Captain George G. Meade and the United States Lake Survey

By Mr. Gustav J. Person

The five Great Lakes—Superior, Michigan, Huron, Erie, and Ontario—comprise one of our greatest natural wonders. Their six quadrillion gallons of water are spread over 94,500 square miles, and their connecting waterways form the world's largest inland water transportation system. From the westernmost port at Duluth, Minnesota, a ship can travel 1,160 miles to the St. Lawrence River and 2,340 miles to the Atlantic Ocean.[1]

Founded in 1841, the United States Lake Survey was undertaken as a hydrographic study to chart the inland seas and make them conducive to trade and development. One of the foremost commanders of this survey was Captain George Gordon Meade, an officer of the Corps of Topographical Engineers. Meade is usually widely recognized for his later role as the victor of the Battle of Gettysburg in 1863 and as commanding general of the Army of the Potomac during the Civil War. This article will examine Meade's early role in the survey, both in advancing scientific research and developing the national economy and defining civil/military relationships at the beginning of the Civil War.

Photo courtesy of Office of History, United States Army Corps of Engineers

Less than a decade after his work on the United States Lake Survey, Captain George G. Meade was Major General Meade, hero of Gettysburg.

George G. Meade

George G. Meade was born in Cadiz, Spain, on 31 December 1815. His father, a wealthy American merchant, was financially ruined by his adherence to the cause of Spain during the Napoleonic Wars. After obtaining an appointment to the United States Military Academy at West Point from a Pennsylvania member of Congress, he graduated in 1835, ranking 19th in a class of 56 members. Meade's original branch was artillery, in which he served in Florida during the Seminole Wars. Resigning in 1836 along with many other young officers, he pursued a short career in civil engineering but reentered the Army in 1842 as a second lieutenant in the Corps of Topographical Engineers. During the Mexican War (1846–48), he served at the battles of Palo Alto, Resaca de la Palma, and Monterey and was awarded the brevet of first lieutenant. Thereafter, he was mostly engaged in lighthouse construction in Florida, New Jersey, and Delaware, in the Fourth and Seventh Districts respectively.[2]

In April 1856, at age 41, Lieutenant Meade received a transfer from coastal duty and was sent to Detroit to assist in the ongoing survey of the Great Lakes. In May 1857, he was promoted to captain and placed in command of the

Map courtesy of Master Sergeant Paul Jenkins, United States Army, Retired

Map of the Great Lakes

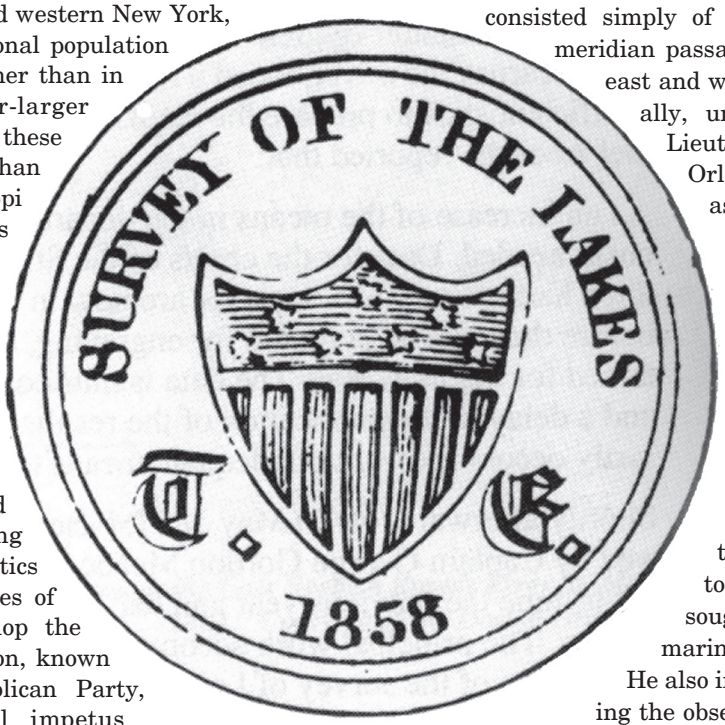
survey, replacing Lieutenant Colonel James Kearney, who was reassigned due to ill health. Meade's official title was *Superintendent* (or *Superintending*) *Engineer, Survey of the Northern & Northwestern Lakes*. The process entailed mapping the lake shores and navigation hazards; charting the lake bottoms to locate hidden dangers; and mapping projected ship channels. The duty included improvements of existing harbors, as well as searching for potential sites that could be converted into harbors in time of war. Sites for lighthouses, beacons, and buoys also had to be located. The work was daunting. Some 6,000 miles of shoreline were to be surveyed. The Army surveyors had to determine latitude and longitude; measure the discharge of rivers into the lakes; and survey tributary rivers, narrows, and shoals.[3]

