

MEMOIR
OF
JOHN H. ALEXANDER.

1812 - 1867.

BY
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BIOGRAPHICAL MEMOIR OF JOHN H. ALEXANDER.

ONCE more the Academy meets to inscribe on its memorial-tablets the name of one of its original members, named in the charter of its organization. Death has been busy in its ranks—within four years from the time of its creation six names have passed to the record of the departed. Some of these, it is true, went in the fulness of years and honors, but others, being still in the vigor of life, might have added much to their services to science and their country, had they been spared. Of the latter number was our late fellow-member, whose life and works we now briefly commemorate.

JOHN HENRY ALEXANDER was born on the 26th of June, 1812, in Annapolis, then as now the seat of government of the State of Maryland. He was the youngest child of William Alexander and Mary Stockett. The father was a member of a Scotch-Irish family, settled in and about Belfast, who having come to America while still a youth, at the close of the struggle for independence, established himself as a merchant in the city of Annapolis, which with its deep harbor and productive vicinage, was a place of considerable trade—in those days, when Baltimore had not yet absorbed all the shipping business of Maryland. The Stockett family, into which he married, came over in 1642, and settled on South and West Rivers, where the estates remain in possession of the family to the present day.

Young Alexander was thus emphatically a son of the State to which he ever adhered, and whose greatness he sought to advance, often before the time had come when the community could appreciate the benefits that were to flow from his plans.

While he was still in childhood, his father died, leaving but scanty provision for the family. The mother, represented as a lady of remarkable beauty and strength of character, lovely and winning in mind and heart, carefully trained her youngest child,

doubtless imparting to his character much of her own refinement and sensibility.

He received his classical education at St. John's College, in his native town, where he took his degree at the age of fourteen, dividing the first honors with his life-long friend, now the Rev. Dr. William Pinkney, Rector of the Church of the Ascension in Washington, to whom the present biographer is largely indebted for facts and traits of character, which his own acquaintance, limited to later years, could not have readily supplied. Speaking of these early days of Prof. Alexander, his friend says:—

“ We passed out of the college halls together, and entered a law office. For four years we read, and walked, and talked together; and then began his careful examination of history, and the great principles of the law, as expounded by its masters. Nothing escaped him, that a youth of his years could comprehend. It is my firm conviction, that had he continued at the bar, he would have soon reached the first ranks of his profession. For although he possessed not the gift of oratory, and would probably not have made a brilliant pleader, he had those peculiar powers, clearness of statement, skill of analysis, concentration and amplification, earnest gravity and wonderful fluency, which would have commanded the respect of courts, and the confidence of juries. He was rich in resources, adroit in argument, ready in retort, and sparkling with wit. No man, who ever encountered him in one of those off-hand debates that spring up in private conversation, could fail to discover that it was necessary to call up his reserves, and keep the column of his ideas in order. He possessed singular self-control, and never allowed passion to obscure his reason, or excitement to throw him off his guard.”

About this time began the development of the modern system of transportation, and of the many applications of science to the arts, relieving the labor of man, and diminishing the obstacles of time and space. Young Alexander, perceiving the great influence which railroads and steamships, and the development of the stores of coal and iron laid up in the earth, were to have on the future of the country, turned aside from the legal career, and devoted himself to applied science.

His first work was in connection with surveys for the Susque-

hanna Railroad, now part of the Northern Central, but he soon turned his attention to the project for a complete topographical map of the State of Maryland, in conjunction with a geological survey. Having urged the matter upon the attention of the legislature, he was appointed before he had completed his twenty-first year, to make examinations preliminary to a general survey of the State, together with Prof. Julius T. Ducatel, who had charge of the geology.

The plan which they submitted was approved, and the offices of Topographical Engineer and Geologist were created in February, 1834, to which Alexander and Ducatel were appointed. The means provided were, however, small, and the work progressed but slowly. A large volume of annual reports, made between 1833 and 1840, attests the faithful efforts made to produce valuable results and to arouse the interest of the people in the development of the agricultural and mineral wealth, and the lines of communication in the State.

Prof. Alexander's plan was to make a complete trigonometrical survey of the State, which should furnish the basis for an accurate topographical and geological map. By making a trigonometrical reconnoissance, he was enabled within four years to construct a map sufficient for the representation of the geology, but in his view only a basis upon which to plan a more elaborate work of geodesic accuracy. This he proposed to execute in connection with the Coast Survey, and he postponed entering upon it, until that work should have reached Maryland, in order to avail himself of its accurate fundamental positions. Meantime the geological examinations were continued by Prof. Ducatel, and the more immediate results of economic value were published in annual reports, illustrated by maps of the several counties, prepared by Prof. Alexander.

