

“From the Rapid Ann to Coal Harbor”
Post-War Topographical Survey of Civil War Battlefields
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Introduction

The day following the Grand Review of the Armies in Washington, D.C., May 25, 1865, was a day when most Union soldiers were looking forward to discharge and returning home. But the topographical engineers of the Army of the Potomac had pressing duties. A survey party left Fairfax Court House, Virginia, on horseback, under command of Maj. C. W. Howell, to “make surveys of Rebel lines in the Wilderness campaign from the Rapid Ann [Rapidan River] to Coal Harbor [Cold Harbor].” Howell’s party returned on June 25, having visited most of the battlefields of Lt. Gen. Ulysses S. Grant’s 1864 Overland Campaign. Adding their survey notes to information derived from the army’s campaign maps and captured Confederate maps, the surveyors created maps of the battlefields of the Wilderness, Todd’s Tavern, Spotsylvania Court House, North Anna, and Totopotomoy Creek. These maps were published during 1865 and credited to Maj. James C. Duane, the Army of the Potomac’s chief engineer.¹ The Duane-Howell survey--first of two postwar topographical surveys of Virginia’s battlefields--was a direct continuation of the wartime work of the army’s topographical engineers.

When Major Duane stepped down in June 1865, Maj. Nathaniel Michler assumed responsibility for completing the military surveys. Michler had served during the last two years of the war as head of the topographical department of the Army of the Potomac and was directly involved with the production of many of the wartime campaign and battlefield maps used in the postwar surveys. Under his direction a broader survey was initiated in 1866 to map the major battlefields of the eastern theater. Maj. John E. Weyss headed the field work in Virginia for this endeavor, which was concluded in December 1867. Maps from the Michler-Weyss survey were published in 1869 as the *Atlas of Military Maps Illustrating the Operations of the Armies of the Potomac & James*.² Many of these maps were later rescaled for inclusion in the *Atlas to Accompany the Official Records of the Union and Confederate Armies* (published in folios 1891-1895), which is the standard reference work for Civil War military maps.³

The maps from the Duane-Howell and Michler-Weyss surveys are the finest historic maps that exist of Virginia’s battlefields. They were adapted to illustrate many postwar memoirs or unit and campaign histories. Historians use the maps to visualize the cultural and physical features of battlefields and park planners to reconstruct historic landscapes based on the patterns of fields and woodlots.⁴ Despite the importance of these maps for primary research, little has been published about their construction or the history of the surveys.

This paper describes the work of the topographical engineers of the Army of the Potomac

¹ Log book of Office of Military Surveys, 1865. Archives Record Group 77, Records of the Office of the Chief of Engineers 1-3-16-21, Box 10.

² *Military Maps illustrating the Operations of the Armies of the Potomac & James*. Washington, D.C.: War Dept., Office of the Chief of Engineers, 1869.

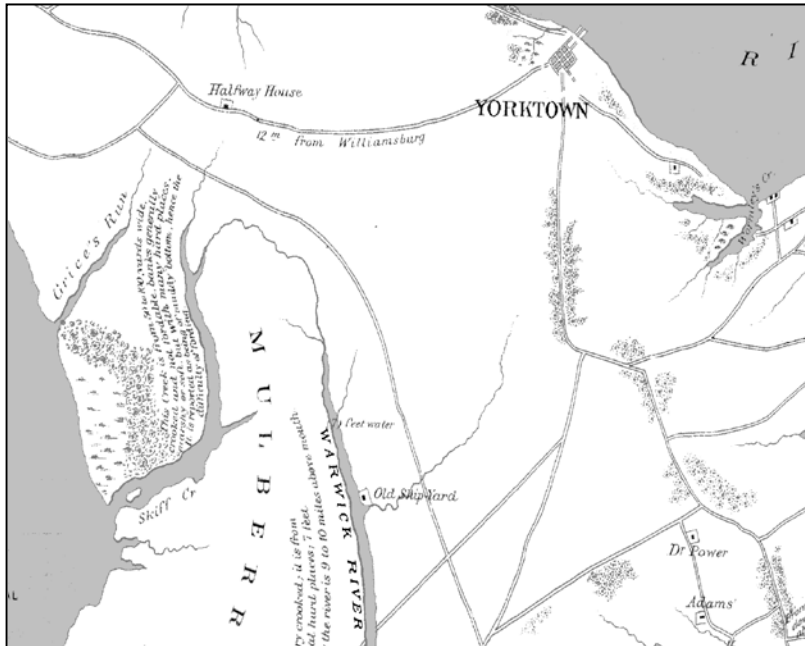
³ *Atlas to Accompany the Official Records of the Union and Confederate Armies*. Washington, D.C.: Government Printing Office, 1891-1895. Reprint. Arno Press, 1983. Cited as the Official Military Atlas.

⁴ Richard R. Anderson and others. “Fredericksburg and Spotsylvania National Military Park: Vegetation Community Structure and Historic Features Survey.” National Park Service Report, 1982.

as it related to the postwar military surveys and discusses the origin of the Duane-Howell survey in the aftermath of Appomattox. Michler and Weyss, who were undoubtedly the finest mapmakers in the army, were intent on creating an atlas for publication. There were few better ways at the time to record these battlefields for posterity. Those who completed the surveys in Virginia and their techniques are described from their notes taken in the field.

Mapping in the Army of the Potomac 1862

When Union and Confederate armies took the field in 1861, the commanding generals discovered a woeful shortage of reliable maps with which to plan a military campaign. The best maps of the time were coastal surveys completed after the War of 1812. A major land war within the United States had not been anticipated, and the country's interior was largely unmapped. Few accurate state maps existed beyond the merest outlines, showing rivers, canals, main roads, railroads, and principal cities and towns. County maps sometimes displayed secondary roads, perhaps adding settlements and mill sites. Most existing maps were sufficient to guide a traveler from place to place but lacked the scale and details of topography needed to move armies into combat. "The most detailed maps are essential . . . because the merest trail, the most insignificant rivulet, the slightest undulation of ground, may for a time become of the greatest importance, either for the offensive or the defensive."⁵ Describing the terrain in this detail, was a challenge.



In early 1862, Maj. Gen. George B. McClellan contemplated the first major offensive of the Army of the Potomac and sent his staff officers to scour military and Federal archives to find maps of the Virginia Peninsula. His staff officers consulted every available map, including British plans of the siege of Yorktown (1781), the coastal defense map compiled by West Point graduate James Kearney (1818), and surveys by Lt. Col. T. J. Cram, the army engineer at Fort Monroe, which is located at the southern end of

the peninsula. From these sources, the engineers pieced together a map that reached from Fort Monroe to Williamsburg, known as the "Cram Map." It was notoriously unreliable.⁶ When the

⁵ George H. Mendell, *A Treatise on Military Surveying, Theoretical and Practical*. New York: D. Van Nostrand, 1864. Introduction. Mendell served with the Engineer Battalion, Army of the Potomac, throughout the war. Cited as Mendell, *Treatise*.

⁶ It is instructive to compare the Cram map, which seems little more than a topographical sketch, to the army's

army approached Yorktown in April, staff officers discovered that the Warwick River, rather than flowing along the peninsula as shown on the map, flowed across the peninsula and posed a major barrier to the army's advance. McClellan claimed that the army was delayed by his faulty maps, which "did us more harm than good, for we were constantly misled by them." Alexander Webb, who served as a major on McClellan's staff at the time, wrote that "this was to be anticipated. The Virginia Peninsula, like many portions even of the older states, was practically *terra incognita* for military purposes."⁷

After the Confederates abandoned Yorktown on May 3-4, the siege works were mapped in detail.⁸ As the army marched up the peninsula toward Richmond, the topographical engineers worked to construct better maps of the routes of march from ground survey. They used a prismatic compass to take bearings and measured distances by counting paces on foot or on horseback. Beginning with a known point on a road, a surveyor would take a compass bearing on a distant curve, measure the distance to the curve, and take a new bearing from there forward along the road. Distant features, such as a house on a far hill, were sketched in by taking two bearings to it from the opposite ends of a measured base line and then using a protractor to construct the angles on paper. The feature was placed on the sketch where the two bearings crossed. In this manner, "a survey of an extensive tract may be made with sufficient accuracy for military purposes."⁹

When time permitted, the surveyors used more accurate tools. A Schmalcalder prismatic compass mounted on a tripod could improve the accuracy of bearings to within a fourth of a degree. Tapes or chains were used to measure distances, rather than pacing. For distances along roads, an odometer would be pulled behind a wagon with a counter that kept track of rotations. Multiplying the odometer wheel's circumference by the number of rotations gave the distance traveled.¹⁰ The favored instrument for achieving accuracy in the field was the theodolite, which "measures horizontal and vertical angles with great accuracy, and is suitable also for making astronomical observations for latitude and time of day."¹¹

Campaign Map No. 1 of the same region. *Official Military Atlas*, plate 18:1,2.

⁷ Alexander S. Webb, *The Peninsula: McClellan's Campaign of 1862*. New York: Charles Scribner's Sons, 1881. Reprint. Wilmington: Broadfoot, 1989, pp. 51-53.

⁸ "Official plan of the siege of Yorktown, Va., conducted by the Army of the Potomac under command of Maj. Gen. George B. McClellan . . . prepared . . . by Lt. Henry L. Abbot, Top. Engrs. A.D.C. . . . The Rebel works are laid down from reconnaissances made immediately after the evacuation . . ." LC List 673. Richard W. Stephenson, *Civil War Maps: An Annotated List of Maps and Atlases in the Library of Congress*. Washington: Library of Congress, 1989. Maps referenced from this work are cited as LC List followed by the index number.

