was established, to which office he promptly received the appointment. And what a wealth of knowledge, study, observation, administrative ability he brought to this most attractive field of research and public utility. There is no need that time be given here to detail the work of the United States Fish Commission. With its three-fold object you are familiar—first, the systematic investigation of the waters of the United States and the biological and physical problems which they present; second, “the investigation of the methods of fisheries, and the statistics of production and commerce of fishery products; and third, the introduction and multiplication of useful food fishes throughout the country.” This annual gathering bespeaks the intelligent interest which from all portions of our country centers in this beneficent work. It remains that I briefly sketch a few traits of the noble man who organized this work and in whose memory we are met at this hour. Though these have been often dwelt upon by those in intimate official connection with him, the occasion demands a few reminiscences, in which you will pardon some allusions of a personal character.

It was in connection with the organization and administration of the Chicago Academy of Sciences about 1868 that my acquaintance with Professor Baird first began. I had become interested in him through his papers on birds, but still more through my friend, his eminent

predecessor in the Smithsonian, Professor Henry; and also through the glowing encomiums of Professor Agassiz, both of whom had visited our city. The first impression made when I came in contact with him was of a man of indefatigable activity of body and mind. This impression was correct, and subsequent acquaintance, whether in the Smithsonian or in his own home in Washington, or in his summer quarters at Woods Hole, when surely recreation should have been secured, corroborated that first estimate. What a proof of tireless devotion is given in the bibliography of his publications prepared by Dr. Goode, issued in 1883. This list embraces 1,063 titles of which 73 relate to mammals, 80 to birds, 43 to reptiles, 431 to fishes, 61 to invertebrates, 16 to plants, 88 to geographical distribution, 46 to geology, mineralogy and paleontology, 45 to anthropology, 31 to industry and art, and 109 to exploration and travel. I know of no such evidence of tireless devotion in existence, where you consider the number of contributions, the breadth of research involved, the thoroughness of treatment, and also take account of the constant burdens carried by the writer in administration of three great organizations—the Smithsonian Institution, its ward, the National Museum, and the Fish Commission. And to such a life did the world bear abundant testimony. Almost every civilized country paid him honor. Honorary degrees came to him from the universities and colleges of our own land, and I know of no prominent scientific society but what claimed him in its honorary membership. All realized indebtedness due to one who was a perennial spring of enthusiasm in departments of scientific effort so varied. Mention should be made of testimonials bestowed by foreign countries. In 1875 he received the decoration of Knight of the Royal Norwegian Order of St. Olaf from the King of Norway and Sweden. In 1878 he was awarded the silver medal of the Acclimatization Society of Melbourne, and in 1879 the gold medal of the Société d’Acclimatation of France. He bore corresponding, or honorary, memberships in zoological or botanical societies in London, New South Wales, Vienna,

Lisbon, New Zealand, Batavia, Budapesth, Cherbourg, Jena, Halle, Nuremberg, Quebec, Berlin.

It was a touching tribute to Professor Baird’s services that was received soon after his death from Yize, the most northerly island of the Japanese Archipelago, in the form of a little volume beautifully printed upon silk, containing his portrait and the story of his character. Perhaps Germany more than any other country recognized the importance of his services to fish culture. In 1880 at the first great International Fishery Exhibition held in Berlin, the magnificent silver trophy which was the first prize was awarded to him by the Emperor William. It has been stated that while Professor Baird’s portrait hung over the entrance to the American section at Berlin, the Kammerherr von Behr, the president of the German Fishery Union, the most influential fishery organization in the world, never passed under it without taking off his hat in honor of the “first fish-culturist of the world,” as he delighted to call him. The nomenclature of zoology contains many memorials of his connection with its history. A partial enumeration shows that over twenty-five species and one genus of fishes bear his name, and that not less than forty species have been named in his honor. These will for all time be monuments to his memory as lasting as the institutions which he founded.

To his friends who know him best and miss him most it seems pleasanter to dwell upon the recognition which his labors received than upon the labors themselves, his devotion to which so shortened his life.