When, in 1841, that stage of the work was reached at which a general scientific report on the geology of the State could have been entered upon, and when the trigonometrical survey was about to be commenced, its support by the State was withdrawn—partly in consequence of the depressed condition of its finances, partly from the prevalence of a narrow utilitarian view—and the new map of Maryland has remained unfinished, as well as its geology. It is due to Prof. Alexander to note, that although he continued to hold the commission as Topographical Engineer

of the State, from 1837 to 1841, he drew no part of the salary attached to it.

During these years he gave much of his time to the opening of the bituminous coal beds in Allegany County, and founded the George's Creek Coal and Iron Company, of which he was President from 1836 to 1845, in which capacity he visited Europe in 1839, with a view of enlisting foreign capital in the enterprise. While engaged in these pursuits he published, in 1840, a volume entitled "Contributions to a History of the Metallurgy of Iron," which, with his habitual thoroughness, is in fact a complete treatise on the subject up to his day. It was followed by a supplement in 1842.

To meet a want very generally felt by the practical engineer in our country, in those days when we had no schools of engineering and when the rapid development of the country called for a great number of surveyors and engineers, he edited with copious additions and adaptations to our special wants, "Simms' Treatise on Mathematical Instruments used in Surveying, Leveling, and Astronomy." This work has passed through several editions, and remains to this day an excellent standard of reference. Among valuable original devices in this branch of science was that of a new form of barometer, specially adapted for the purpose of measuring altitudes, which is described in a paper printed in the *Amer. Journ. of Sciences*, vol. xlv, 1843. In the list of publications appended to this memoir will be found several papers on cognate subjects, contributed by him.

The subject of Standards of Weight and Measure early attracted Dr. Alexander's attention. He was in constant communication with the late Professor Hassler, Superintendent of the Coast Survey, under whose direction copies of the United States Standards were constructed for delivery to the several States, with the view to securing uniformity throughout the country. Upon the completion of the same, Dr. Alexander urged upon the Legislature of his own State the propriety of furnishing copies thereof to each county, and was, in 1842, charged with their construction and verification. His report "On the Standards of Weight and Measure for the State of Maryland," made in 1845, is a work of great research, and exhibits strikingly the thoroughness, accuracy, and ingenuity which he brought to bear on every subject that he undertook to deal with.

It contains a disquisition on the origin of the Anglo-Saxon measures, with a digest of all legislation had in reference to the matter in England from the earliest times, and subsequently in the United States. This historical statement must have cost immense research, and is invaluable in the latter part, by giving an account of frequent Congressional inquiry and Committee reports, which, not having resulted in legislation, can be found only by a thorough examination of the Journal of both Houses of Congress. Dr. Alexander's comment on a Committee Report of 1819 may be quoted as illustrating his own views in regard to proposed changes that have been much canvassed in latter years. He says: "This report is a model of calmness and conservatism: too much learning had not confused, nor too wearied reflection led astray. It is easy to see, too, from its tone, as well as that of the Senate resolution just quoted, how the public mind was settling down in aversion to a violent change: what had been found hard of acceptance in 1790, among a people of less than four millions, was now, with a population not far short of ten millions, grown to be nearly impossible."

In the experimental portion of Dr. Alexander's work in constructing these standards, his method of determining the cubical temperature-factor of the metal employed by comparing it with that of water, through the weight of the water displaced from a glass vessel by the effect of heat, with and without the metal in question being immersed in it, deserves special mention. With the aid of an accurate balance he was thus able to get very satisfactory results, that otherwise could only have been obtained by expensive apparatus not at his command.

He subsequently published (*Am. Journ. Sci.*, vol. xvi., 1853), a discussion of Mr. Hassler's experiments on the dilatation of water by heat, which were not readily accessible to men of science. His introductory remarks to that paper may fitly find a place here, both as illustrating his own style and character, and as a tribute to a geometer whose life-memoir has not yet been written as it deserves to be.