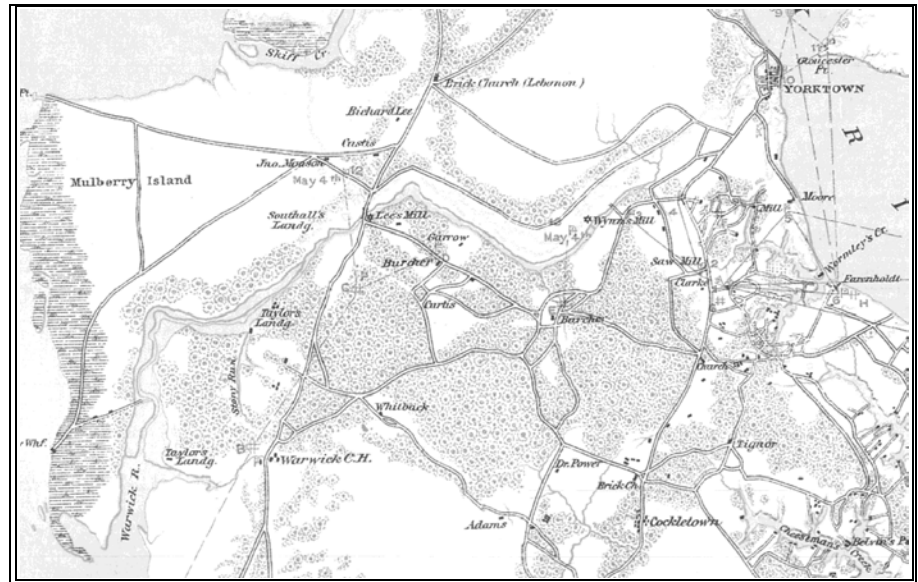
⁹ Mendell, *Treatise*, pp. 5, 153-166. Basil Jackson, *A Treatise on Military Surveying*. London: W. H. Allen, 1853. Cited as Jackson, *Treatise*.

¹⁰ "On Military Sketching With the Prismatic Compass." Jackson, *Treatise*, pp. 5-23. Bearings taken with a prismatic compass were from the magnetic meridian and required adjustment to bring them into line with true north.

¹¹ Mendell, *Treatise*, pg. 53.

A survey conducted with the theodolite was called a triangulation or trigonometrical survey. It was the most sophisticated technique in the engineers' repertoire. The maps and sketches produced during the Peninsula Campaign reveal little evidence that the engineers had the time or felt the need to use a theodolite.

By July 1862, Capt. Henry L. Abbot, head of the Army of the Potomac's Corps of Topographical Engineers, had completed a campaign map in three parts at a scale of about one and a half inches to the mile.¹² Captain Abbot's map was a vast improvement over Cram's but contained many empty areas, denoting unsurveyed ground. The topographical engineers had learned to only commit to paper what they had seen. Army headquarters had learned a lesson -- only to rely on what had been surveyed. It was better for a general in the field to know when he was entering unmapped terrain than to blunder forward following an inaccurate map. Some of the blank spaces on McClellan's maps were only filled in when the Army of the Potomac returned to the region in June 1864. By then the topographical engineers had gained vast experience in mapping large areas from ground reconnaissance.



¹² Report of A. A. Humphreys, Chief of Topographical Engineers, Feb. 20, 1863. *War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*. Washington, D.C.: GPO, 1880-1900. Serial 12:152-153. Cited as *Official Records, Armies*. Peninsula Campaign maps: *Official Military Atlas*. Plate 18: 2 "Map No. 1, Yorktown to Williamsburg." Plate 19:3 "Williamsburg to White House." Plate 19:3 "White House to Harrison's Landing."

Mapping in the Army of the Potomac 1864

In March 1863, the army's Corps of Topographical Engineers was abolished and merged into the Corps of Engineers as a department. This reorganization resulted in better integration of the work of the mappers with the other duties of the engineers. During the winter months, Major Michler compiled a series of campaign maps at a scale of one inch to the mile, "comprising the country from Gettysburg south to Petersburg, and from the Chesapeake Bay as far west as Lexington, in readiness for the movement of the army in whatever direction it might march after breaking up the winter camps."¹³ The experience of the Mine Run Campaign south of the Rapidan River, November-December 1863, revealed that the "existing maps of the country to be traversed were valueless for the purposes of marching and fighting an army Consequently, this information had to be obtained in advance of the army." This work was assigned to the topographical department.¹⁴

On May 4, 1864, the Army of the Potomac commanded by Maj. Gen. George G. Meade crossed the Rapidan River to initiate the Wilderness or Overland Campaign, part of Lt. Gen. Ulysses S Grant's multi-pronged movement against Richmond. As the army fought its way south and east across the Virginia piedmont, Maj. Michler's staff of regular officers and civilian volunteers attempted to traverse and map every road within Federal lines from the Rapidan to James River. At the same time, they produced sketches and maps of Federal lines during the battles of the campaign--Wilderness (May 5-7), Spotsylvania Court House (May 8-22), North Anna (May 23-26), Totopotomoy Creek and Bethesda Church (May 28-June 1), and Cold Harbor (May 31-June 12)--to be included in official reports of the campaign. After incurring more than 55,000 casualties on five major battlefields, the army crossed James River in mid-June and began to entrench before Petersburg.

The topographical department had evolved into an efficient organization, capable of rapidly scouting the terrain, plotting and correcting maps, and reproducing them in large numbers using an innovative photo-reproduction process. Between May and August 1864, Michler's engineers conducted "more than 1,300 miles of actual surveys, issued 1,200 maps, and produced over 1,600 photographic sketches [photo reproductions]," covering the routes of the campaign.¹⁵ Overseeing this prodigious output were Michler's principal assistant Maj. John E. Weyss,¹⁶ aide-de-camp Capt. W. H. Paine, and seven civilian assistants, who "were pushed as far to the front and on the flanks [of the army] as was compatible with safety to go without incurring any unnecessary risk of capture." The field notes from these surveys were "immediately plotted and the maps compiled and at once photographed for the use of the officers of the command As rapidly as any new information could be procured, new editions of the maps would be prepared and photographed, and widely distributed."¹⁷

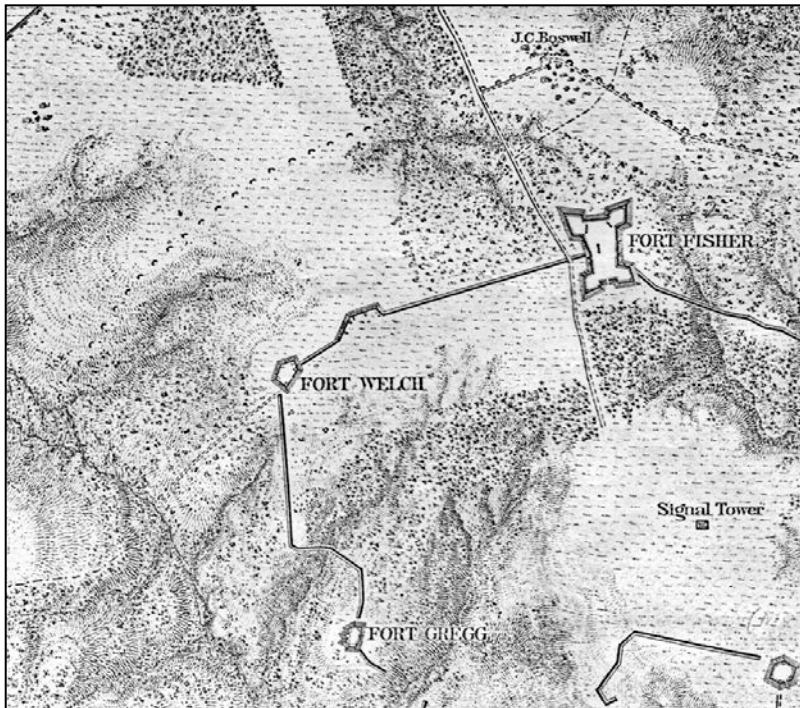
¹³ Report of Maj. Nathaniel Michler, Acting Chief Engineer, October 20, 1864 *Official Records Armies*, Serial 67:292-293.

¹⁴ Francis Trevelyan Miller, ed., *Photographic History of the Civil War*, 1911. Reprint. New York: Yoseloff, 1957; vol. 5, pp. 228-236.

¹⁵ Michler, October 20, 1864. *Official Records Armies*, Serial 67:295

¹⁶ John E. Weyss (sometimes spelled Weiss) was not a West Point graduate but received a commission from the Governor of Kentucky and appeared early in the war on the staff of the Army of the Ohio as Michler's principal assistant. (See "Sketch of the Battlefield of Shiloh," *Official Military Atlas*, Plate 18:1.)

¹⁷ The seven civilians were Ferd. Thielkuhl, W. Burchard, Franz Schumann, E. Myers, L. C. Oswell, George L.