Time forbids any analysis of the character of Professor Baird. Indeed the occasion, and my personal relations to him to whose memory we consecrate this hour favors no critical sentiment. I may briefly present a few characteristics which memory bring before me. And first there stands out his modesty, always impressive whether in personal contact or in his writings. Although constantly before the public he seemed never to care for public recognition. Throughout a long life given to the public service, I find but one instance where he was induced to take the platform in a

public place. This occurred a few months before his death, when Harvard University conferred upon him the degree of LL.D., as an "eminent promoter of science."

No man was more easily approached than Professor Baird. His reception of young persons, especially those with an inclination to natural history, was particularly charming, at once relieving them from embarrassment and captivating them by his unassuming manners, his geniality, and frankness. I wish there were time to present instances of these traits. They irradiate through his whole life. His unflinching geniality was proverbial. These characteristics secured for him the favorable consideration of congressional committees when presenting his requests for money to be used in the expanding work of the Fish Commission of the National Museum.

May I mention one other very marked trait in Professor Baird? His aversion to personal controversy, so decided that under no circumstances could he be drawn into one, and this when as a pioneer in scientific research his views always frankly expressed called out frequent criticism. One who knew him well writes: "One of his striking characteristics was that he would never quarrel, and never have anything to do with the quarrels of others. He was always for peace."

But the earthly end of this noble life drew on. Nature could no longer endure the strain which for nigh half a century unremitting, unselfish devotion to the promotion of science had made upon mind and body. For many months before the end, Professor Baird knew that the closing shadows were gathering. The public realized it when with startled sorrow early in 1887 at his request the Regents of the Smithsonian authorized the appointment of Professors Langley and Goode as assistants. The aid came too late. In the early summer he returned to Woods Hole, vainly hoping its pure air and cool breezes might still permit some participation in his loved Fish Commission work, and this satisfaction was to some extent granted him. His life was now restricted, and with many results of his life work about him, he calmly awaited the highest summons. In

this period of weakness it was his pleasure, placed in a wheel-chair, to be moved around the pier, past the vessels he had built for research, and through the laboratory where many were at work in biological investigations. For every one he had words of good cheer, well knowing they were words of farewell. The end came when after a brief period of unconsciousness he breathed his last on August 19, 1887.

Of all the tributes to his character none was more eloquent than one at the funeral services, which were held in the Fish Commission building. The simple burial service had been read, when the clergyman recited these words from the Sermon on the Mount: "Blessed are the merciful, for they shall obtain mercy. Blessed are the pure in heart, for they shall see God. Blessed are the peacemakers, for they shall be called the children of God."

During the reading of the paper the writer said: "I also say, at that very time Dr. Kirtland discovered the bird which now bears his name on the western shores of our own Lake Michigan.

"One evening I was sitting with Prof. Baird at his house in Washington, and I said, 'A friend in Chicago has had a motto placed over his mantle which has interested me very much, and I would like to see one over yours.' 'What is it?' he said, and I suggested the motto, 'The increase and diffusion of useful knowledge among men.'"

At the end of his paper, the writer said:

"His thoughts were with his work up to the last. In the morning one of his nearest aids and assistants, one who is now honored by all for the work that he is doing for this Commission, called upon him, as was his habit, in the early morning, and Prof. Baird said to him, 'I wish you would set a trap off Butler's Point. I think there are grounds there that may bring in something.' He left immediately and went about the work, and when he was getting the poles set to which he was attaching his net, as he looked over at the commission, he noticed that the flag had been placed at half mast, and he came home and found his chief then lying in the present office, dead."

Address of W. K. Brooks

One must be an ornithologist, and an ichthyologist, and an explorer of the deep sea, and he must have in his mind the whole history of these great departments of biological science, if he is to speak of the contributions to these varied aspects of natural knowledge which we owe to his earnestness and industry and scientific insight.

One must search the records of the Smithsonian before he can venture to speak of the results of his long service to this institution as its secretary, and one must know its later history, in order to understand the permanent influence of his administration.