"The late Mr. Hassler enjoyed, during his lifetime, a high reputation; but one founded, it would appear, at least in this country, more upon the prestige of his manifest and presumed intellectual and moral faculties, than upon any just knowledge or estimate of his special achievements in science or art. It is

true that these faculties were both large and well defined, and they had a scope for their exhibition, sometimes, more favorable to the interest of the spectator than the ease and comfort of the actor. He was undaunted, diligent, patient, self-reliant; no man feared an adversary less, or loved friends more; sympathetic, too, and (for which credit was not generally given him) tender-hearted; still his stern self-command enabled him for many years to fold his robe with a certain grace over wounds of soul and body, so deep and sore as to have put out of the heads of many others, who yet think themselves strong men, all idea of the dignity of sorrow. Intellectually, also, nature had been bountiful to him, and under his finely shaped cranium had placed a network of brain, active in perception, and of firm retention. All the organism for a geometer was there: and wit and humor, too, with a spice of dogmatism, that, like carbonic acid in certain wines (itself an irrespirable gas), only served to make them more racy and *montants*. Unfamiliar people were apt to suppose that this free acidity predominated normally; but the fact was, that his dogmatism arose out of his disgust at all pretence, and it was always manifested in proportion to the difference between the reality, and the pretension in any person or thing that exhibited the latter. He was essentially a man of truth; assumption of any kind disgusted him; while to assumption without a basis (or what is commonly called humbug) he was never merciful, but visited it with all the weight of logic and all the sharpness of sarcasm. Those who knew him, knew that he could be both heavy and sharp.

“But to draw traits of character was by no means the object of this memoir; what has been said, has slipped from my pen spontaneously. It is true, that honored by the intimacy of Mr. Hassler, and even bound by a sort of half promise (for in the mathematical probabilities of life, there was every chance of my being long his survivor), I should years since, had the means been at my disposal, have endeavored to do justice to his memory by an account of the events he had mixed in, of the services he had rendered toward the stabilitation and diffusion of knowledge, and of the methods, which he partly originated, and partly combined, for divers researches of science.”

When after the death of Mr. Hassler, in 1843, Prof. Bache, our late lamented President, was appointed to the superinten-

deney of the Coast Survey, Dr. Alexander's previous acquaintance with that distinguished scientist soon ripened into friendship, and he ever held an esteemed place as *amicus curiae* in the counsels of the Coast Survey and Standards Department.

While engaged in the construction of the State standards, he collected data for a work entitled, "A Universal Dictionary of Weights and Measures, ancient and modern" (Baltimore, 1850), which is one of the most complete and exact works of the kind ever published, and must ever continue to hold a high rank as a work of reference.

A pamphlet entitled, "International Coinage for Great Britain and the United States," first printed in 1855, as a basis for action by Congress, and subsequently reprinted in England (Oxford, 1857), shows the mature and analytic consideration he had given to the subject under discussion. His aim was to equalize the pound sterling and the half-eagle—a measure which would be of infinite convenience to the two nations, if the temporary inconvenience of a change could be tided over. His concluding paragraphs may be here quoted :—

"It is to such an end of simplification and harmony that all which has been here written is aiming. Not that the aim could not by others have been better expressed, or, when time is riper, or by happier effort even now, been better reached ; but mainly as an indication of a method, resting upon principles unquestionable, by which a great and useful result may be conveniently attained.

"All violent changes are here avoided. That one, the hardest of all to be effected in great national masses, the change of *name* (which is, in its degree, a change of language, and so of thought, which in general finds life but in language), is here neither necessary nor even contemplated. Quietly, with prudent management—almost without management at all—the existing systems blend with and melt away in the new one, whose convenience in the mint and in the market there is no need of experience to affirm ; until, finally, if the present suggestions, or some modification of them, be adopted, the two great branches of the Saxon family will realize what history shows to have been the uniform destiny of their forefathers—the carrying with them, and impressing where they tread, the characteristics of their institutions—and will be able to point out, as among their peaceful triumphs,

the establishment of one weight, one measure, and one money, first for themselves, and then for all the world."

In 1857 Dr. Alexander went to Europe, charged by the National Government with a mission having in view the Unification of Coinage. His answers to the questions of the British Commission on Decimal Coinage, of which Lord Overstone was Chairman, were printed by the Commission, and form an important and perspicuous review of the whole subject. He returned without having effected any arrangements, the opposing interest of the bankers being, in his opinion, the principal obstacle to unification, or even assimilation of the coinage of the two countries. His views met with due appreciation at home, and he was about to be appointed Director of the Mint in Philadelphia, in 1867, when death prematurely put an end to his career.

