

**AN ADDRESS IN  
COMMEMORATION OF  
ALEXANDER DALLAS BACHE:  
DELIVERED AUGUST 6, 1868**

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An Address in Commemoration of Alexander Dallas Bache: Delivered August 6, 1868 by  
Benjamin Apthorp Gould

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**BENJAMIN APTHORP GOULD**

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from the author*

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AN

A D D R E S S

IN COMMEMORATION OF

ALEXANDER DALLAS BACHE,

DELIVERED

AUGUST 6, 1868.

BEFORE THE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,

BY

BENJAMIN APTHORP GOULD.

President of the Association.

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ADDRESS

IN COMMEMORATION OF

ALEXANDER DALLAS BACHE,

BY

BENJAMIN APTHORP GOULD.

GENTLEMEN OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE:—

It is no common event which you have called upon me to commemorate. Death, who comes with an impartial tread into the hovels of the poor and the castles, of monarchs, is a visitor too well known to us all. Yet, sometimes he assumes a new aspect. When, three years ago, at the very moment of the hard won and stern rejoicing of the Republic, we saw her first citizen struck down in the midst of the people who honored him, the destroyer gained almost a new power in our imaginations. So is it with us now. He, who by common consent, unquestioning and unchallenged, stood forth preëminent as our leader in science, our first counsellor where her welfare was at stake, unflinching in the maintenance of her interests, wise in the guidance of her affairs,—he has gone from among us.

Adequately to portray the character, abilities and influence of such a man would be an undertaking from which the ablest tongue or pen might shrink. It is not for the labor it implies, for labor is fitly bestowed in recording a life at once so great and so inspiring; not from the natural timidity, which even the most competent might well feel, in presuming to pronounce any judgement upon so rare a virtue, ability and patriotism; nor is it even that our point of view is palpably too near, to permit the just portrayal of this lofty character with all the truthfulness of outline for which a comprehensive survey of the whole in its

many relations is imperative; or to give its fair proportions, undistorted by the mists which encompass our vision, and untinged by the hues with which affection adorns his image. Beside all these, there is yet another reason for distrust. His influence extended through so large a sphere that it is difficult for us fully to comprehend it now. The more we examine the tokens of its action, the more do we become impressed with its extraordinary range. I know of no department of physical or natural science which has not been stimulated or fostered through his means. The legislative and executive departments of the nation knew his power through many years, and relied upon it in matters far beyond the range of his ordinary pursuits. Both the army and navy felt, and have often acknowledged their obligations to him. The progress of education, the development of scientific research, the extent of scientific discovery, the growth of the arts, and the spread of commerce, have all been greater in America because he has lived.

Such a man was our beloved and honored BACHE. To hesitate, when summoned to put into words our common tribute, were unworthy of his friend or of his pupil. You will all feel the inadequacy of the offering, and the futility of attempting to compress into the utterance of an hour or two such records and such results. Many of you have already brought him a better tribute,—that of years of fruitful labor, prompted and encouraged by himself, or of a change in the aims and pursuits of a lifetime, induced by his wise and kindly counsel.

ALEXANDER DALLAS BACHE was born in Philadelphia on the 19th day of July, 1806. If intellectual and moral eminence might be inferred from an honorable lineage, which, unhappily, is not always the case, it certainly would have been anticipated for him. His father was the son of Richard Bache and Sarah Franklin; the former, President of the Republican Society of Philadelphia at the outbreak of the American Revolution, and Postmaster General of the United States from 1776 to 1782; the latter, the only child of Benjamin Franklin and his wife Deborah (Read), and herself eminent as one of the heroines of the war of independence. The noble women who, during our recent struggle for the maintenance of the nationality the achieved, gave their time and energies to the support of the

countrymen facing the edge of battle, and who have aided in making the name of our own Sanitary Commission immortal, were but the unconscious imitators of that smaller but equally devoted band who, during our first struggle for national existence, similarly labored in mitigating the sufferings of our soldiers. Like them, Mrs. Bache ministered to the sick and wounded in army hospitals; and under her superintendence more than 2200 women were at one time employed in making garments for the barefooted and half-clad men, who, against almost unparalleled obstacles, were achieving the independence of a continent and a new vantage-ground for the oppressed of all nations. The maternal grandfather of our departed colleague, for whom he received his name, was Alexander James Dallas, Secretary of the Treasury of the United States from Oct. 1814 to Nov. 1816, who, in the second war of our Republic, redeemed its finances from confusion, and, in the short space of two years, restored them to a condition of order and stability. Under his administration also, the Coast Survey of the United States was established, and Mr. Hassler appointed to its superintendence. The late Commodore Dallas, and Mr. George M. Dallas, Vice President of the United States, were his sons.

A peculiarly large number of Mr. Bache's family, both on the paternal and maternal side, were engaged in the government service, civil or military, and young Bache was destined by his father for the army, which offered also to the boy an attractive career. Accordingly, at the age of fifteen, he entered the Military Academy at West Point, where he graduated, July 1, 1825, the first scholar in a class so far above the usual grade of excellence that four of its members were assigned to the Corps of Engineers, although for more than one or two in each class to attain this distinction was a rare occurrence. Among his classmates at West Point were General Robert Anderson, of Fort Sumter, and Major-General C. F. Smith, who served his native land so faithfully and effectively during the recent rebellion.