One must know how the collection which he brought together overflowed its crowded cellars and dimly lighted corridors, until he laid the foundation of the National Museum, and established it so firmly, and made such wise and skilful provision for its growth and improvement that it has quickly outgrown the generous limits of the home which he provided, and must soon be cared for in a still more stately and commodious building.

One must know the history of the National Academy of Sciences, to understand his part in the organization of this body of eminent men to be the advisors of our government on those affairs of state which call for the experience and technical knowledge and judgment of scientific experts.

No one who has not seen the work of the United States Fish Commission, in all its details, upon land and sea; its work of exploration in our streams and lakes, and along our sea-coast, and in the depths of ocean; its success in protecting and preserving and increasing the aquatic supply of human food; the contribution it has made to the peace of nations by protecting and defending our fisheries from international complication; its work of biological research in the laboratory and the museum—no one who has not seen and studied and reflected upon all this until he has come to understand it in all its interrelations with economics, and biology, and education and statesmanship, and intellec-

tual development, can venture to speak of this, the greatest of Professor Baird's creations.

Finally, no one who did not enjoy the life-long confidence and friendship of Professor Baird can take the liberty of telling of the sweetness and grand simplicity of his nature, of his quick and lively sympathies, of the magnanimity and disinterestedness and directness of thought which were shown in his every word and act. I knew him but little, and only near the end of his days, and while I was able to perceive how much these qualities, which so endeared him to all who knew him better, contributed to the success of his great undertakings, I have no right to talk of him from this personal standpoint.

You are all as familiar with his great achievements as I am. You know that he increased the efficiency of the Smithsonian Institution for the diffusion of knowledge. You know that he conceived the plan for a National Museum, and put it into execution. You know that he was one of the founders of the National Academy of Science, and that he was prominent in its councils. You know that this laboratory is his work and that he was the father of the Fish Commission, and that all its diversified lines of activity were clearly and definitely outlined by him and that they have become the accepted standard and model for similar undertakings the world over.

I should have found it a pleasant task to have made some one of these great achievements the subject of this address. I should have found profit and instruction in discovering the obstacles and difficulties which Professor Baird overcame, and in studying the tact and wisdom with which he planned and executed all his undertakings. It would have been a congenial occupation to have seen and mastered all the ramifications of the activity of one of these great creations of his genius; its growth from the foundations which he laid, along the lines which he so clearly foresaw and provided for; but I regret that it has not been in my power to handle any of the topics today; for the high honor of the opportunity to speak of the work of this great naturalist and many-sided man of science came to me only a few

days ago, far from books of reference and means of inquiry, at a little laboratory which I had set up at a remote point, in order to complete, in a cool climate, a biological research for which I had gathered the material, in the early part of the summer, at the new laboratory of the United States Fish Commission at Beaufort, North Carolina.

After the completion of the central station at Wood's Hole, it was Prof. Baird's plan, announced many years ago, to promote the study of marine biology by the erection of laboratories at points upon our sea coast selected for their natural advantages; and I cannot too highly commend the wisdom which has led his successors to select Beaufort for the first step in the movement to give effect to his intention.

The new laboratory, which was opened last summer, is a carefully and skilfully planned and beautifully constructed building; and it is, in all things, a model and an object lesson, for I have never seen a more convenient and comfortable and attractive laboratory.

It stands alone upon a little island close to the town of Beaufort, and it is within easy reach of the fauna of the North Carolina seacoast, in all its wonderful richness and variety and inexhaustible abundance. It is thoroughly equipped with everything that the investigator can ask, and with all the comforts that he needs to make his life a pleasant one in the southern summer.

I cannot describe to one who has not lived and worked in this laboratory the care and thought and intelligent foresight that have been shown by those who have had it in their charge to put the plans of Professor Baird into practice, and to foresee and provide for all the needs of the investigator.

I have myself spent many summers at Beaufort with scanty facilities, and under many hardships and privations, and I had come to consider them the necessary incidents of summer work in the waters of North Carolina, so that I was lost in amazement to find myself surrounded with comforts and conveniences at the new laboratory, as I reflected that the investigator who works there in future years will have no thought of Beaufort, except as a place where

every advantage is to be enjoyed without any discomfort.

