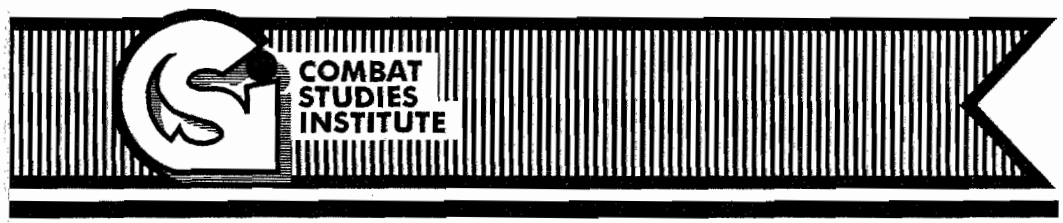
Railroad Generalship: Foundations of Civil War Strategy

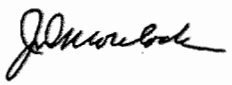
by
Dr. Christopher R. Gabel

U.S. Army Command and General Staff College
Fort Leavenworth, Kansas 66027-1352



FOREWORD

According to an old saying, "amateurs study tactics; professionals study logistics." Any serious student of the military profession will know that logistics constantly shape military affairs and sometimes even dictate strategy and tactics. This excellent monograph by Dr. Christopher Gabel shows that the appearance of the steam-powered railroad had enormous implications for military logistics, and thus for strategy, in the American Civil War. Not surprisingly, the side that proved superior in "railroad generalship," or the utilization of the railroads for military purposes, was also the side that won the war.



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JERRY D. MORELOCK
Colonel, Field Artillery
Director, Combat Studies Institute

CSI publications cover a variety of military history topics. The views expressed herein are those of the author and not necessarily those of the Department of the Army or the Department of Defense.

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Since the dawn of history, military strategy has been dominated by the inexorable calculus of logistics—distance, time, transport capacity, and consumption. For thousands of years, every army that waged war relied upon the muscles of its men and animals to carry it across the countryside. It is sobering to consider that, up until 1830, every soldier that ever went into battle got there on his own feet or by the efforts of an animal. Every weapon, every round of ammunition, every pound of food eaten by an army, every tent peg, and every bandage reached the battlefield by muscle power. The only exceptions were those resources transported by water and those extracted from the countryside.

Ironically, the armies with the largest contingents of draft animals for their supply trains also faced the most difficult logistical challenges: each of the animals pulling a supply wagon had to eat too, which meant that even more wagons and animals were needed to carry food for the animals hauling supplies for the fighting troops. Naturally, one then needed animals to carry fodder for the animals carrying fodder. This pattern of diminishing returns compounded dramatically the farther an army got from its supply base. Typically, food for animals constituted more than half of an army's supply requirement. Under the best of circumstances, an army relying exclusively on muscle-power transport could carry a maximum of about ten days' worth of supplies. No wonder that armies of the preindustrial age were so often hungry, ragged, and exhausted, spending far more time scouring the countryside for food than they did fighting the enemy.

Nowhere was this more true than in North America. The New World was just too big a battleground for armies moving by muscle power. In addition to the vast distances involved, roads were generally poor, and much of the countryside was undeveloped, offering little to a foraging army. Consider the various conflicts fought in North America—colonial wars, the Revolutionary War, and the War of 1812—and one finds that often the biggest challenge in planning a campaign was just getting to the battlefield without