The topographical department began work in June on a full series of campaign maps, covering central Virginia from the Rapidan to Petersburg. This series consisted of “several editions of each of eleven separate sheets . . . , comprising surveys which cover an area of 737 square miles.” Information to update each edition was compiled from captured Confederate maps and additional ground survey. Six sheets, titled “Culpeper, Chancellorsville, Fredericksburg, Hanover, Richmond, and Petersburg,” were corrected and sent to an

engraver for reproduction.”¹⁸

On July 9, 1864, Michler’s staff began work on a map of the vicinity of Petersburg, based on a triangulation survey, which could be considered their *magnum opus*. The Federal siege works and opposing Confederate lines were laid out on a scale of eight inches to the mile with the theodolite. Using triangulation to fix the positions of known church spires and other landmarks within the town of Petersburg, the Federal engineers were able to merge the results with an existing coastal survey map of the Appomattox River to construct a detailed map of areas both within and outside of Federal lines.

Fighting at Globe Tavern in mid-August extended the Federal lines west beyond the Weldon Railroad. The new positions were “added to the large 8-inch map of the operations in front of Petersburg.” In September, surveys were pushed south and east through occupied territory to Blackwater Swamp about twelve miles southwest of Petersburg. The newly constructed fortifications of Forts Sedgwick and Haskell south of Petersburg were plotted.¹⁹

Michler stated on September 24 that the detailed map, extending from Appomattox River to the Weldon Railroad was “now completed, with the exception of the lettering.” The map, of course, was not complete but continued to evolve. In its final stages, it filled twenty-eight sheets and covered more than 290 square miles. It depicted a Federal entrenched line sixteen miles

Crane, and John H. Mullen. Report of Maj. Nathaniel Michler, Acting Chief Engineer, October 20, 1864: “Some of them had been connected for a long time with the Army of the Potomac, and had gained great experience in making rapid reconnaissances and surveys, and in executing topographical sketches.” *Official Records Armies*, Serial 67:290-291. Thielkuhl, Burchard, Schumann, and Oswell are credited on many of the postwar survey maps.

¹⁸ Michler, October 20, 1864. Some of these maps survive in the Library of Congress. See LC List, 501.7. A map of Central Virginia (LC List 501.5), dated Oct. 27, 1864, is probably derived from this campaign series.

¹⁹ Reports of Maj. Nathaniel Michler, Acting Chief Engineer, September 17, 1864, *Official Records, Armies*, Serial 107:276; September 24, 1864, *Official Records, Armies*, Serial 87:164; October 20, 1864, *Official Records, Armies*, Serial 67:290-291; October 22, 1864, *Official Records, Armies*, Serial 87:174.

long, along which had been constructed “nineteen forts and redoubts and forty one batteries.”²⁰ The siege works are shown in great detail, including the batteries, picket lines, military roads and railroads, headquarters locations, and signal stations. Features were drawn on a grid of one minute longitude and one minute latitude as noted in pencil in the map’s margins. Such a large-scale map was of inestimable value to Federal headquarters in conducting the siege and planning future operations. “Constant reference was made to it.”²¹

In November 1864, a survey party was dispatched to Spotsylvania County, escorted by cavalry, to begin work on maps of the battlefields of the Overland Campaign at a scale of four inches to the mile, including the Wilderness, Spotsylvania Court House, and Cold Harbor. These were the first battlefields of the previous year’s campaign to be revisited and surveyed by the army’s topographical engineers.²²

Work continued on these and other projects throughout winter. Preparations began for what would be the decisive spring campaign. On April 1, 1865, the Federals crushed the Confederate army’s right flank at Five Forks, taking several thousand prisoners. Lee’s defense of Richmond and Petersburg rapidly deteriorated. The following evening, the Confederate army evacuated Petersburg and began a week-long retreat toward Appomattox. Federal units occupied Richmond and Petersburg on April 3. The pursuit of Lee’s army unfolded so rapidly that the topographical engineers could not keep pace, though they continued to record distances and bearings along their routes through long-ingrained habit.

Duane-Howell Survey, 1865

Gen. Robert E. Lee’s Army of Northern Virginia surrendered at Appomattox Court House on April 9, 1865. But for those who had served through four years of bitter warfare, there was no guarantee that hostilities truly had ended. The engineers mapped their way back to Richmond from Appomattox, tracing the routes of the armies.²³

With the occupation of Richmond and Petersburg, it now became imperative to document the Confederate fortifications that defied the Federal army for nearly nine months. On April 12, General Grant directed Brig. Gen. John Gross Barnard, his Chief Engineer “to make full and

²⁰ Report of Michler, September 17, 1864.

²¹ Report of Michler, October 20, 1864. Maps are described in Archives Special List 2.246 “Maps of the area in the vicinity of Petersburg and Richmond compiled under the direction of Bvt. Brig. Gen. N. Michler, 1865-1867.” National Archives, *A Guide to Civil War Maps in the National Archives*. Washington, D.C.: National Archives and Records Administration, 1986. Maps referenced from this work are cited Archives List.

²² Reports of Maj. James C. Duane, Corps of Engineers, November 20, 1864: “A map showing the lines occupied by the U. S. forces in the neighborhood of the Wilderness Tavern (scale four inches to the mile), is also progressing rapidly.” *Official Records, Armies*, Serial 87:179. November 27, 1864: “Maps of the battlefields of Spotsylvania Court House and Cold Harbor (scale, four inches to the mile) are being projected . . .” *Official Records, Armies*, Serial 87:180. December 3, 1864: “. . . the maps of the battlefields at Spotsylvania Court House and Cold Harbor are being constructed . . .” *Official Records, Armies*, Serial 87:181. December 12, 1864: “. . . the assistants were engaged in delineating the several routes by which the army marched during the late campaign, and constructing maps of the battlefields of Spotsylvania Court House and Cold Harbor.” *Official Records, Armies*, Serial 87:181-182.

²³ Archives RG77, 14-5-13-7 Box 159. Field book of L. C. Oswell, assistant engineer, headquarters, Army of the Potomac, details his return trip to Washington, D. C. via Richmond, mapping and measuring the entire route. The last entry is dated April 28, 1865.

complete surveys and maps of the fortifications and defenses . . .’ Barnard assigned Col. James C. Duane, Chief Engineer of the Army of the Potomac, to the task.²⁴

As it turned out, Col. George Thom, Chief Engineer of the Military Department of the James, had already detailed his chief topographical engineer, Capt. Peter S. Michie, to survey and map the Richmond lines. Discovering this, Barnard suggested that Duane and his engineers work independently south of James River and allow Michie’s surveyors to cover everything north. Colonel Duane detached Lt. Charles W. Howell to head a survey party on April 14, the day President Abraham Lincoln attended Ford’s Theater.²⁵

Division of responsibilities between the armies of the Potomac and James proved problematic, however. By May 13 trouble was brewing over control of the surveys. While in Washington, D.C., Barnard learned that Colonel Thom had “assumed control over the surveys and over the engineers I had charged with it.” This did not sit well for a number of reasons, among them a concern that the project might somehow downplay the role of Grant, Meade, or the Army of the Potomac, if left in the hands of the engineers of the Army of the James. “It may be a matter worthy of consideration whether the surveys in question, which concern the military history of the armies lately operating against Richmond, should be taken from my hands even so far as to compel me to make them through Colonel Thom.”²⁶

Barnard’s concern for an accurate and favorable rendering of history, regarding what was depicted in the battlefield maps, carried weight with headquarters. On May 27, General Grant cut through the ambiguities of departmental responsibility and ordered General Meade to “. . . have surveys and plans made of the battlefields of the Wilderness, Spotsylvania Court House, and North Anna, by your engineers, sending proper cavalry escorts. General Barnard has been directed to have made while at Richmond a survey of the battlefield of Cold Harbor.”²⁷ Colonel Thom and Captain Michie were placed under the orders of Barnard and Duane, and by this time, Howell’s party was already en route to survey and map the battlefields.

Maj. C. W. Howell’s party consisted of veteran surveyors L. C. Oswell, L. Bell, and R. B. Talfor, plus “tape-men, flag-men, scouts, and escorts” detailed from the 1st Massachusetts Cavalry. Using compasses, an odometer, and tape measures, the party retraced the route of the

²⁴ James C. Duane graduated from West Point, Class of 1848, assisted with the construction of the defenses of Washington in 1861, was appointed Chief Engineer, Department of the South, in 1862, and served as Chief Engineer, Army of the Potomac, from July 15, 1863, until June 8, 1865. George W. Cullum, *Biographical Register of the Officers and Graduates of the U.S. Military Academy at West Point, 1802-1890*. Boston & New York: Houghton, Mifflin, 1891. Cited as Cullum, *Biographical Register*.

²⁵ Special Orders No. 75. Headquarters Armies of the United States, City Point, Va., April 12, 1865. *Official Records, Armies*, Serial 97: 719. Barnard to Duane, April 12, 1865. *Official Records, Armies*, Serial 97:719. Charles W. Howell graduated from West Point, Class of 1863, was assigned to the Engineer Battalion, Army of the Potomac, from June 11, 1863, until the end of the war. He was described as being on “detached service, mapping, April 14-May 28, 1865.” Cullum, *Biographical Register*.

²⁶ Barnard to Rawlins, May 13, 1865, “If I have anything to do with them I should prefer that in this duty General Michie report to me and act immediately under my orders.” *Official Records, Armies*, Serial 97: 1143. See also Michie to Barnard, May 10. *Official Records, Armies*, Serial 97: 1143-1144.