They will owe these good things, as I have myself owed many opportunities to Professor Baird; so, reluctant as I was to lay aside my own work when my invitation came, I felt that it was not only a privilege, but a duty, to leave my microscope and my embryos and to come here today to bear witness to my own great debts to him and to remind the younger generation of naturalists how much they owe to him.

As I have not been able to refer to the publications in which the story of his great achievements is recorded, I cannot enter into a specific account of any of his great works, so I must try, as well as I can, to look at them from a more general standpoint.

It is in all modesty that I undertake this task, for the life and works of a great man like Professor Baird teach many lessons to many men, telling each one only that which he is best prepared to hear and to understand. I am well aware that he who ventures to read to others the lesson of such a life may only succeed in laying bare, to some one of deeper penetration, his own inability to grasp its truest and best meaning.

Professor Baird's public life began at a time when the scientific bureaus of the government, which have grown and multiplied with such rapidity in our day, and have become so prominent, and complicated, and important, were in the air, although they had, as yet, hardly begun their existence in tangible form.

There was need for a leader and an organizer; for a man who, while well trained in some branch of science, and thus qualified to distinguish the mere pretender from the true investigator, was also endowed with the breadth of view and the catholicity of interest which fit one for generous admiration for success in other fields, and lead them to do all in his power to promote it.

A man was needed who could inspire the confidence of his colleagues and contemporaries, sympathize with and encourage the young, reconcile the rivalries and jealousies of his fellow-workers; and thus bring it about that as the various scientific bureaus of the government began to be organized and

equipped for their duties, they grew up in a spirit of friendly cooperation and mutual aid.

There was need for a man whose integrity and unselfishness of purpose and earnestness and simplicity of character and clearness and directness of thought and speech and action were so evident and so universally known and esteemed, that he could command a friendly hearing from the seat of government, and gain the intelligent interest and support of Congress for new and expensive plans to extending the scope and increasing the efficiency of our scientific bureaus.

Professor Baird was eminently fitted for this peculiar and difficult field of usefulness. He had many able and eminent allies and fellow-workers, and while he must not have all the credit for the wisdom with which the scientific work of our government was organized and coordinated, it is nevertheless a fact that there are few scientific bureaus which do not still exhibit the impression of his hand, while some of them are his alone.

My own acquaintance with him began in the later years of his life, at the time when he was fully occupied in developing the plans and in laying the foundations upon which such stately edifices have been reared; so I am unable to speak of his younger days; but I cannot believe that he willingly turned aside from his earlier studies of ornithology and general natural history, or that he abandoned these pursuits for the weary and vexatious work of administration without a struggle.

He perceived the needs and the opportunities of his day, and he knew his own ability to make a wise use of these opportunities, and he entered into the work which lay nearest his hand with all the enthusiasm and energy of his kindly and disinterested nature.

The institutions with which the name of Professor Baird is associated, and the works to the encouragement and promotion of which his life was devoted, exhibit a three-fold purpose—to promote the progress of natural knowledge through researches in laboratories and in museums, and through explorations and discoveries, and through the reward of membership in the National Academy

of Science; to diffuse and distribute it among men by means of publications and museums and exhibitions; and to advance its application to the material needs of mankind through the protection and regulation and development of the bounty of nature. We are too apt to look at these three aspects of science as three distinct and independent fields, each of which may be successfully cultivated out of all relation to the others. Thoughtful scientific investigators, who ought to know better, are not always free from a feeling of superiority to those who devote themselves to its diffusion or to its practical application; and some, who are less thoughtful, have been heard to speak in disparaging terms of the mere popularizer, and of bread and butter science. Some of them have even been known to boast that the object of their own researches is so far removed from the possibility of practical application that it can never, by any possibility, be put to any conceivable use whatever.

I am not able to say anything about the secret reflections of those who have grown rich through the practical application of scientific discoveries, but I have an impression that their respect for the investigator who, while he may earn his bread, has but a small share of the world's butter, is not very great, and that they do not always look upon him as one whose life has been altogether successful.