Among other scientific works of Dr. Alexander's are reports made at the request of the U. S. Light-House Board, on Babbage's numerical system of light-houses, on steam-whistles as fog signals, and, in connection with the chemist, C. Morfit, on illuminating oils.

At the breaking out of the civil war, he tendered his services to the national government, and, as engineer officer on the staff of the department commander, aided in planning and constructing the defences of the city of Baltimore. He also contributed largely from his private means towards the raising and equipment of a field battery, which was commanded by his eldest son.

Dr. Alexander was not only a mathematician and a physicist, but likewise a linguist and a poet. As a linguist he could have had but few equals in this hemisphere. Latin he wrote as readily as he wrote English, with the same choice command of words and skill in construction. He was deeply versed in Greek and no mean Hebraist. The modern tongues of the civilized world were perfectly familiar to him; and he was as exact as he was varied in his gift of tongues. Among his unpublished manuscripts is a "Dictionary of the Language of the Lenni-Lenapé, or Delaware Indians," being a compilation of the several vocabularies of Zeisberger and Heckewelder, Moravian missionaries, whose activity among the Indians, chiefly in Pennsylvania, covered a long series of years. In this volume he attempts to construct etymologies, and to make intelligible the structure of

that language, now entirely perished. The following is the concluding paragraph of the preface: "A similar irregularity will be found, also, in the attempt to reconcile the etymologies of various words; all of which herein rest only upon the authority of the compiler. The incompleteness, however, in this feature of the dictionary it possesses in common with, though to a greater degree than, the lexicons of accomplished scholars in other tongues. And if the meagreness and doubtfulness of this research are admitted for other languages, as well long-cultivated and classic as modern and vernacular, which count their philologists by hundreds, their words by thousands, and those who use those words by millions, something may be conceded to a dialect whose explorers are but two, and who themselves alone made it a written tongue, and of which while its genius is as potent over derivative words as the many-sided polysyllabic and mellifluous Greek, we have only remaining the scant debris, almost to be reckoned on the fingers, which the present compiler has gathered in the following pages."

The most important of Dr. Alexander's unpublished works, the titles of which are given in the appended list, is "A Dictionary of English Surnames," an announcement of which was made in the *Am. Journal of Science*, in 1860. It is a monument of learning, is thoroughly exhaustive of the subject, and bears the impress of a strong and original genius. It is to be regretted that no publisher has yet been found for it. Arrangements for its publication were interrupted by the war.

He was also a poet: not a popular poet, for there was too much depth and originality of thought and expression to secure at once the popular applause—too much purity and beauty of language, and calm quiet depth of sentiment, to win its way to the popular heart, save by slow steps. He was, however, a true poet. His *Introits* and *Catena* are both works of a high order.

The *Catena* is a string of pearls, which will link his name to an immortality, in that serene region, where the sacred muse most delights to dwell, and she weaves her freshest and most beautiful garlands. The opening piece, the *Prelude*, and the closing piece, the *Valete*, are conceived in his richest vein, and marked throughout with that pathos and depth of feeling which go direct to the heart. They are exuberant in thought, musical in rhythm, profound in sentiment, and full of heart-revealing.

The above are the words of Dr. Alexander's friend who has been previously quoted. He adds: "Dr. Alexander was almost, if not quite, as deeply read in theology and church history as he was in mathematics and general literature. It is not common for a layman to push his inquiries into this region of thought; nor is it common for him to succeed, if he does. But there was nothing common in the mental calibre of our deceased friend. He prepared and published a tabular statement of the points of doctrine, in which the several systems of religious belief meet and diverge; and I hazard nothing in saying, that this remarkable exhibition of the powers of condensation and accurate discrimination would have been worthy of any prelate in Christendom. On one occasion, meeting a distinguished and most learned divine of the Lutheran faith, who did not know him, he asked for information touching some point of belief, when the gentleman replied, I know not where you will find an answer, unless it be in a sheet published by some Dr. Alexander, of Baltimore, which is the most wonderful paper that has ever met my eye."