It is recorded of Bache that, during the whole term of his course at the Military Academy, he never incurred a single mark of demerit. And this is all the more to his credit, in that



he was no demure and prematurely sedate youth, but possessed, in an eminent degree, that love of frolic and of jest which formed a prominent trait of his character in riper years. Nor was the high position which he acquired in the confidence and respect of his instructors attained at the expense, in any degree, of the affection of his fellow pupils. The bonds of friendship formed within the precincts of the Military Academy seem to have been of remarkable strength, and were most tenderly guarded by him throughout his subsequent life.

The final examination of the cadets, just before the close of their academic course, was attended then, as now, by prominent officers of the military service. In the year now referred to, the Secretary of War himself was present, and the tokens of scholarly and military excellence given by the first pupil of the class were such as to elicit the most uncommon marks of approval. The Secretary himself, with a sympathetic appreciation which does him the highest honor, was prompted to the unusual step of addressing a letter to Bache's mother. This letter, one of that mother's most cherished mementoes, I am permitted to read to you.

WEST POINT, June 10th, 1825.

*My Dear Madam*:— Upon any other occasion than the subject of the present letter, I should be obliged to admit that our very small acquaintance would rebuke me for addressing you. But, being a father, and knowing how exquisite is the pleasure arising from the well-doing of children, I am quite sure, from your amiable disposition, that you will forgive me, when you learn that my only purpose in writing is to state, as I do most sincerely, how greatly I was gratified at the evidences given by your son in his examination, of the excellence of his attainments. He ought to be, as I am sure he will be, a source of the greatest consolation. I know not whether it has been your lot to have your cup of life drugged in any degree with calamity. The draught must have been severe indeed if it is not sweetened by the blessing of your excellent son. I knew and loved your father—his great paternal ancestor I knew only by his works. I thought, or permitted myself to believe, that I saw the excellences of both branches about to be united in your son. I offer you my sincere congratulations.

JAMES BARBOUR.

MRS. SOPHIA BACHE.

That mother's cup of life was indeed bitterly drugged with calamity; but the supporting arm of her son, the rich honors

which she happily lived to see accorded him in no stinted measure, and the abundant benefits to the commonwealth and to the nation, which followed his accession to each successive place of influence or authority, did most effectively sweeten it, and cause it to run over with gladness.

During the first year after graduating, he remained at West Point, as assistant to Professor Mahan in the department of Engineering, and, in the summer of 1826, was detailed as assistant to Colonel Totten, then in charge of the construction of Fort Adams, at Newport. Here commenced a close friendship between these two eminent men, which increased with their increasing years, and was severed only by death. And when, long years afterwards, their duties brought them once again to the same place of residence, and permitted a resumption of their intimate communion, the joint influence of General Totten, as Chief of the Engineer Corps, and of Professor Bache, as Superintendent of the Coast Survey, quietly but steadily wrought a wondrous change in the welfare of scientific interests, and in the position of scientific men at Washington. In their intimate domestic intercourse they not only occupied the relation, but assumed the titles of kindred; and to their mutual support in times of peril to the great intellectual interest which they defended, American science will be forever indebted.

Nor was General Totten the most important or the nearest friend whom Bache won for life during his sojourn of two years at Newport. It was his privilege there also to enlist the affection and secure the hand of an admirable woman, who, for nearly forty years, accompanied him in all his many wanderings; by her sound judgement, unsurpassed devotion, and intellectual ability, multiplying his opportunities of usefulness as well as his happiness, and rendering it possible for him to accomplish, for his own honor and for the welfare of his country, what no man probably could have accomplished without some such assistance.

On the 16th of September, 1828, only three years after graduating from West Point, and only two years after the commencement of his professional duties at Fort Adams, Mr. Bache was elected Professor of Natural Philosophy and Chemistry in the University of Pennsylvania, at Philadelphia. He was at

this time but twenty-two years old, yet the repute of his career at West Point had been already a source of pride to his native city, and sundry communications, which he had found time in Newport to contribute to the *Mathematical Journal*, had borne witness to his mental activity and ability. Mr. Bache obtained a six months' leave of absence, was married as soon as it was received, and, on the 11th of October, about three weeks after his election, arrived in Philadelphia to assume the duties of his professorship. These duties proving acceptable to himself and to the college authorities, he definitely resigned his position in the army at the expiration of his leave of absence.

Here commences his scientific career, interrupted sometimes by the pressure of other duties, but never discontinued, no matter what his avocations, so long as God granted him and us a continuance of his mental powers.

For seven years Professor Bache retained his position in the University, beloved by his pupils, esteemed by his colleagues, respected by the whole community. During these years he was an active member of the Franklin Institute and of the Philosophical Society, and their transactions contain some twenty-five contributions from him within this period, all of them recording the results of original scientific research.

Among these papers some deserve especial mention.

The earliest which I find recorded is an article "On the Specific Heat of the Atoms of Bodies," published in February, 1829. In this firstling he maintained that the best and latest determinations of the atomic weights and specific heats of elements failed to support the doctrine that the specific heat of the atoms is the same for all bodies. The topic was a large one for discussion by a young man of twenty-two, but he certainly made his point good; and if the theory which he then opposed has found acceptance in subsequent years, it has only been because the data upon which it rests have been modified by more accurate determination.

This paper was followed, a year later, by his first experimental research, which was upon the inflammation of phosphorus in a vacuum, or rather, in a highly rarified medium. This appeared in the *American Journal of Science*, bearing date May, 1830, and was the beginning of a more extended line of investigation,