No one has ever been more free from every trace of this littleness of mind than Professor Baird. To him the promotion of science, and its diffusion, and its practical application were not three independent ends which could be attained by different means. He was as well aware as Francis Bacon that it is only in the coordination of these three aims, and in the maintenance of a just and equal balance between them, that science finds its true inspiration and its very life. It may be that the naturalist is better prepared than other men of science to perceive this. The practical application of natural history to the material needs of mankind is not, commonly, of the sort for which men pay money. It is like the rain and the sunshine. It is not thought of as enriching any, because it enriches all. It is, no doubt, for this reason, that

there is more mutual respect and regard and good fellowship between those who devote themselves to research and those who are occupied with its practical application in this province than there is in other branches of science.

As Professor Baird was a naturalist, he was better fitted than most men of science for diffusing and applying natural knowledge, as well as encouraging it and contributing to its advancement; and all his undertakings bear witness to the soundness of his judgment as to the balance which should be maintained, in a bureau of our government, supported by the people of our country, between these three purposes, and the way in which success in the accomplishment of each of them should be made to contribute to the sound and healthful progress of the others. This is, in my opinion, one of the most instructive lessons of his life and work, and it is nowhere more clearly illustrated than in the organization and operation of the Fish Commission. It is because of the wisdom and foresight with which the Fish Commission has been so organized and conducted as to bring this about that it has come to be looked upon, by foreign governments, as a model to be studied and copied from.

The purpose for which it is maintained by our citizens is the improvement of our fisheries, and it has seemed to some that deep-sea explorations and research in laboratories are no part of its duty to the public, but Professor Baird knew the progress in the expansion and improvement of the economic work would soon come to an end without the aid of the student of pure science, and that the Commission would quickly degenerate into a mere clerical routine and mechanical round of perfunctory duties without the inspiration of scientific discovery.

All men prize the fruit, but he understood that the tree will soon be barren if we visit it only at the harvest; that we must dig about it and water it, and cherish the blossoms and the green leaves, else there will soon be no fruit to be gathered.

But I have no thought of coming before you today as a champion of pure science; nor do the people of America

need to be informed that it is the fountain head from which all the arts that enrich our civilization are supplied. So I ask your leave to devote the rest of my time to the examination of a criticism which has been made of the practical work of the Fish Commission—an objection which, because of its plausibility, and because of the eminence of the authority who has been its most prominent advocate, has had great weight with many of the thoughtful and reflective, and has received the endorsement of many naturalists.

You all know that Huxley believed, and took many public occasions to declare, that marine fishes, like the cod and the mackerel, inhabit the ocean in such innumerable multitudes, and are so prolific, that the utmost efforts of man can have no practical effect upon their numbers, because they are exposed to the ravages of so many natural enemies that the destruction caused by man is not worthy of consideration in comparison. He is, therefore, led to believe that efforts to maintain them in their natural abundance or to add to their numbers by artificial propagation are misdirected and useless. Respect for Huxley's experience and good sense and sound judgment has led many to think that this opinion is sound and well warranted, and when we reflect that innumerable millions of young mackerel and cod are born in a state of nature for each one that can be reared artificially, and that millions are born for each one that lives through the perils of infancy and survives to maturity, there does not seem to be reason for doubting whether the efforts of man to affect the supply of marine fishes by artificial means can have any effect; for man's addition to their numbers is only as a drop of water in the ocean, and the chances of survival of any young fishes that are hatched by human aid and then cast into the ocean to share the perils of those that are born naturally can only be as one in millions.

Yet, with all deference to Huxley, I venture to assert that it is he who has made the mistake, and failed to comprehend the problem of the life of marine food fishes, and not Professor Baird and his successors, and that the burden of error is on his shoulders and not on those

of the Fish Commission.