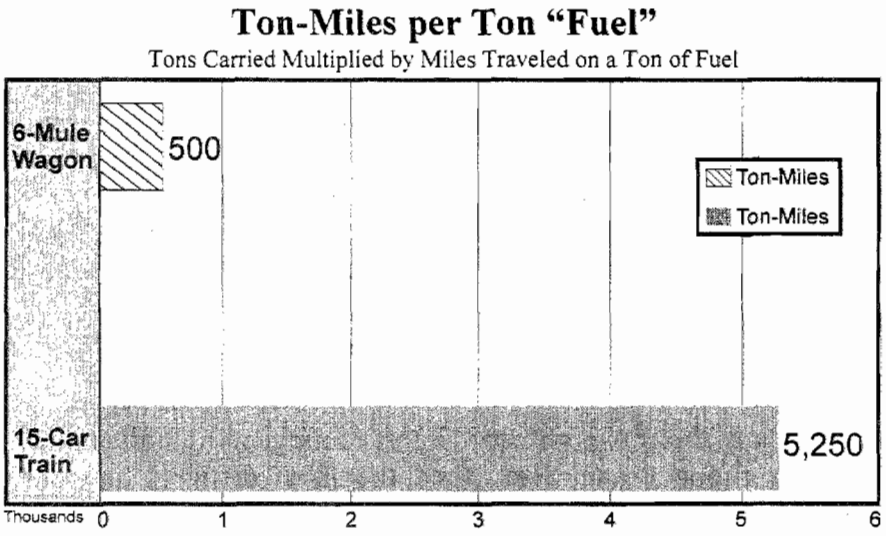


Table 1

starving en route. Fighting the enemy was almost incidental. This is why, in colonial days, a log fort containing a few dozen soldiers and some barrels of wormy flour could dominate thousands of square miles of wilderness—nobody else could get there in any condition to dispute ownership.

This situation changed dramatically by 1861. There were more farms, less wilderness, and a wider variety of bad roads to choose from. Just as important was the advent of steam-powered transportation.

What exactly did steam power do for military logistics? Obviously, a railroad train could carry more tons of cargo than a mule-drawn wagon, but this alone did not confer any logistical advantage, for one could make up the difference in tonnage simply by adding more mules and wagons. The steam locomotive's advantage resided in the fact that it could haul more supplies farther *on a given amount of fuel* (see table 1). A team of six mules drawing a wagon carrying 1.5 tons of supplies could travel approximately 333 miles on one ton of food. Multiplying 1.5 tons by 333 miles yields 500 ton-miles of transport capacity generated by that ton of mule forage. In contrast, a Civil War-era freight locomotive could travel only thirty-five miles or so on a ton of fuel, but its payload could be as high as 150

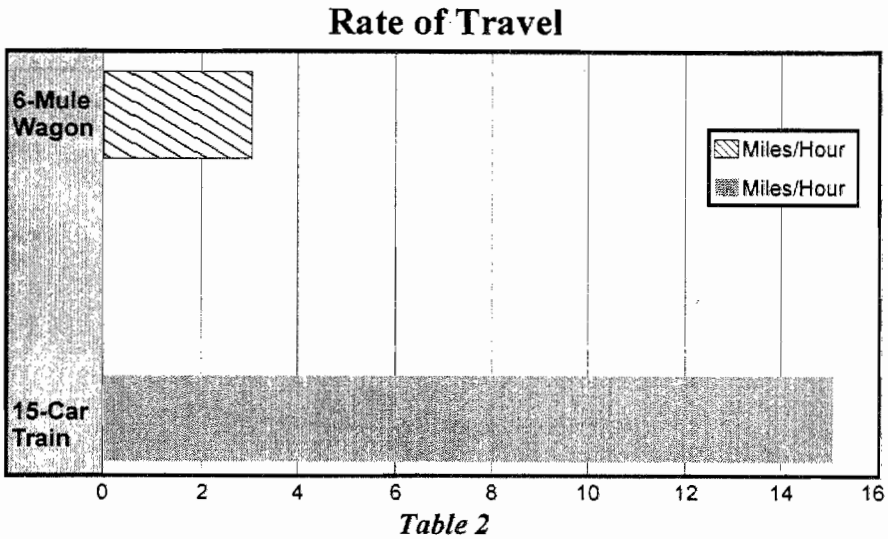


Table 2

tons, yielding 5,250 ton-miles per ton of fuel consumed. (Steamboats, incidently, did even better.)

Trains, moreover, traveled about five times faster than mule-drawn wagons, which not only expedited the delivery of supplies but actually reduced the number of supply vehicles required. Faster travel meant more round trips in a given time, which meant that fewer vehicles were needed to maintain the required flow of supplies (see table 2). Faster travel also meant that cargoes, be they men or supplies, arrived at the front in better condition. Troops traveling by train rather than on foot experienced less fatigue and fewer instances of straggling and desertion, even though the freight cars used for most troop movements were anything but comfortable. Supplies hauled by rail were more likely to reach the troops in useable condition, owing both to the speed of delivery and to the shelter afforded by enclosed railroad cars.