²⁷ *Official Records, Armies*, Serial 97:1222. Barnard to Rawlins, Washington, D.C., June 12, 1865. “Under actual orders from the lieutenant-general I am actively engaged in superintending surveys of the defenses of Richmond and Petersburg and of the battlefields connected therewith.” *Official Records, Armies*, Serial 97: 1272-1273.

1864 Overland Campaign, spending three days at the Wilderness, three hours at Todd's Tavern, five days at Spotsylvania Court House, three days at North Anna, and five days at Totopotomoy Creek and Bethesda Church. Their intent was evidently to complete the maps of Wilderness and Spotsylvania begun in November 1864 and to map the remaining battlefields of the campaign.²⁸

Some of Oswell's, Bell's, and Talfor's field books survive for work at the Wilderness, Spotsylvania, and North Anna.²⁹ The surveyors divided each battlefield into sectors and focused much of their effort on producing a more accurate rendering of the Confederate and Federal trench lines. Surveyor Leverett Bell's field notes for the Wilderness, June 4-6, for example, show sketches of the "Rebel line to left of turnpike, facing west," "Rebel line S. of Orange Plank Road," and "Union works along Brock Road." Notes after June 10 at Spotsylvania Court House describe the "Rebel line through Spots. C. H.," "Lee's final line near Harrison House," and the "Angle of Death." In his field sketch of the "Angle of Death," Oswell drew an X to locate the "famous tree cut down with bullets, 24-in. in diameter." This was the tree mentioned by veterans in many accounts to illustrate the intensity of fighting at what was later termed the Bloody Angle.³⁰

Howell's party reached Bethesda Church by June 17 and did not continue to Cold Harbor, possibly because the area had already been covered by the November 1864 mapping or by Michie's surveyors under Barnard's direction. Two days after their return to Fairfax Court House on June 25, Oswell, Bell, Talfor, and Mooney rode to Washington, D.C., "to construct maps of the Wilderness campaign battlefields."³¹ Oswell noted on July 8, 1865, that "the work in this book is all plotted."³² The resulting maps were issued later in the year.

At some point in the year, Howell's party compiled maps of City Point, Petersburg, Dinwiddie, Farmville, and Appomattox Court House, but it is presently unclear whether these maps were from additional surveys or from previous surveys made after Lee's surrender.³³

The Duane-Howell maps described in the appendix were a compilation of the various reconnaissances and surveys conducted by the topographical department of the Army of the Potomac, beginning in May 1864 and ending in June 1865. Colonel Duane resigned as chief engineer of the army on June 8, 1865, because of poor health that had plagued him for the last year of the war. Lieutenant Howell also left the Army of the Potomac in summer 1865 for other duties. Nathaniel Michler, who had directed the efforts of the topographical engineers throughout the war's final campaigns, assumed responsibility for the army's mapping projects.

Michler-Weyss Survey, 1866-1867

²⁸ Map legends, *Official Military Atlas*, plate 55. Archives RG77 Records of the Office of the Chief of Engineers 1-3-16-21 Box 10.

²⁹ Bell (one book), Oswell (two books), Talfor (two books), Archives RG77 14-5-13-7 Box 159. Only Talfor's notes cover Totopotomoy Creek or Bethesda Church; other field books may be filed in a different location.

³⁰ The trunk of this tree, bearing the scars of hundreds of minie balls, is preserved by the Smithsonian Museum of American History.

³¹ Log book of Office of Military Surveys, 1865. Archives Record Group 77, Records of the Office of the Chief of Engineers 1-3-16-21, Box 10.

³² Oswell's field book for North Anna, Archives RG77 14-5-13-7 Box 159.

³³ Oswell's Field book for Sailers Creek, High Bridge, and Farmville, dated April 7-April 18, 1865, Archives RG77 14-5-13-7 Box 159. See "Map of Weyss and party, 1865," RG77 12-3-12-13.

Maj. Nathaniel Michler was detailed to make “surveys and military maps illustrating the operations and battlefields of the Army of the Potomac and James” from June 1866 until October 1, 1867.³⁴ Sometime in 1866, Maj. Gen. A. A. Humphreys, Chief of the Army Corps of Engineers, directed Major Michler to produce a definitive atlas to document the military history of the Armies of the Potomac and the James. General Humphreys was well aware that the military and political reputations of the commanding generals would rely on history’s estimation of their battlefield victories or defeats. At the time, he had begun already to collect notes and records with an eye toward writing a history of the 1864 Overland Campaign, a book that was eventually published in 1883, the year of his death. Humphreys respected the work of Michler’s topographical engineers. The sketch maps that were used to illustrate his campaign history were derived from the atlas he ordered compiled.³⁵

Being occupied with other duties in Washington, D.C., Michler assigned Maj. John E. Weyss to compile battlefield maps for eighteen battlefields, including at least three that had not been mapped during his tenure with the Army of the Potomac--Antietam, Chancellorsville, and Fredericksburg. Weyss was also asked to conduct a more systematic field survey of the battlefields that were mapped already by Duane and Howell and by other army surveyors. Evidently, blank spaces remained on these earlier maps. Although Michler retained administrative responsibility for the project, he did not participate in the field.

To complete the surveys, Major Weyss relied on those who had served under him during the war. Ferd. Thielkuhl, J. Strasser, and Gilbert Thompson were credited on all of the maps published in the *Atlas of Military Maps Illustrating the Operations of the Armies of the Potomac & James*. Of the other surveyors named on maps in the unpublished Michler series, Capt. Peter S. Michie, Capt. W. H. Paine, W. Burchard, and Franz Schumann appear to be credited for the 1865 surveys around Richmond and Petersburg.³⁶ Two of Weyss’s assistants, H. F. French and L. C. Oswell, received no map credits.³⁷ From the records examined thus far, Oswell appears to have been the only surveyor who participated in both postwar surveys.

According to an unsigned field book, a survey party headed by Weyss was at work in the vicinity of the Bermuda Hundred Campaign south of Richmond in September 1866.³⁸ This is the earliest field book that was located in the National Archives and suggests that others may survive from 1866.

The most comprehensive set of survey records that have been located from the Michler-Weyss survey consists of seventeen field books for six surveyors for the period of September 21-November 5, 1867.³⁹ During this period, Major Weyss, assisted by Thielkuhl, Strasser,

³⁴ Cullum, *Biographical Register*. Michler was a West Point graduate, Class of 1848.

³⁵ Andrew A. Humphreys, *The Virginia Campaign of '64 and '65: The Army of the Potomac and the Army of the James*. New York: Charles Scribner’s Sons, 1883.

³⁶ See appendix. Michie is cited for the Cold Harbor, Bermuda Hundred, and Richmond maps, surveys conducted by the engineers of the Army of the James, 1865. Burchard (Burkhardt) and Schumann are credited on the Petersburg and Five Forks maps and on a pre-publication Spotsylvania variant that also cites Howell’s June 1865 survey. Captain Paine mustered out August 5, 1865. William H. Powell, *List of Officers of the U.S. Army 1779-1900*. New York: Hamersly, 1900.

³⁷ See appendix. Two books by French and two for Oswell survive for work at Fredericksburg and North Anna.

³⁸ Archives RG77, 14-5-13-7 Box 159.

³⁹ See appendix, table one.

Thompson, French, and Oswell, surveyed the battlefields of Fredericksburg, Chancellorsville, the Wilderness, Mine Run, and North Anna, using a range of techniques. Weyss employed a theodolite to triangulate features in and around the town of Fredericksburg. Elsewhere, the surveyors used the theodolite sparingly, relying instead on the prismatic compass, on chaining, and odometer readings. Some distances were measured by pacing on horseback. In general, pacing was used in areas that were already well mapped, along farm lanes that did not require the highest degree of accuracy, or to fill in areas that were at the periphery of a battlefield but were needed to "square off" the map. While Weyss, Strasser, and French continued work in Fredericksburg and along the north bank of the Rappahannock River, Thielkuhl, Thompson, and Oswell rode south to record the positions of the armies at North Anna River. By November 6, the surveyors reunited in Fredericksburg and traveled north toward Washington via Stafford and Occoquan, taking odometer readings along three separate routes.

Weyss's party operated in military fashion, establishing a camp near the center of the area being surveyed and moving as work in the area was completed. Weyss recorded the locations of seven camps during this period: near Dr. Taylor's, Fredericksburg (September 21); near Chancellorsville (September 30); at Widow Tapp's, Wilderness (October 11); near Robertson's Tavern, Mine Run (October 14); at Widow Morris, Mine Run (October 16); at Beale's near Germanna Ford (October 19); and at Johnson's on River Road (October 23).

The daily pattern of field survey is best illustrated by describing the surveyors' work on the Fredericksburg battlefield, beginning September 21. The survey party established camp in a wooded ravine near Dr. Taylor's house just south of where the Orange Turnpike (modern Hanover Street) descends from Marye's Heights toward the town. Here they pitched their tents beneath the trees and tethered their horses near a stream. Several accompanying orderlies and a cook unloaded equipment from a supply wagon and an ambulance, setting up a drafting table to hold the master map for the survey.

They had encamped on the fall line where the Virginia piedmont meets the coastal plain, the geographical feature that gave birth to Fredericksburg at the highest navigable point of the Rappahannock River. From above camp, near the middle of Marye's Heights, Weyss could look east, down into the streets of the town. Beyond, trees were golden along the river and red and orange on Stafford Heights, the far bank. Marye's Heights had been the Confederate defensive line during the battle on December 13, 1862.

