

BIOGRAPHICAL MEMOIR

OF

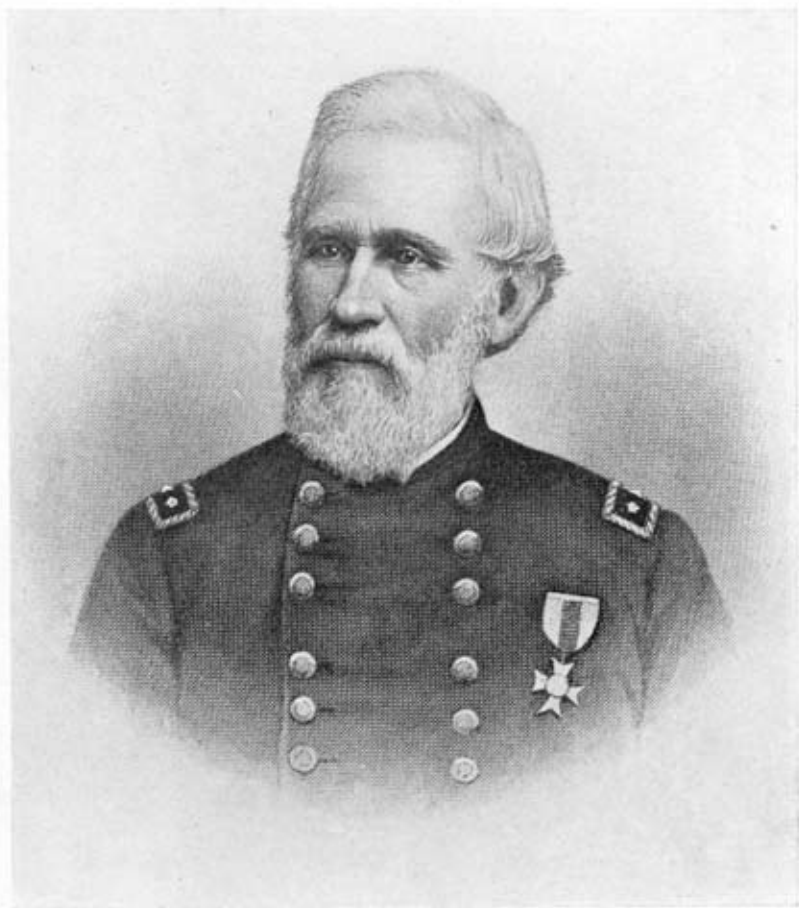
JOHN GROSS BARNARD.

1815-1882.

BY

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BIOGRAPHICAL MEMOIR OF JOHN GROSS BARNARD.

The act of March 3, 1863, incorporating the National Academy of Sciences, contains the name of General JOHN G. BARNARD as one of the original fifty members, and his interest in its object and development ended only with his life.

He was born in Sheffield, Mass., on May 19, 1815, being the second son of Robert Foster and Augusta Porter Barnard. His father, the son of Dr. Sylvanus and Sarah Gross Barnard, was a lawyer of marked ability, known beyond the circle in which he lived, although always leading the quiet life of a small town. General Barnard's mother traced her descent from a somewhat remarkable old New England family. Among the early settlers of the country, John Porter and his wife, Rose, settled at Windsor, Conn., which he represented in the legislature in 1646. In the fourth generation Colonel Joshua Porter married Abigail Buel, the daughter of Peter Buel, whose wife was the widow of Noah Grant, one of the ancestors of General U. S. Grant. Thus it happens that the great-grandmother of General Grant and of General Barnard was one and the same person.

The boy spent the first twelve years of his life at Sheffield, attending the village school, and was then sent to begin his more advanced studies under his brother, our late colleague, President Barnard, who, after graduating at Yale College, was then teaching school in Hartford. A year later his great-uncle, General Peter B. Porter (for whom Fort Porter, at Black Rock, Buffalo, is named), who was then Secretary of War, offered the boy an appointment at West Point. This was gladly accepted, and he entered in 1829, having just passed his fourteenth birthday and being probably the youngest pupil ever admitted.

He was graduated at the end of the four years' course with second rank in a class of 43 members, several of whom attained distinction in their subsequent careers. He was assigned to the corps of engineers as brevet second lieutenant on July 1, 1833, and, passing through all intermediate grades, became colonel on December 28, 1865, having received five brevets for distinguished services in the Mexican and the civil wars. He was retired on

January 2, 1881, and died on May 14, 1882. Such in brief is the outline of a career which exerted no small influence upon the current events, both civil and military, of the times in which he lived.