Great Lakes Economy

With characteristically broad vision, Colonel John J. Abert (1786–1863), the first Chief of Topographical Engineers, described the survey in the most far-reaching terms. "These lakes," he wrote, "constitute a great northern seaboard." At almost every turn, he urged Congress to provide more money, buttressing his arguments for increased support by reminding the legislators of the thriving lake trade and backing his claims with the commercial statistics that he required of his engineers in the field.[4]

In the 1820s and 1830s, the economy of the Great Lakes region made tremendous gains, leading to the need for a comprehensive survey. Congressman Joshua Giddings of Ohio had witnessed the beginnings of trade on the lakes during this period. During the 1840s, he called on fellow lawmakers to recognize the greatly expanded trade and provide for harbor improvement. He noted that trade on these waterways amounted to more than $65 million in 1841 and more than $100 million in 1844. Chicago's Democratic congressman, John Wentworth, remarked in 1846 that "the commerce on the lakes the past season has been $125,000,000, employing 6,000 active seamen. The large amount of lake commerce (import/export) will be best appreciated when it is known that the whole export commerce of the United States is but $114,000.000." The Erie Canal, completed in 1825, already served as the linchpin for the new system of trade, tying the Great Lakes into New York City and the Northeast. Lake representatives demanded that the government create "harbors of refuge" for vessels caught in the violent storms that often swept across the inland seas.

The development of the lakes considerably reoriented the economy of the Midwest. Reflecting the influx of settlers from New England and western New York, more and more of the regional population lived around the lakes rather than in the Ohio Valley. An ever-larger portion of shipments from these states flowed east rather than south down the Mississippi River. Finally, the demands of Great Lakes congressmen for government improvement outlays led to a realignment of Northern voters. The new patterns of trade weakened old political alliances and formed a new, purely Northern party that joined together two overlapping groups: the strongest critics of slavery and the advocates of federal programs to develop the North. The new organization, known after 1854 as the Republican Party, would provide additional impetus toward the outbreak of the Civil War.[5]



Seal of the Survey of the Lakes, 1858

Meade's Accomplishments

Although Army engineers conducted surveys as early as 1833 and during the period 1836–37, the systematic surveying was not begun until 1841. In that year, Captain William G. Williams, then stationed at Buffalo in charge of harbor improvements on Lake Erie, received directions from Colonel Abert to start the survey of the Great Lakes. Into this ever-expanding and potentially explosive political situation, George Meade arrived with his family at the Detroit headquarters of the United States Lake Survey in 1856. He came well prepared for this role. He had the comprehensive mental grasp of the country that makes a born surveyor and which must have been apparent to everyone associated with him. His principal accomplishment was the survey of the whole of Lake Huron during the 1857–59 seasons and completion of the survey of Saginaw Bay. Lieutenant Colonel Cyrus Comstock, one of Meade's successors as commander of the survey and a future commandant of the United States Army Engineer School (1886–87), noted that "the nature of the field operations required a combination of triangulation and astronomical work for the determinations of the positions of points on the shores of Lake Huron, and [Meade] made some changes necessary in the method of executing the off-shore hydrography." He also noted that Meade determined the general configuration of the bottom of that lake by running a few lines completely across it.[6]

Undoubtedly, the most notable method Meade adopted for the survey was a modification of the procedure to determine longitudes by the use of the electric telegraph, known as the American method. This procedure, invented by Professor C.A. Young of Western Reserve College in Ohio, consisted simply of observing and timing the meridian passage of stars at two stations east and west of each other. Additionally, under Meade's supervision, Lieutenants C.N. Turnbull and Orlando Poe did considerable astronomical work, and Lieutenant William P. Smith performed a good deal of magnetic work. The procurement of state-of-the-art chronometers and other instruments aided these important endeavors.[7]

In 1859, Meade set up 19 weather stations on the five lakes. In addition to gauging the weather, he sought to predict it and warn mariners of impending storms. He also instituted a system for refining the observations made on the force and direction of the wind, after finding that the meteorological authorities had developed no uniform system.[8]

In 1860, the survey of the northeastern end of Lake Michigan was extended southward to include the Fox and Manitou Islands and Grand and Little Traverse Bays. This survey resulted in the publication of a much-needed chart of that dangerous part of Lake Michigan—the route traversed by vessels sailing between the Straits of Mackinac and Chicago. The Lake Survey completed a few local harbor surveys on Lake Superior by 1859 and began a general survey of the western end of that lake in 1861.[9]

From 1858 through 1861, the federal appropriations for the Lake Survey grew to $75,000 annually. The increase permitted expansion of the scope of the survey; introduction of more accurate methods to obtain longitude; and commencement of a series of magnetic and meteorological observations, as described above. In addition, these appropriations provided funds for the construction of an astronomical observatory at Detroit and, after 1858, for the first systematic recording of lake water levels.[10]