In person Dr. Alexander was tall, finely formed, erect, and easy in motion, always neat and precise in his dress. In his intercourse with others he was so scrupulously observant of the etiquette of good breeding, as sometimes to give the impression of stiffness. A keen debater, aided by immense resources of memory, fond of argument, as an exercise of acumen, his disputations had no tinge of self-assertion, but were ever courteous and good-tempered. He liked a good intellectual tilt, and to the writer, many years his junior, it was a pleasure to engage with him, because he was sure to be gainer in facts and lore previously unknown to him. Undemonstrative in his manner to the outside world, his tender nature spent its wealth upon his family, to whom he devoted much of his time. In 1836 he married Margaret Hammer, the daughter of a prominent Baltimore merchant. She survived him, with five sons and a daughter. He was not yet fifty-five years of age when he died, cut down in the vigor of life, by an attack of pneumonia, on the 2d of March, 1867. His innate modesty and love of retirement had kept him from being called to public trusts where his admirable talents and systematic industry would have produced the most valuable results, and it is to be regretted that the public service so seldom had the benefit of the wisdom of his counsels and the assiduity of his

labor. To the world of science he was well known, and here he had received the due meed of recognition. The degree of Doctor of Laws was conferred upon him by St. James College, of his native State, where he occupied the chair of Physics for a year. He occupied a similar position in the University of Pennsylvania, and subsequently in the University of Maryland. He was a member of the Maryland Historical Society, of the American Philosophical Society of Philadelphia, of the American Association for the Advancement of Science, and was one of the members of the National Academy of Science, named in the act of Incorporation.

List of essays by J. H. Alexander, published in the "American Journal of Sciences," and other scientific periodicals.

- 1843. On a New form of Mountain or other Barometer (with a plate), vol. xlv, p. 233.
- 1848. A Crystallographic Memorandum, vol. v, p. 136.
- 1848. On a new empirical Formula for ascertaining the Tension of Vapor of Water at any temperature, vol. vi, pp. 210, 317. *Phil. Mag.*, xxxiv, 1849; *Pogg. Ann.*, lxxvi, 1849.
- 1849. On a new Formula for Interpolation, vol. vii, p. 14.
- 1849. On a new Protractor for Trisecting Angles, vol. vii, p. 243.
- 1849. On a new Table of the Pressure of Steam at various Temperatures, vol. vii, p. 361.
- 1851. On Certain Meteorological Coincidences, vol. xii, p. 1.
- 1853. Hassler's Experiments on the Expansion of water at various temperatures, vol. xvi, p. 170.
- 1854. Improved Apparatus for the Analysis of Coal, and for Organic Analysis generally. *Journ. Franklin Inst.*, 1854, p. 102.
- 1856. Ultimate Analysis of certain pure Animal Oils (with C. Morfit).
- 1858. A Chemical Examination of the Commercial Varieties of Brown Sugar, vol. xxv, p. 398 (with C. Morfit).
- 1860. (Announcement of) A Dictionary of English Surnames, vol. xxxix, p. 304.

PUBLISHED BOOKS.

- Treatise on Mathematical Instruments used in Surveying, Leveling, and Astronomy, by F. W. Simms. Edited with copious additions. Baltimore: 1835, 8vo.; 1839, 8vo.; 1848, 8vo.
- Treatise on Leveling, by F. W. Simms, with large additions. Baltimore: 1838, 8vo.
- Contributions to a History of the Metallurgy of Iron, Part I. Baltimore: 1840, 8vo., pp. xxiv, 264, plates.

NATIONAL ACADEMY OF SCIENCES.

- Contributions, etc., Part II. Baltimore: 1842, 8vo.
Introïts; or, Ante-Communion Psalms for the Sundays and Holy-days throughout the year. Philadelphia: 1844, 12mo.
Report on Standards of Weights and Measures for the State of Maryland. 1846, 8vo., pp. iv, 213.
Universal Dictionary of Weights and Measures, Ancient and Modern. Baltimore: 1850, royal 8vo., pp. viii, 158.
Catena Dominica. Philadelphia: 12mo.
Reports on the New Map of Maryland; Annual, from 1838 to 1840. Annapolis: Public Printer.

IN MANUSCRIPT

- A Dictionary of English Surnames. 12 vols., 8vo.
Ancient Roman Surnames. 1 vol., 8vo.
Greek Onomatology. 1 vol., 8vo.
A Dictionary of the Language of the Lenni-Lenapé, or Delaware Indians. 4to.
A Concordance and Analytic Index of the Book of Common Prayer. 2 vols., 8vo.
A Handy Book of Parliamentary Practice. 8vo.
The Hymns of Martin Luther, translated into English, with Notes. 8vo.
Suspiria Sanctorum. A series of Sonnets for Holy-days all th ough the year. 8vo.
Introïtus, sive Psalmi Davidici. 8vo.
Lives of the Cambists.