In the civil branches of his profession General Barnard's services covered works of construction and of internal improvement extending from the Great Lakes to the Gulf of Mexico and from the Atlantic to the Pacific coast. In this wide area few important engineering problems engaged the attention of the government in which his advice was not officially demanded, either individually or as a member of special boards and commissions. His professional duties were not even restricted to the limits of the United States. During the war with Mexico he superintended the construction of defenses at Tampico and made surveys about the City of Mexico, and in 1850 he was named by the President chief of a scientific commission for the survey of the Isthmus of Tehuantepec with a view to establish a route of commerce and travel to our newly acquired Pacific possessions. The report drawn up by J. J. Williams, in 1852, gives the first full account ever published of that isthmus. The exposures incident to this service in the tropics affected his health so seriously that he never entirely recovered. In later life he was sent to Europe twice as a member of commissions to collect information needed by the government.

General Barnard's military services during the civil war were conspicuous. At its very outbreak he initiated, as chief engineer of the Department of Washington, field works for the defense of the city. In the Bull Run campaign he served as chief engineer on the staff of General McDowell; and the details of the general plan to turn the enemy's left were established upon his personal reconnaissances, made on the day before the battle, of the route by Studley Springs. At the organization of the Army of the Potomac, in August, 1861, he became its chief engineer, and after greatly extending the defenses of the city he accompanied General McClellan in the spring to the peninsula, and served as his chief engineer during the entire campaign. At the siege of Yorktown he commanded all the engineer troops, and directed the location and construction of the batteries and approaches. On the Chickahominy he was charged with the construction of the bridges and batteries, and was often con-

sulted as to the position and movements of the troops. After the occupation of Harrison's Landing, contrary to the views of General McClellan, he favored the withdrawal of the army to Washington. On the 16th of August he was individually recalled to that city, and was placed in command of the fortifications, including the troops assigned to their defense; but on the 2d of September he relinquished the latter, not having a rank commensurate with the duty. His commission as brigadier general of volunteers dated from September 23, 1861, while the troops which had become available for defending the city were often commanded by officers of higher rank. He, however, retained the charge of the defenses until their essential completion early in 1864, and was often called upon for reports and advice as to general plans, such as operations against the chief ports of the enemy, the defense of Harper's Ferry, of Pittsburg, of the lake shore, against raids from Confederates in Canada, and also as to important naval problems. In January, 1864, he applied for duty in the field, and on the 5th of June was assigned to General Grant's staff as chief engineer of the armies in the field. He served in that capacity until the surrender of Lee's army, on April 9, 1865, taking an active part in the operations in Virginia. As his office was finally organized, weekly reports of the chief engineers of the two armies, monthly reports of materials received and expended, requisitions for engineer supplies, etc., were submitted to him at General Grant's headquarters. He also devoted much time to careful inspection of the extended lines.

In recognition of his services in the civil war General Barnard received the brevets of colonel, brigadier general, and major general in the regular army, and of major general in the volunteers. He was also named in the act of March 3, 1865, as one of the one hundred corporators to establish a military asylum for disabled volunteers.

Although present in many important battles in the civil war, and assisting by his counsels in the decision of many important military problems affecting naval operations, as well as those on land, it is upon his services as chief engineer of the defenses of Washington that are based his most enduring claims to remembrance in that crisis of our national history. From a military point of view, the geographical and topographical location

of the capital was unfortunate. It lay within the region where the most important struggles must have place, and it occupied a plain surrounded by commanding heights throughout the greater part of whose circumference an attack might be apprehended if the covering army should experience a serious check. Its loss, even if temporary, must entail disastrous consequences, not only directly upon the conduct of the war, but also indirectly upon our foreign relations, then not always of the most friendly character. These conditions were perceived, but not fully appreciated, in the blind confidence prevailing before the first Manassas campaign; but, after that repulse of the army, the necessity of putting Washington in a condition to be defended by a moderate garrison before the Army of the Potomac could move from its immediate front was seen by all persons of intelligence. Before the first advance, a few field works in the nature of *têtes-de-pont* had been thrown up to cover the Aqueduct bridge, the Long bridge, and Alexandria, and it is doubtless due to their presence and imperfectly known development that no demonstration was made by the Confederates in front of Washington at the time when demoralization was at its height after the battle of Bull Run. It was fortunate that the duty of extending and perfecting these preliminary works of defense devolved on an engineer so competent to appreciate the problem as was General Barnard. The works of Torres Vedras furnished the best example, but the conditions were so different that a master mind was required for a judicious application of the principles involved. Something more than ordinary field works, but less exacting in time of construction than usual works of permanent defense, was called for; and General Barnard, *par excellence*, was the man for the occasion. His own monograph, published in 1871 as No. 20 of the Professional Papers of the Corps of Engineers, fully details the semi-permanent system adopted, and will long remain a standard authority on this novel application of the principles of fortification. When completed, the lines enclosed Washington by a cordon of works aggregating 37 miles in length, with 68 inclosed forts and batteries having a perimeter of about 13 miles, actually mounting 807 guns and 98 mortars, with many other emplacements, together with 20 miles of rifle trenches, three block-houses, and 32 miles of military roads, in addition to those of the District. The utility of these fortifica-

tions during the civil war can hardly be better set forth than in the modest language of their designer :