Meade would later write that he considered the early work on coastal lighthouses and the lakes survey as among the most important duties of his extensive career. However, he had watched with great anxiety the stresses that were beginning to tear the nation apart in the late 1850s. He scanned the political horizon for some glimmer of hope that the dreaded resort to hostilities might be averted. Therefore, in the presidential election of November 1860, he cast his vote for John Bell and Edward Everett of the new Constitutional Union Party, a compromise group that attempted to sway conservative voters who opposed both the Republicans

Photo courtesy of Office of History, United States Army Corps of Engineers

Colonel James D. Graham

and the Democrats. Abraham Lincoln, with only 40 percent of the popular vote, won enough electoral votes to win the presidency. The secession of the Deep South states followed soon thereafter.[11]

Civil War

In the strongest language, Meade denounced the Southern leaders who were goading their people into civil war. He knew of the immense superiority of the North over the South in human and materiel resources, and of the contempt of the South for the North. In Detroit, as elsewhere, there was intense political excitement, and one of its manifestations was distrust of many officers of the Army and Navy—a number of whom had resigned their commissions to side with the Confederacy. In the midst of the uproar, a proclamation in Detroit requested the presence of military officers at a mass meeting in order that they might take the oath of allegiance to the United States. Captain Meade was having none of this. His officers met at his home and, with one exception, declined to attend the mass meeting. As justification, they claimed that it was unbecoming of officers in government service to be present at such a meeting, especially for such a purpose; that it would set a dangerous precedent for officers to take an oath at the demand of a crowd; and that the organizers of the meeting were unjustified in making such a demand. They then drew up, signed, and forwarded a statement of their willingness to take the oath of allegiance whenever called upon by the War Department.

The action of these officers in declining to attend caused a great deal of violent language from the public at the mass meeting, which dispersed after the usual patriotic speeches and resolutions. Nothing of consequence came of the affair, although it generated some suspicion and ill will among some prominent people in that part of the country.

Soon after the firing on Fort Sumter on 12 April 1861, Captain Meade made urgent and repeated requests to the War Department for active duty. With no response, he went to Washington in late June. He protested against being retained in charge of the Lake Survey and applied for a commission in one of the new regiments being raised to put down the rebellion. Unfortunately, nothing came of it and he returned to Detroit empty-handed. Meanwhile, he had been placed in charge of the erection of new lighthouses on Lake Superior. All of the younger officers under his command had already been ordered to active duty and were engaged in raising and organizing new volunteer units.

In early August, he was ordered to turn over his duties to Colonel James D. Graham—at age 77, one of the oldest topographical officers—and to return to Washington to take charge of the recruitment of a company of topographical engineers, lately authorized by Congress. Meade was much dismayed by the situation in which engineer officers, agreeing or ordered to continue their own corps duties, were left behind in junior rank, while others were rapidly being advanced to field and general officer grades in the volunteer service. This dismay had led to his determination to resign his Regular Army commission in order to accept the colonelcy of one of the regiments of Michigan volunteers, a post which had been offered to him by Governor Austin Blair. However, much to his surprise and gratification, he was officially notified of his appointment, on 31 August 1861, as a brigadier general of volunteers with orders to report to Major General George B. McClellan, then commanding the Union forces around Washington, D.C. He hurriedly sent his family back to Philadelphia and hastened to the capital, where he was assigned as a brigade commander in the division of Pennsylvania troops commanded by Major General George A. McCall. As the world knows, his later record of service in the Civil War was decidedly distinguished.[12]

Epilogue

In Meade's absence, Colonel Graham, and later Lieutenant Colonel William F. Raynolds, supervised the Lake Survey. Both officers would continue and capitalize on Meade's excellent work. Due to active operations during the Civil War, the survey was the only active topographical field office still operating, although only the survey of

Huron was finally completed. The Lake Survey would continue until 3 October 1970, when it was redesignated the Lake Survey Center and officially transferred to the National Oceanic and Atmospheric Administration. It became part of the National Oceanic Survey, the former Coast and Geodetic Survey. The Lake Survey Center was finally phased out in March 1976.[13]

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Endnotes

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[5]Marc Egnal, *Clash of Extremes; The Economic Origins of the Civil War*, Hill and Wang, New York, 2009, pp. 101-22.

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[7]Meade, pp. 211-13.

[8]Schubert et al., pp. 44-45; Isaac R. Pennypacker, *General Meade*, D. Appleton and Company, New York, New York, 1901, p. 20.

[9]Woodford, pp. 37-38.

[10]Ibid., p. 38.

[11]Sauers, p. 12.

[12]Meade, pp. 213-16.

[13]Schubert et al., p. 45; Woodford, pp. 186-89.