Weyss selected the principal points for his triangulation survey, consisting of landmarks that would be visible from many places on the battlefield. One point was the spire of St. George's Episcopal Church, which stands today on Princess Anne Street in downtown Fredericksburg. A second point was at the southern end of Marye's Heights near the center of the National Cemetery, where he erected a signal flag for visibility. The monument to Mary Washington, which still stands (in a slightly different location), was a third point. Weyss laid down a base line along the Sunken Road, from its intersection with Hanover Street south along the foot of Marye's Heights. The Sunken Road had sheltered Confederate riflemen, four and five deep, as they riddled the attacking Federals and drove them to ground, leaving behind their litter of thousands of dead and wounded. This base line was used to measure all subsequent angles of the Fredericksburg survey.

On September 21, Weyss and his crew traversed north along Marye's Heights to

Stansbury's Farm then east to the canal basin, recording angles and degrees of slope with the theodolite and chaining distances. Notes were recorded for thirty stations. Stansbury's "Gate" and the canal basin were established as secondary points from which buildings and other features in the sector could be triangulated and filled in. Thielkuhl's crew worked south along the heights to Hazel Run and downstream to the Rappahannock River. Thompson conducted a "pace survey" along the main roads leading into town. By the end of the first day, the three crews had laid out the basic structure of the town and the adjacent high ground, using a combination of triangulation, compass, and pacing. On September 23, Weyss and crew traversed the farm lane north of Dr. Taylor's with the theodolite, recorded features at Dr. Smith's, continued along Confederate trenches on the high ground west of Stansbury's, then descended to the plain to take readings along the canal to the river. Turning south, they followed River Road back to the canal basin, joining with the end of their first day's survey. The crew covered a little more than four miles with measurements taken from 45 stations. Thielkuhl's crew worked from near Hamilton's Crossing along the Stage Road north to the Farney House for a distance of about four miles.

Returning to the canal basin on September 24, Weyss and crew sketched in details of the buildings, roads, and ditches between the canal and river then followed the River Road westward to a lane leading south past the Widow Downman Farm. Working south along a farm road with the theodolite, Weyss sketched in cornfields and woodlots and indicated changes of elevation with contour lines. The crew reached the Orange Turnpike at Howard's Farm and followed it back to camp. During the day, they covered a distance of about four and a half miles, recording angles and degrees of slope from fifty-five stations. Thielkuhl worked along the Rappahannock River upstream from Burnett's.

For the next two days, Weyss mapped "Rebel rifle pits" along the heights, while Thielkuhl conducted a chain survey of the Stage Road and the Old Mine Road. Thompson mapped the street grid of the town. Weyss spent September 27 mapping between Marye's Heights and the town and recording the area east of the Sunken Road in detail. This was the bloodiest ground of the battlefield over which Federal brigade after brigade attacked in a futile effort to break the Confederate line. Great care was taken to sketch individual buildings and fence lines, cornfields and meadows, entrenchments and battery positions, and to note what appears to be a "burial camp" near the site of the present day National Park Service visitor center. This may have been a location where workers encamped while disinterring battlefield dead and moving the remains to the National Cemetery.

By September 30, the survey of Fredericksburg battlefield was substantially completed. The surveyors chained and paced west along Orange Turnpike, Plank Road, and the line of the unfinished railroad to begin their survey of the Chancellorsville battlefield. Weyss established a new base camp north of the Chancellorsville ruin on the Ely's Ford Road. On October 2, Oswell noted in the margin of his field book "I am 23 years old today." He spent his birthday mapping a trench line on Chancellorsville battlefield with Mr. Thompson.

The party had moved on to the Wilderness by October 7, where they recorded sections of Confederate and Union entrenchments in fine detail with compass and chain. They noted the placement of artillery, the presence of traverses, openings or breaks in the line, or where a trench changed hands and was dug to face in both directions. Details in the field books were recorded at roughly thirty inches to the mile in contrast with the published scale of three inches to the mile. Many of these finer details can be discerned on the battlefield today, nearly 130 years after the

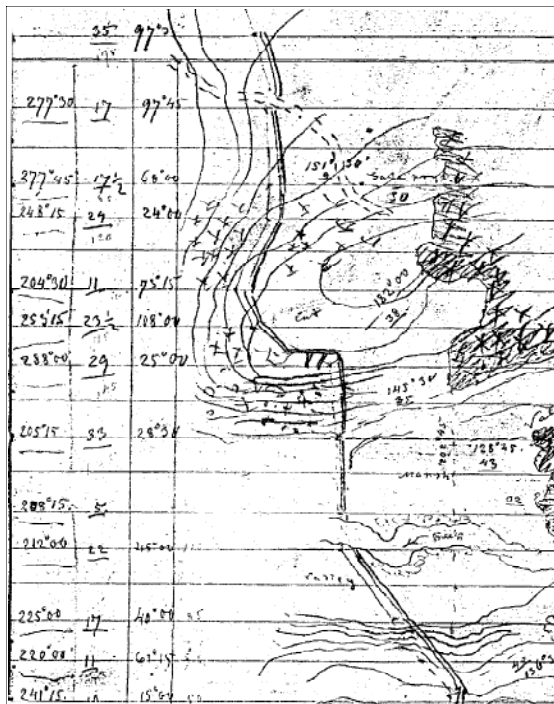
surveyors passed on to map other ground.

Unmapped Territory

Weyss and party began a triangulation survey of the battlefield of Antietam, Maryland, on November 13, joined by at least one new surveyor, named Forsyth.⁴⁰ The last field books examined suggest that Weyss ended his surveys for the atlas at Antietam, during November-December 1867. It is clear that Michler and Weyss borrowed substantially from wartime surveys, from the Duane-Howell survey, and from Michie's work for the Army of the James. These attributions were dropped in the atlas of *Military Maps illustrating the Operations of the Armies of the Potomac & James*, published in 1869. There was little difference in content, for example, between a map of the battlefield of Spotsylvania Court House credited to both Michler and Howell and one credited to Michler and Weyss other than the scale and style of drawing.⁴¹ An examination of the manuscript maps at the Cartographic Division of the National Archives would begin to unravel some of the questions surrounding the sources, survey dates, and surveyors whose field work contributed to the published maps.

The Michler-Weyss maps were constructed from ground surveys using practiced methods, plotted and projected according to principals outlined in the engineering manuals of the time, and finished in a style suitable for publication. It is not always easy to decipher the field books of the different surveyors, to discern where each was working or the base maps they were using, or to read their cryptic notes. The records are incomplete. Field books have been lost or were misplaced in the National Archives. Many of the details noted in the field books were not transferred to the published maps. In some cases, farms or house sites were not labeled with the resident's name. Buildings depicted as unnamed symbols sometimes were differentiated in the field books as house, barn, stable, or tannery. Open ground might be noted as field, cornfield, meadow, or marsh. A grove of large trees might be drawn in. Such details would prove invaluable to archeologists or to historians intent on recreating the historic landscape of a battlefield.

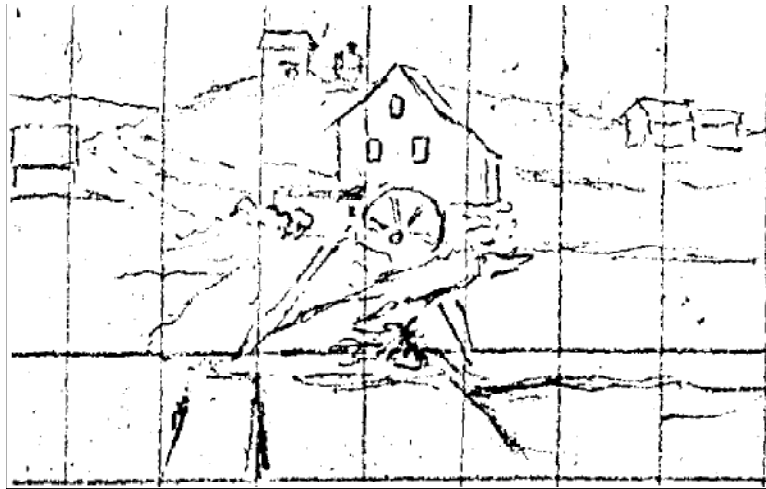
When Maj. John Weyss sat on the right bank of Mine Run on October 15, 1867, he sketched Bartlett's Mill in his field book. It was a quick pencil sketch that nonetheless captured essential military information about the crossing--the site of the mill, the mill dam, outlying buildings, the steepness of the approaches. Mine Run was the boundary for the day's survey, and



⁴⁰ Archives RG77 36-5-3-8 (Book 18).

⁴¹ Michler-Howell-Weyss, National Archives, RG77, G204-19, scale 1:15,480. Michler-Howell, LC List 658.1, 658.2, scale 1:21,120.

the boundary for the map that would be produced from it. As far as Weyss was concerned, the left bank would remain unsurveyed. He took bearings of the distant buildings, sketched in the contours of the ground, and noted a grove of black walnut trees just to the south. His hand and eye were long accustomed to this work. Weyss strove conscientiously to capture the landscape on paper--lives had depended upon it in the past. Lives might depend upon it again. The maps that he and his fellow surveyors created would become the topographical landscape for all subsequent narrative histories of the battlefields. He was sketching history.