The Civil War-era steam locomotive, although unreliable by modern standards, was still somewhat more dependable on campaign than draft animals. Mules, in particular, tended to operate under their own value system and could not always be relied upon to do their patriotic duty. Moreover, when not in use, the locomotive did not consume any fuel, whereas animals kept eating whether they were working or not. Finally, the manufacture of locomotives could be

Sherman's Rail Communications, Atlanta Campaign, 1864



Map 1

modified and expedited to meet demand. But the mule comes in only one model, and its "manufacture" is governed by inflexible biological timetables.

In sum, the advent of the steam-powered railroad boosted logistical output by at least a factor of ten. Such a dramatic development was bound to have a major impact on strategy in the Civil War.

Most notably, the railroad increased enormously the geographical scale of military operations. An army supplied by railroad could operate effectively even when hundreds of miles from its main base of supply. Such a capability allowed the waging of war on a continental scale, enabling armies to conduct campaigns that would have been unthinkable with wagon-haul logistics. Railroads also permitted armies to become larger. In previous North American wars, armies of 30,000 taxed the limits of wagon-haul logistics and local requisition. But in 1864, Major General William T. Sherman waged an offensive campaign with an army of 100,000 men and 35,000 animals (see map 1). His supply line consisted of a single-track railroad extending 473 miles from Atlanta to his main supply

base at Louisville. Sherman estimated that this rail line did the work of 36,800 wagons and 220,800 mules!

The railroad did more than just expand the scale of warfare. It seems also to have contributed to the prolongation of the Civil War by making it more difficult to wage decisive campaigns. One of the foremost techniques of Napoleonic warfare, which many Civil War generals tried to copy, involved the use of "interior lines" to mass against and annihilate the enemy's field armies one at a time. "Interior lines" simply means that a group of cooperating armies on the inside of a curved front can mass more quickly than their opponents on the outside, because they have a shorter distance to travel (see figure 1). Railroads made such geographical dispositions less relevant. Effective use of railroads by the force on exterior lines might allow it to move as fast or faster than the force on the inside. In September 1863 Lieutenant General James Longstreet's corps of 12,000 men traveled by rail, on interior lines, from Virginia to northern Georgia where it reinforced General Braxton Bragg's Army of Tennessee at the Battle of

"Interior Lines"

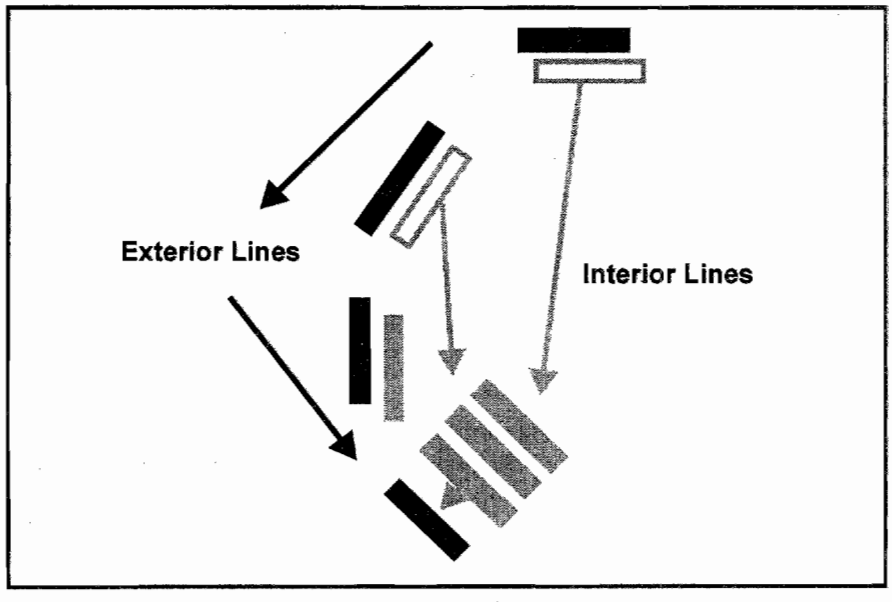
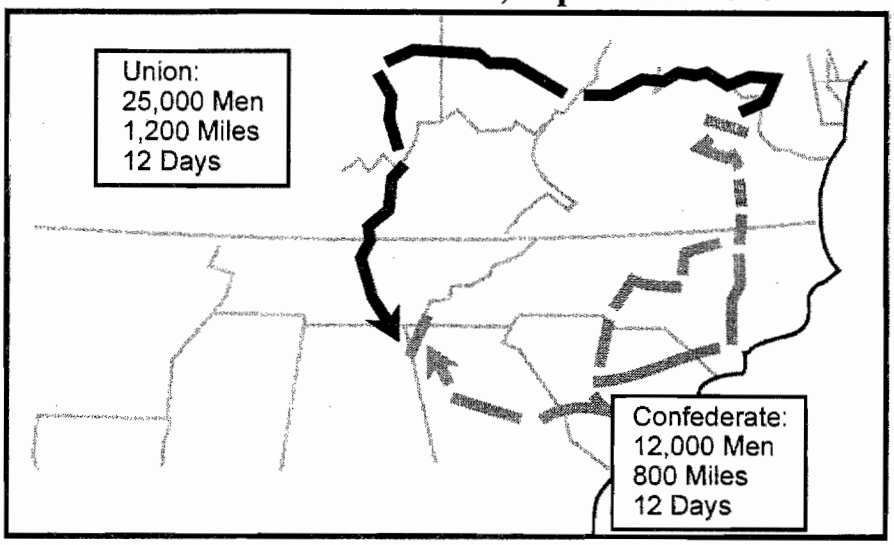