“ When the Army of the Potomac, in 1862, was beaten in the field and to some extent demoralized and disorganized, it fell back on the defenses, where it rested in security ; a very few days of respite, the arrival of reinforcements, and a change in the commander enabling it to take the field again offensively.

“ When Early marched on Washington, in 1864, the defenses had been stripped of the disciplined and instructed artillery regiments (numbering about 18,000 men) which had constituted their garrison, and their places supplied by newly raised 100-days' regiments (Ohio National Guards), insufficient in numbers and quite uninstructed. Under such circumstances much anxiety was felt on the approach of Early's veterans, flushed with recent success, inspired by the very audacity of their enterprise, and incited by the prize before their eyes. Yet, inadequately manned as they were, the fortifications compelled at least a concentration and an arraying of force on the part of the assailants, and thus gave time for the arrival of succor.”

Soon after the close of the war General Barnard was made president of the permanent Board of Engineers for Fortifications and River and Harbor Improvements, a position which he held until his retirement from active service, in January, 1881. The epoch was one of radical transition in coast defense and of vast extension in our works of internal improvement. Our system of masonry coast defenses, to the elaboration of which our former colleague, General Totten, had devoted his life, and which General Barnard has so admirably set forth in his biographical memoir, read before the Academy on January 6, 1866, had been rendered antiquated by the enormous increase in the size and efficiency of heavy guns and by the success in the efforts to mount them on ships protected by armor against shell fire. Our coasts, which had been furnished with fortifications superior to any existing in Europe and in a good state of progress toward completion, were found to be open to attack by a modern fleet of armored battle ships. A new type of shipping had appeared just before and during the civil war, and a new system of coast defense would ultimately be demanded. Pending the necessary studies to determine its character, the existing works must be modified and strengthened to meet immediate needs. The new

problem of ordnance and armor was then occupying the attention of the ablest engineers abroad, and General Barnard brought to the study a mind ripened by practical experience in war, a thorough understanding of the fundamental principles involved, and a technical knowledge of the new developments. Experiments on a large scale were at once inaugurated at Fort Monroe and Fort Delaware by the engineer department, and General Barnard, with able coadjutors, was sent to Europe to study the new problems in the light of the most recent investigations there. We have now no occasion to regret either false conclusions or unwise recommendations by the board of which he was so long the president and leading member. During these years he also served as a member of various special boards charged with investigations looking to the improvement of navigation in certain western rivers and at the mouth of the Mississippi, and for a long time was a member of the Light-house Board.

The degree of A. M. was conferred upon General Barnard by the University of Alabama in 1838, and that of LL.D. by Yale College in 1864. He was a member of the American Institute of Architects, and an honorary member of the American Society of Civil Engineers.

Throughout life General Barnard was an untiring student, and he wrote with facility and to the point. Even at the Military Academy he had shown uncommon mathematical ability, and he subsequently carried original investigations in this direction much beyond the limits usually attained by men of so busy a professional career. His papers on the gyroscope and kindred problems, published in *Silliman's Journal* before the civil war, are examples in point. His writings on technical engineering subjects, both civil and military, were voluminous, and many of them will long remain authorities on the subjects of which they treat. Among them may be mentioned: Notes on Seacoast Defence (1861); Reports of Engineer and Artillery Operations of the Army of the Potomac, prepared with General Barry (1863); Report on the Defences of Washington (1871); Report on the Fabrication of Iron for Defensive Purposes, prepared with Generals Wright and Michie (1871); North Sea Canal of Holland and Improvement of Navigation from Rotterdam to the Sea (1872); Problems of Rotary Motion Presented by the Gyroscope, the Precession of Equinoxes, and the Pendulum (1872).

It is, however, in Johnson's Universal Cyclopædia, published in 1874-1877, that the versatility and precision of his mental culture are best shown. He found time to act as one of the associate editors in its preparation, and over ninety scientific and other articles, some of them almost treatises, are from his pen. Among them may be named: Aeronautics; Breakwater; Bridge; Bull Run, Battle of; Calculus; Gyroscope; Harbor; Imaginaries; Laplace's Coefficients; Light-house Construction; Rotation; Tehuantepec; Variations, Calculus of; and Tides, Theories of. Few engineers have been more profoundly versed in their profession or more able to give reasons for their convictions.