APPENDIX

**Table 1: Michler-Weyss Survey Books Consulted in National Archives Record Group 77
Organized by Location of Survey, Surveyor, and Date
(Book No. refers to order in box not to chronology)**

Location	Weyss	Thielkuhl	Oswell	Strasser	Thompson	French
Fredericksburg	Sept. 21- Oct. 10 1-5-9-6 (Book 6)	Sept. 21- Oct. 6 1-5-9-6 (Book 7)	Sept. 23- Oct. 12 12-5-5-1 (Book 5)	Sept. 25- Oct. 14 (Book 8)	Sept.?- 1-5-9-6 (Book 9)	
Chancellorsville	Sept. 21- Oct. 10 1-5-9-6 (Book 6)		Sept. 23- Oct. 12 12-5-5-1 (Book 5)	Sept. 25- Oct. 14 (Book 8)		
Wilderness	Oct 11-18 4-3-8-11 (Book 5)	Oct. 7-18 4-3-8-11 (Book 4)	Sept. 23- Oct. 12 12-5-5-1 (Book 5)	Sept. 25- Oct. 14 (Book 8)	Sept. 26- Oct. 24 1-5-9-6 (Book 10)	
Mine Run	Oct 11-18 4-3-8-11 (Book 5)	Oct. 7-18 4-3-8-11 (Book 4)	Sept. 23- Oct. 12 12-5-5-1 (Book 5)	Oct. 15- Oct. 24 4-3-8-11 (Book 3)	Sept. 26- Oct. 24 1-5-9-6 (Book 10)	
Along the Rappahannock River	Oct. 19-25 4-3-8-11 (Book 11) Oct. 26- Nov. 4 4-3-8-11 (Book 10)	Oct. 19-? 4-3-8-11 (Book 2)		Oct. 15-24 4-3-8-11 (Book 3) Oct. 25- Nov. 5 4-3-8-11 (Book 8)	Sept. 26- Oct. 24 1-5-9-6 (Book 10)	Oct. 15-24 4-3-8-11 (Book 9)
North Anna		Oct. 30- Nov. 4 4-3-8-11 (Book 1)	Oct. 30- Nov. 4 4-3-8-11 (Book 6)		Sept.?- 1-5-9-6 (Book 9)	
Return via Stafford and Occoquan		Nov. 6-? 4-3-8-11 (Book 7)			Nov. 6-? 4-3-8-11 (Book 7)	Nov. 6-? 4-3-8-11 (Book 7)
Antietam		Nov. 13- 26 36-5-3-8 (Book 12)		Nov. ?- Dec. 5 36-5-3-8	Nov. 17- Nov. 22 36-5-3-8 Nov. 23- Dec. 5 36-5-3-8	Nov. 16-? 36-5-3-8

See also RG77, 36-5-3-8: Forsyth Nov. 17-? (Book 18), Unsigned (Book 13), Unsigned (Book 19)

DUANE-HOWELL SURVEY MAPS

Sources: National Archives, *A Guide to Civil War Maps in the National Archives*. Washington, D.C.: National Archives and Records Administration, 1986. National Archives, *A Guide to Civil War Maps in the National Archives*. Washington, D.C.: National Archives and Records Administration, 1986. *Atlas to Accompany the Official Records of the Union and Confederate Armies*. Washington, D.C.: Government Printing Office, 1891-1895.

Duane-Howell Survey Maps reproduced in the *Official Military Atlas of the Civil War*, Plate 55

- 1) Wilderness
- 2) Todd's Tavern
- 3) Spotsylvania
- 4) North Anna
- 5) Totopotomoy and Bethesda Church

All maps bear the note: "Part not covered by Topography compiled from Campaign Maps of the Army of the Potomac and Rebel Map D.N.V."

Manuscript Maps, Duane 1865

Archives List, various maps and scales: Manuscript maps of battlefields surveyed under Col. J. C. Duane, Chief Eng., Army of the Potomac, including the Wilderness May 5-7, 1864 (G1841-1), Spotsylvania C. H. , May 8-21 (G181-1), North Anna, May 23-27 (G181), and Totopotomoy and Bethesda Church, May 28-June 2 (G182) [see also G182-3, G181-2], a manuscript map of the country in the vicinity of Todd's Tavern (G185), a manuscript sketch showing lines near new Cold Harbor (G134) [see entry 2.235].

Operations of the Army of the Potomac [Appomattox Campaign], Duane 1865

LC List 512a.5 Scale 1:160,000 36 x 88 cm.

Map of the country between Petersburg and Appomattox Court House, showing the operations of the Army of the Potomac under command of Maj. Gen. George G. Meade, from March 29th to April 9th, 1865. Engineer Department, Headquarters, Army of the Potomac.

North Anna, Duane-Howell 1865

LC List 589 Scale 1:15,840 57 x 89 cm.

Map of the battle fields of North Anna showing the field of operations of the Army of the Potomac commanded by Maj. Gen. George G. Meade, U.S.A. from May 3rd to 27th 1864. Surveyed under the orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers. J. Bien, lith., N.Y. [1865]

Petersburg, Office of the Chief of Engineers, 1865

LC List 615, Scale 1:7920, five parts, each 185 x 247 cm.

Map showing the Federal and confederate works during the siege of Petersburg, between the Appomattox River and Hatchers Run, Jun 16, 1864, to April 3, 1865." This pen and ink tracing may have been intended as part of the Duane-Howell series, mapping General Meade's campaigns with the Army of the Potomac.

Spotsylvania, Duane-Howell 1865

LC List 657 Scale 1:15,840 56 x 67 cm.

Map of the Battlefield of Spottsylvania C. H. Showing the field of operations of the Army of the Potomac commanded by Maj. Gen. George G. Meade, U.S.A., from May 8th to 21st, 1864. Surveyed under the

orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers. J. Bien, lith., N.Y. [1865]

Todd's Tavern, Duane-Howell 1865

LC List 662 Scale 1:15,840 38 x 32 cm.

Map of the country in the vicinity of Todds Tavern with the position of the 2nd Corps, Army of the Potomac, May 8th, 1864. Surveyed under the orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers. J. Bien, lith., N.Y. [1865]

Totopotomoy, Duane-Howell 1865a

LC List 663 Scale 1:15,840 61 x 72 cm.

Map of the battle fields of Tolopotomoy [sic] and Bethesda Church. Showing the field of operations of the Army of the Potomac commanded by Maj. Gen. George G. Meade, U.S.A., from May 28th to June 2nd, 1864. Surveyed under the orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers. J. Bien, lith., N.Y. [1865]

Totopotomoy and Bethesda Church, Duane-Howell, 1865b

Archives List 2.252 1:7,920 (8"=1 mi.) 53 x 58 cm.

Showing the field of operations of the Army of the Potomac commanded by Maj. Gen. George G. Meade, U.S.A. from May 28th to June 2nd, 1864. Surveyed under the orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers.

Wilderness, Duane-Howell 1865a

Archives RG77 G184-1 (Archives Guide 1.149) Scale 1:7,920

Map of the Battlefield of the Wilderness, May 5th, 6th, 7th 1864. Showing the field of operations of the Army of the Potomac commanded by Maj. Gen. George G. Meade, U.S.A. Surveyed under the orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers. J. Bien, lith., N.Y. [1865]" Described under Manuscript maps of battlefields surveyed under Col. J. C. Duane, Chief Engineer, Army of the Potomac, including the Wilderness (G184-1).

Wilderness, Duane-Howell 1865b

Archives RG77: G184-2 /LC List 665) Scale 1:15,840 60x74 cm.

Map of the Battlefield of the Wilderness, May 5th, 6th, 7th 1864. Showing the field of operations of the Army of the Potomac commanded by Maj. Gen. George G. Meade, U.S.A. Surveyed under the orders of Bvt. Col. J. C. Duane, Major of Engineers, Chief Engineer Army of the Potomac by Bvt. Maj. C. W. Howell, 1st Lieut. of Engineers, assisted by Messrs. L. C. Oswell, L. Bell, and R. B. Talfor, topographical engineers. J. Bien, lith., N.Y. [1865]

MICHLER-WEYSS SURVEY MAPS

Nathaniel Michler was a captain in the regular army engineers. Maj. John E. Weyss was a Major of Kentucky volunteers. It may be safe to assume that Weyss was Michler's protégé in that both came east to serve as topographical engineers for the Engineer Department, Army of the Potomac in June 1863. From

August 3 to September 30, 1863, Weyss surveyed and mapped Harpers Ferry, West Va., under Michler's direction. Michler was promoted to Major early in 1864 and took over as head of the topographical engineers.

Weyss served as principal assistant to Capt. Nathaniel Michler, head of topographical engineers, Army of the Ohio in 1862-1863. The two collaborated on a range of maps and topographical sketches, including maps of Perryville, Ky. (LC 226), Corinth, Miss. (LC 268, 395), Middle and East Tennessee (LC 393.5, 396.25, 396.4), Collins River, Tenn. (LC 406.7), Columbia, Tenn. (LC 406.9), Decherd, Tenn. (LC 408), Nashville, Tenn. (LC 433.4), Shelbyville, Tenn. (LC 434.5), Shiloh, Tenn. (LC 438), Sparta, Tenn. (LC 440.5), Stones River, Tenn. (LC 443), and Williamson County, Tenn. (LC 446.5).

Sources: National Archives, *A Guide to Civil War Maps in the National Archives*. Washington, D.C.: National Archives and Records Administration, 1986. National Archives, *A Guide to Civil War Maps in the National Archives*. Washington, D.C.: National Archives and Records Administration, 1986. *Atlas to Accompany the Official Records of the Union and Confederate Armies*. Washington, D.C.: Government Printing Office, 1891-1895.