Marine food fishes are enormously prolific, because they are exposed to so many dangers and enemies. Natural selection has, in course of ages, brought about such an adjustment between the natural destruction of the individuals of each species and their birthrate, that the number of mature individuals of the species is about equal to the resources of the natural supply of food, and remains constant on the whole, so long as the natural conditions of their life remain unchanged. But when a new disease, or a new rival, or a new enemy, which has not been provided for and guarded against by natural selection, invades their home and comes to stay, the destructive effect of this new element in their lives soon shows itself, even when its ravages are so slight, as compared with the total number of violent deaths, that it seems to be trivial and unimportant. Man is the most resistless and insatiable of destroyers. The fear of him and the dread of him is upon all the beasts of the field, and upon the birds of the air, and upon all the fishes of the sea, and upon everything that moveth upon earth, but he is not a part of that order of nature to which the birthrate of marine animals has been adjusted. As a navigator and a sea fisherman he is too new to have given natural selection time to have produced any compensating adjustment; and the quickness with which he invents new weapons of destruction, and improves himself in their use, far outstrips the movement of this slow process of modification; for the time he has needed to progress from the bone fishhook and the hurdle of rushes to the steam fishing vessel, is as nothing in the long history of species. It is, no doubt, true that the whole number of mackerel and cod and herring which he destroys is as nothing when we compare it with the slaughter wrought by bluefish and porpoises and dogfish and other sea robbers, but this slaughter is provided for in the birthrate, while that which he works is not. While a number of food fishes, greater beyond all computation than man destroys, has been destroyed by natural enemies each year for ages without any effect upon their abundance, every one knows that when man turns

his energy and intelligence and inventive skill to the work of destruction he quickly brings about a very notable decrease in the supply. It is because the slaughter caused by man is infinitesimal that an infinitesimal increase in the birthrate is all that is needed to make it good, and this infinitesimal increase in the birthrate it is, fortunately, within the power of man to bring about by artificial propagation. Instead of showing that efforts to maintain sea fisheries by artificial propagation are misdirected and useless, the well-known facts to which Huxley calls our attention, turns out, when carefully considered and thoroughly understood, to afford the clearest proof of the prudence and wisdom and foresight and scientific knowledge of Spencer Fullerton Baird, the founder of and father of the United States Fish Commission.

President Bowers—We have with us today two members of the American Fisheries Society who are among the early appointees of Professor Baird. Both of them, as known, have made splendid reputations for themselves in connection with the United States Fish Commission. It gives me pleasure to present to this audience Mr. Frank N. Clark, of Northville, Mich., who will address you.

Remarks by Frank M. Clark

Mr. President and Fellow-Members of the American Fisheries Society, Ladies and Gentlemen: It is with a feeling of the deepest sadness that I undertake to tell you my feelings towards the man whom this memorial tablet represents. It is true that I was connected with Professor Baird in the early stages of the Fish Commission. My association with him was from time to time, and during a period of about fifteen years, when the Fish Commission was not what it is today, when the practical men of the Fish Commission were working in all manners and ways, as you might say, to get the Fish Commission started, and none of those practical men had a warmer friend in all the work than Professor Baird. He was an inspiration to them to

do all they could in helping to establish the Fish Commission. I might tell you all that I feel and all that Professor Baird did for me, but my heart is too full to express it, even had I the ability to do so. Professor Baird was an inspiration in his talk, and many a talk have I had with him on the practical side of fish culture. Discouragements would arrive, and through his talk and through his correspondence new inspiration was given. My friends, not having had time to prepare anything, as I was only spoken to to say a word in regard to this matter, I will now leave you.

President Bowers—The other gentleman I referred to a few minutes ago is Mr. Livingston Stone, of Vermont, who will now say a few words:

Remarks of Livingston Stone

Mr. President and Members of the Fisheries Society and Ladies and Gentlemen: I do not feel that I can add anything to the very able and interesting addresses which you have already heard, but at the same time I do not feel as if I could decline to say anything on this occasion, for I was one and I am one of the few living early appointees of Professor Baird, when the United States Fish Commission was started. It was my privilege to know Professor Baird from about the time that the Fish Commission started until the time of his death. It was also my privilege to be in somewhat close relations with him up to the time of his death. For it is just thirty-one years ago this month, and almost thirty-one years ago this very day, that I was appointed by Professor Baird to be his deputy commissioner for the Pacific Coast, but if I should attempt to say anything at this time without preparation I should certainly not feel equal to the occasion. However, just before I left home I happened to come across a copy of the *Forest and Stream* which had something in it which I wrote some time after Professor Baird's death, and although I think it is hardly fair or proper to inflict a printed page upon my hearers today, or upon any occasion, I feel sure that it would be much more satis-

factory to you if I should read from this notation of *Forest and Stream* than if I should try to make any fragmentary remarks without preparation. So, with your kind permission, I will read one or two extracts, but I will not take much of your time:

“The mere mention of Professor Baird's name strikes a chord of dear memories in the hearts of all who knew him. No man of our time has left a purer memory, a more stainless name, or a more animated or enduring influence over his special field of labor than Professor Baird. He was loved by those who knew him when he was living; he is revered by those who have survived him. Professor Baird lived in a higher plane of life and breathed a purer atmosphere than most men. Quiet and unassuming, with a nature as gentle as a child's his natural superiority never failed to show itself when he was with other men, not even among the distinguished men who gathered in the winter at the National Capitol. Yet he was thoughtful and considerate of his subordinates, and always ready to give his meed of praise of any work well done by his humblest employee. Professor Baird had the enviable gift not only of endearing everyone to him who came in contact with him, but of inspiring them with his own enthusiasm and energy. This made Congressmen vote him all the appropriations that he asked for; for it was a common saying at Washington that Congress gave Professor Baird everything that he wanted. Like a good general, he had the personal welfare of his men at heart while he was Fish Commissioner, and they in turn wanted to do everything in their power for him, which, doubtless, was one of the secrets of his great success. It is a fact that his employees in the Fish Commission would voluntarily work a great deal harder for Professor Baird than they would for themselves. This fact is prevalent for another saying at Washington at that time—that Professor Baird's men were the busiest workers in all the departments. It was the inspiration of this patient, disinterested, tireless, kind-hearted and lovable man, whose work they were doing, that made them work so well, and also make their

work a pleasure.

“It is unnecessary to say that Professor Baird possessed extraordinary mental endowments, but I perhaps may mention one or two, as they are so rare. He had a quickness of apprehension that sometimes seemed supernatural. For instance, he would glance down a printed page and comprehend in a moment what would take others several minutes to read.

“He had a marvelous memory, not only retentive of everything intrusted to it, but quick to call up anything that was wanted when it was wanted—a quality which most of us know well how to appreciate. His mind was also of the clearest type. No complications ever seemed to confuse him; he never became involved during his conversation, no matter what were the intricacies of the subject. His mind, like his placid temper, never seemed to be ruffled or disturbed. Extraordinary as his mental faculties were, he had evidently added to their efficiency by severe discipline, for he possessed that infallible mark of a well-trained mind, of having all of his great and diversified stores of knowledge classified and grouped together in his brain according to subjects, so that he could call up his whole knowledge of any subject at a moment's notice. Another remarkable thing about Professor Baird's mental composition was that with a thoughtful, scientific cast of mind were united qualities of the most practical character. Professor Baird was a scientific man by nature. He loved science and scientific studies; but at the same time no man had a sounder judgment or a clearer head in the management of practical affairs than he did. It is very rare to see scientific and practical qualities of mind united in such an eminent degree as they were in Professor Baird's.

“Professor Baird was gifted with still another unusual mental endowment, which reminds one strongly of one of the traits of the first Napoleon. With that comprehensiveness of mind which takes in the broad features and large general outlines of a great enterprise, he combined, as Napoleon did, a capacity for close and thorough attention to all the details of a subject down to the minut-

est item necessary to success. This combination, as we all know, is a rare one.

“Professor Baird has been called a plain man. He was a plain man indeed, but one who was made after Nature’s largest pattern of men. He was large in men-

tal calibre, and large in physical frame; large in his broad sympathies and in his wide scope of vision; large in his comprehensive grasp of great aims, and large in his capacity for great undertakings; large in everything, but small in nothing.”

President Bowers—This closes our exercises, and on behalf of the American Fisheries Society, I want to thank you for your courteous attention and your presence here this afternoon.