In early life, when stationed in New Orleans, he married Miss Jane Elizabeth Brand, daughter of William Brand and sister of the Rev. William F. Brand, of Maryland, one of the noted clergymen of that state. Four children were born to them, of whom one son survives. In 1860 he married Anna E., daughter of Major Henry Hall, of Harford county, Maryland, whose ancestor emigrated with Lord Baltimore; and their three children are all living.

In his personal characteristics General Barnard was a thoughtful, self-contained, and earnest soldier. Under fire he seemed to have no sense of exposure, and in his frequent reconnaissances he was wont to push aside advanced pickets attempting to advise him as to the position of the enemy's sharp-shooters, apparently trusting more to his own intuitions than to their local knowledge. His inherited deafness rendered social intercourse somewhat difficult, and to those who did not know him intimately this circumstance perhaps conveyed the idea of coldness and formality; but such was far from being his nature. As his aide-de-camp during the Peninsular campaign, I often saw evidences of the warm interest he took in the success of the many young officers serving under his orders and of his cordial appreciation of good work done by them. His brother, our late colleague, being at the south at the outbreak of hostilities, had experienced no little difficulty in crossing the line or communicating with his family, and when he suddenly appeared unannounced in the general's tent one evening, the fraternal embrace which followed proved that they both concealed warm hearts under a dignified exterior. He had a keen sense of

humor and a passionate love of music. Indeed, he composed many pieces—among others, a *Te Deum* that still survives.

General Barnard was nominated by the President, on the death of General Totten, to succeed him as brigadier general and chief of engineers, April 22, 1864; but the nomination was withdrawn, at the request of General Barnard, before any action was taken by the Senate. He never, to my knowledge, made public his reasons for this request; but the facts suggest the fair inference not only that President Lincoln highly appreciated the merit of General Barnard's services, but also that the latter's sense of justice to a superior in rank in the corps of engineers forbade him to take advantage of this appreciation. Such self-sacrifice is not common, either in or outside of the army.

The estimation in which General Barnard was held in the corps of engineers is well expressed in the concluding paragraphs of the order of General Wright announcing his death:

"A service of nearly fifty years in the corps of engineers has been closed by the death of one of the most prominent of its members.

"Of greatly varied intellectual capacity, of a very high order of scientific attainments, considerate and cautious, ripe in experience, sound in judgment, General Barnard has executed the important duties with which he has been charged during his long and useful life with conscientious care and regard for the public interests and with an enthusiastic devotion to his profession. His corps, the army, and the country are his debtors.

"Modest and retiring in disposition, considerate and courteous, warm in his sympathies and affections, our deceased associate will be missed as few are missed, and his name, which will be held as one of the foremost names of the corps of engineers, will be cherished with peculiar love and affection by his brother officers."

LIST OF THE MORE IMPORTANT PAPERS PUBLISHED BY
GENERAL J. C. BARNARD.

- Phenomena of the Gyroscope analytically examined. 1858.
Dangers and Defences of New York City. 1859.
Notes on Seacoast Defence. 1861.
The C. S. A. and the Battle of Bull Run. 1862.
Reports of the Engineer and Artillery Operations of the Army of the Potomac from its Organization to the Close of the Peninsular Campaign. (Jointly with General Barry.) 1863.
Eulogy on the late Major-General Joseph G. Totten, late Chief Engineer, U. S. A. 1866.
Report on the Defences of Washington. (P. P. Corps of Engrs., No. 20.)
Fabrication of Iron for Defensive Purposes. (Jointly with General Wright and Colonel Michie.) (P. P. Corps of Engrs., No. 21, and supplement.)
Report on the North Sea Canal of Holland. (P. P. Corps of Engrs., No. 22.)
Problems of Rotary Motion presented by the Gyroscope, the Precession of the Equinoxes, and the Pendulum. Smithsonian Contributions to Knowledge, vol. XIX, 56 pages, 1872.
On the Internal Structure of the Earth considered as Affecting the Phenomena of Precession and Nutation, being the Third of the Problems of Rotary Motion. Smithsonian Contributions to Knowledge, vol. XXIII, 19 pages, 1877.
Many articles in Johnson's Cyclopædia on scientific subjects, such as Bridge Building; Harbor, Jetty, and Light house construction; Calculus, Aeronautics, Imaginaries, Gyroscope, Theory of Tides, etc.