Michler-Weyss Survey Maps Reproduced in the *Official Military Atlas of the Civil War*

- 1) Antietam, Md. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 29:2
- 2) Appomattox Court House, Va., (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 78:2
- 3) Bermuda Hundred, Va. (Michler and Michie/Weyss, Thielkuhl, Strasser, Thompson), Plate 77:3
- 4) Chancellorsville, Va. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 93:2
- 5) Cold Harbor, Va. (Michler and Michie/Weyss, Thielkuhl, Strasser, Thompson), Plate 97:2
- 6) Fredericksburg (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 33:1
- 7) High Bridge and Farmville, Va. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 78:4
- 8) Jetersville and Sailor's Creek, Va. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 77:4
- 9) North Anna River, Va. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 96:2
- 10) Petersburg and Five Forks, Va. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 77:2
- 11) Richmond, Va., and Vicinity (Michler and Michie/Dessez, Brown, Collett, Weyss, Thielkuhl, Oswell, Thompson, Schumann), Plate 77:1
- 12) Spotsylvania Court House, Va. (Michler and Howell/Weyss, Thielkuhl, Burchard, Oswell, Thompson, surveyed June 1865), Plate 96:3
- 13) Totopotomoy River, Va. (Michler and Howell/Weyss, Thielkuhl, Strasser, Thompson), Plate 96:6
- 14) Wilderness, Va. (Michler/Weyss, Thielkuhl, Strasser, Thompson), Plate 96:1

Index Map, 1915

Reduced and redrawn version of the index map in the U.S. Army, Corps of Engineers' *Military Maps illustrating the Operations of the Armies of the Potomac & James*, LC List 508.8 (See also 518) G3882.N6S5 186- .M5, Scale 1:500,000 (67x40 cm.)

Map of the region between Gettysburg, Pa. and Appomattox Court House, Va., including all the battlefields of the Army of Northern Virginia. Expressly prepared for this work from the United States government map based on surveys made by Bvt. Brig. Gen. N. Michler, Major of Eng'rs. and others, under the authority of the Hon. Secretary of War. Reproduced in Photographic Rooms, War College Division, General Staff. [Washington, 1915?]

Atlas of Military Maps, 1867-1869

U.S. Army, Corps of Engineers' *Military Maps illustrating the Operations of the Armies of the Potomac & James*, LC List 517-520 G1291. S5U5 1867 Vault. Also G1201 .S5U515 1869 folio. Photocopy, 18

maps on 17 sheets, 61 x 42 cm.

Including the battlefields of the Wilderness, Totopotomoy, North Anna, Spottsylvania, Cold Harbor, the movements north of the James River, siege of Petersburg, battlefields of Five Forks, Sailor's Creek, Farmville & Appomattox Court House, as also the routes of the march of the opposing armies. [1867]

Antietam, Michler-Weyss 1867

LC List 245.8, 245.85, 245.9, 245.95, Scale 1:21,120 58 x 66 cm.

Antietam, Prepared by Bvt. Brig. Gen. N. Michler, Major of Engineers, from surveys under his direction, by order of Brig. Gen. & Bvt. Maj. Gen. A. A. Humphreys, Chief of Engineers, and under the authority of the hon. Secretary of War. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Lettering by J. de la Camp. Photolith. by the N. Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt. 1867.

Appomattox Campaign, Michler-Weyss 1867

LC List 525.2 Scale 1:21,120

From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Bermuda Hundred, Michler-Michie-Weyss 1867

LC List 525b.2, 525b.3, 525b.4, Scale 1:42,240

From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers and Bvt. Lieut. Col. P. S. Michie, Capt. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Chancellorsville, Michler-Weyss 1867

LC List 528.2, 528.3, Scale 1:21,120 57 x 62 cm.

Chancellorsville [sic], Prepared by Bvt. Brig. Gen. N. Michler, Major of Engineers, from surveys under his direction, by order of Brig. Gen. & Bvt. Maj. Gen. A. A. Humphreys, Chief of Engineers, and under the authority of the hon. Secretary of War. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Lettering by J. de la Camp. Photolith. by the N. Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt. 1867.

Cold Harbor, Michler-Michie-Weyss 1867

LC List 531.2, 531.3, Scale 1:21,120

Cold Harbor, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Major of Engineers, and Bvt. Lieut.-Col. P. S. Michie, Captain of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Harpers Ferry, Michler-Weyss 1867

LC List 697.5, Scale 1:21,120 58 x 70 cm.

Harper's Ferry, Prepared by Bvt. Brig. Gen. N. Michler, Major of Engineers, from surveys under his direction, by order of Brig. Gen. & Bvt. Maj. Gen. A. A. Humphreys, Chief of Engineers, and under the authority of the hon. Secretary of War. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Lettering by J. de la Camp. Photolith. by the N. Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt. 1867.

High Bridge and Farmville, Michler-Weyss 1867

LC List 536.7 Scale 1:21,120

High Bridge and Farmville, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Five Forks, Michler-Weyss 1865?

LC List 540, 540.1, Scale 1:21,120

Map of the battlefield of Five Forks, Compiled from surveys under the direction of Bvt. Brig. Gen. N. Michler, Major of Engineers, Bvt. Brig. Gen'l., U.S.A. Surveyed by Maj. J. E. Weyss, Thielkuhl, Burchard, Schumann, Thompson. Drawn by F. Thielkuhl, Thompson, Schumann.

Fredericksburg, Michler-Weyss 1867

LC List 553.6, 553.7, 553.8 Scale 1:21,120 82 x 57 cm.

Fredericksburg, Prepared by Bvt. Brig. Gen. N. Michler, Major of Engineers, from surveys under his direction, by order of Brig. Gen. & Bvt. Maj. Genl. A. A. Humphreys, Chief of Engineers, and under the authority of the hon. Secretary of War. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Photolith. by the N. Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt. 1867.

Jetersville and Sailors Creek, Michler-Weyss 1867

LC List 559.5, 559.55, 559.6 Scale 1:21,120 51 x 87 cm.

Jetersville and Sailors Creek, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Mine Run, Michler-Weyss 1867

Archives RG77, G204-29 (Not in the LC collection) Scale 1:15,840

Battlefield of Mine Run, prepared by command of Brig. Gen. A. A. Humphreys, Chief of Corps of Eng, U.S. Army From Surveys made under the direction of N. Michler, major of Eng., Bvt Brig. Gen., U.S.A. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

North Anna, Michler-Weyss 1867

LC List 590.1, 590.2 Scale 1:21,120 41 x 48 cm.

North Anna, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Major of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Petersburg, Michler-Weyss 1867

LC List 617, 618, 619 Scale 1:15,840 74 x 78 cm.

Map of the Siege of Petersburg, Surveyed under the direction of N. Michler, Maj. of Engrs., Bvt. Brig. Genl., U.S.A. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, Burchardt, Schuman, Thompson, and Graham.

Petersburg and Five Forks, Michler-Weyss 1867

LC List 607.8, 607.9, 608, 609 Scale 1:42,240 55 x 85 cm.

Petersburg and Five Forks, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Richmond, Michler-Michie-Weyss-Dessez 1867

LC List 648 Scale 1:63,360 38 x 56 cm.

Richmond, Surveyed under the direction N. Michler, Maj. of Engrs., Bvt. Brig. Genl., U.S.A., and Bvt. Lieut. Col. P. S. Michie, Capt. of Engrs., Bvt. Brig. Gen. U.S.V. Surveyed & drawn by Maj. J. E. Weyss & L. Dessez, assisted by Thielkuhl, Burchardt, Schuman, Thompson, Brown, Collett.

Richmond, Michler-Michie-Weyss 1867

LC List 632.7, 632.8, 632.9 Scale 1:42,240 56 x 85 cm.

Richmond, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers and Bvt. Lieut. Col. P. S. Michie, Capt. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Spotsylvania, Michler-Howell-Weyss 1867a

National Archives, RG77, G204-19, Scale 1:15,480 56 x 90 cm.

Map of the Battlefield of Spotsylvania [sic] C.H., Compiled from surveys under the direction of N. Michler, Major of Engineers, Bvt. Brig. Genl., U.S.A. and C. W. Howell, Capt. Of Engineers, Brv't. Maj. U.S.A. Topographical survey by Maj. J. E. Weyss, Thielkuhl, Burchard & Oswell, during the action from May 8th to 21st, 1864. Line of works from survey under direction of Brv't. Maj. C. W. Howell, 1st Lieut. Of Engineers, June, 1865. Drawn by Thielkuhl, Thompson, Schumann.

Spotsylvania, Michler-Weyss 1867b

LC List 658.1, 658.2 Scale 1:21,120 51 x 80 cm.

Spotsylvania [sic] Court House, From surveys under the direction of Bvt. Brig. Gen. N. Michler, Major of Engineers, by command of Bvt Maj. Genl. A. A. Humphreys, Brig. Gen. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Photolith. by the N. Y. Lithographing, Engraving & Printing Co., Julius Bien, Supt. 1867.

Totopotomoy, Michler-Weyss 1867

LC List 663.2, 663.3, 663.4 Scale 1:21,120

From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Genl. A. A. Humphreys, Brig. Genl. & Chief of Engineers. Surveyed & drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson.

Wilderness, Michler-Weyss 1864 MSS

Archives RG77: G204-17 (Archives List 2.254) Scale 1:15,840

Topographical Sketch of the Battle Field of the Wilderness from Reconnaissances During the Actions of the 5th, 6th, and 7th of May, made under the direction of Major N. Michler, Corps of Engineers, U.S.A., by Major John E. Weyss, U.S. Vols., Principal Assistant, Capt. W. H. Paine, Additional Aide de Camp & Assistant ... Headquarters Army of the Potomac, Engineer Department, Official.

Wilderness, Michler-Weyss 1867 Pub.

Military Maps illustrating the Operations of the Armies of the Potomac & James, LC List 665.8, 665.9 Scale 1:21,120 (3"=1 mi.) 78x47 cm.

The Wilderness [1864] From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Gel. A. A. Humphreys, Brig. Gen. and Chief of Engineers. Surveyed and drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Photolith. by the N. Y.

Lithographie, Engraving and Printing Co. Julius Bien, Supt. 1867.

Wilderness, Michler 1867/1891 Pub.

Official Military Atlas of the Civil War, Plate 96:1 Scale 1.25"=1 mi.

The Wilderness [1864] From surveys under the direction of Bvt. Brig. Gen. N. Michler, Maj. of Engineers, by command of Bvt. Maj. Gen. A. A. Humphreys, Brig. Gen. and Chief of Engineers. Surveyed and drawn by Maj. J. E. Weyss, assisted by F. Thielkuhl, J. Strasser & G. Thompson. Photolitho. by the N. Y. Lithographie, Engraving and Printing Co. Julius Bien, Supt. 1867.

See Also:

MSS. Archives General Guide 1.137 Manuscript survey and preliminary compilation sheets for the Fredericksburg, Chancellorsville, the Wilderness, and Mine Run (Z402-1 through 402-6; Z404 ½. Scale 8" = 1 mi. These maps were working drafts used to create the finished Michler survey maps. In many cases, these maps reveal methods and techniques of construction.

Described in Archives List as : Manuscript maps compiled under the direction of Bvt. Brig. Gen. N. Michler and Bvt. Lt. Col. P. S. Michie; maps of battlefields and campaign areas on a scale of 4" = 1 mi. Chancellorsville (G204-28), Fredericksburg (G204-27), Mine Run (G204-29), Spotsylvania Court House (G204-19), and the Wilderness (G204-17).

Described in Archives List as: Maps published in 1867 by order of Bvt. Maj. Gen. A. A. Humphreys, Chief of Engineers, on a scale of 3 or 4" = 1 mi. contained in the atlas, entitled *Military Maps illustrating the Operations of the Armies of the Potomac & James May 4th 1864 to April 9th 1865, including Battlefields*, published by the Office of the Chief of Engineers, War Department, 1869.

Partial Chronology of Michler-Weyss Survey Books, September-November 1867

September 21

Weyss: Survey from initial point near camp over the heights, canal, to woolen mill on Falmouth Road

Thielkuhl: along Hazel Run near national cemetery

Thompson: pace survey, Fredericksburg

September 23

Weyss: Survey from road above camp along heights above Stansbury's, canal, & River Road, Falmouth Bridge to woolen mill & dam

Thielkuhl: Hamilton's Crossing, Road to Deep Run, Farney House

September 24

Weyss: Survey from basin along Smith's lane canal, River Road, W. Downman to Plank road at Howard's and along it back to . . . 's point near camp

Thielkuhl: Burnett and road along Rappahannock River

September 25

Weyss: Survey of rifle pits from camp to Taylors & by . . . 's, road back to gate on Stansbury's Farm

Thielkuhl: Leech, Goodwin houses

September 26

Weyss: Survey from Plank Road near crossing of Deep Run / Thielkuhl's survey, Hamilton's

crossing and on R.R. back to depot in F'burg.

Thompson: Fredericksburg

Thielkuhl: Chain Survey, Hamilton's crossing and vicinity, Hamilton House, Old Mine Road

September 27

Weyss: Survey of front of Marye's Hill

Thielkuhl: Compass survey, rebel rifle pits to Maj. Weyss connection point

September 28

Thielkuhl: Vicinity of Howison House

September 30

Weyss: Survey on Plank Road from crop road at Underhills to Chancellorsville camp

Thielkuhl: Turnpike-Old Plank Road intersection down to old railroad toward Aldrich

Thompson: From Plank Road near Stevenson to Baines

October 1

Weyss: Survey of rifle pits from peg near Chancellorsville camp around the fields to creek road to Plank Road and by byroad to camp

Thielkuhl: Roads around Aldrich to Chancellorsville

Strasser: Chaining from Chancellorsville to Wilderness Tavern

October 2

Weyss: Survey from peg near camp along Ely's Ford Road

Thielkuhl: Brock Road to Wilderness national cemetery & along Germanna Plank Road to Wilderness

Oswell: 23 years old today

October 3

Weyss: Survey from peg on Ely's Road up to U.S. Ford

Thielkuhl: From turnpike to Plank Road

Oswell: with Thompson, works near Chancellorsville

October 6

Weyss: Addition to Oct. 1st compass read on south end

Thielkuhl: Thompson's compass . . . turnpike to Wilderness Tavern, roads N. of turnpike

October 7

Weyss: Survey of works in the Wilderness south of T'pike

Thielkuhl: north of turnpike, north of Germanna Road, Lacy House, Wilderness Run

Strasser: Wilderness, Confederate works

Oswell: French chaining for Mr. Thompson

October 8

Weyss: Continuation of yesterday's work from G on line

Thielkuhl: north of tavern and pike

Thompson: clear and cool with frost in morning

October 9

Weyss: Chain survey from Lacy's Gate along valley

Thielkuhl: Germanna Plank road, Wilderness Run, Lacy House

Oswell: paced for Mr. Strasser

October 10

Weyss: Chain survey from pike near Lacy's House to Battery M

Thielkuhl: Plank Road from Wilderness Tavern, Brock Road intersection, corduroy road

Oswell: moved camp

October 11

Weyss: Chain survey from peg on Plank Road of enemy's right wing and back from A along the

works . . . to peg I October 10th and back to camp at Mrs. Tapp's
Thielkuhl: Unfinished railroad, Plank Road to New Hope Church

October 12

Weyss: Chain survey from peg near M. Tapps along Plank Road over Mine Run to 2nd line of
Rebel works

Thielkuhl: Unfinished railroad from F'burg to Orange C. H. To Plank Road near New Hope
Church

Thompson: Locust Grove, Rapidan and Rappahannock confluence

Oswell: moved camp, New Hope Church to Locust Grove

October 13, Sunday

October 14

Weyss: Survey from peg N of 12th on Plank Road to turnpike and on it along to Mine Run at
Rives Mill and Robertson's Tavern

Thielkuhl: Rebel rifle pits, J. Reynolds, tanyard, Glover Hill

October 15

Weyss: Survey from peg on turnpike along Raccoon Ford Road to Bartlett's Mill (with sketch of
mill)

Thielkuhl: Along Mine Run

October 16

Weyss: Chain survey from peg at Widow Morris . . . near Mine Run, Ms. Sisson, to Rapidan (with
sketch of confluence of Mine Run and Rapidan River)

Thielkuhl: Widow Morris, along Mine Run

October 17

Weyss: Chain survey from peg I to camp at W. Morris

October 18

Weyss: Chain survey from peg L of Oct 17 to Plank Road at Beale's to Germanna Ford and
correction with Thompson's Plank Road survey (with sketch of Germanna Ford)

October 19

Weyss: Chain survey from camp at Beale's to Melville Mine and Culpeper Mine Ford and back to
J. Hall's Farm

October 20

Weyss: Survey from peg at camp near Beales to peg a B. Shop on Plank Road and by peg 2 of
Thompson by Halls to peg A of Oct. 19th near old church at Beales Camp

October 21

Weyss: Chain survey from peg O of Melville Mines to Ely's Ford

October 22

Weyss: Survey from peg K on Ely's Ford Road by Quisenbery's Mill, Lowell, Hunting Creek,
Childs to U.S. Ford

October 23

Weyss: Chain survey from U.S. Ford to Old Mountain Mine Road and along it to . . .

French: connecting with Thielkuhl's and Strasser's work

October 24

Weyss: Chain survey from peg at camp along River Road; survey from Z at W. Bowers House by
Mrs. . . . to fence on Banks Ford Road; chain survey from peg F to peg E

French: with Thompson (with cross sections of field works)

October 25

Weyss: Survey from River Road from Gate near Taylor's; new camp

Strasser: chained turnpike, Salem Church, Fredericksburg

October 26

Weyss: Gradiator survey

October 29

Thompson: Quarles Mill, North Anna

October 30

Weyss: Survey from peg at camp up the creek

Thielkuhl: Jericho Mill, North Anna

Thompson: Quarles Mill, North Anna

Strasser: railroad, Fredericksburg

November 1

Weyss: Chain survey from stump of survey, Oct. 30, Telegraph Road

November 2

Weyss: Survey from peg C of Nov 1 by Blake's to Banks Ford and from Blake's (with sketch of Banks Ford)

November 3

Weyss: Survey from peg M38 of Gradiator survey, Oct. 26, Telegraph Road

Strasser: Telegraph road, railroad, Fredericksburg

November 4

Weyss: Survey from fork of road at Mr. England

Thielkuhl: Ox Ford, North Anna

November 5

Weyss: Survey of . . . Valley

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