Figure 1

Interior Lines Nullified, September 1863

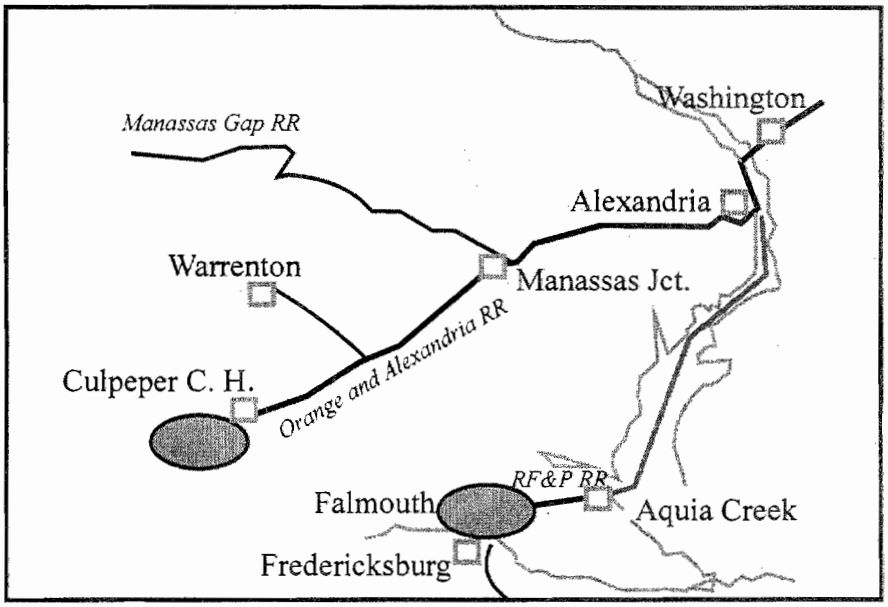


Map 2

Chickamauga. Longstreet's corps traveled roughly 800 miles in about twelve days. Two weeks after the Confederate victory at Chickamauga, two Union corps (the XI and XII), totaling 25,000 men, traveled 1,200 miles from Virginia to the Chattanooga front, where they reinforced the defeated Army of the Cumberland (see map 2). This movement on exterior lines also took about twelve days, even though the distance was greater and the number of troops larger. Thus, the more efficient Union railroads demonstrated the potential to nullify Confederate interior lines.

Paradoxically, at the level of the individual field armies, railroads actually restricted maneuver. Field armies tended to bunch up around their railheads. One reason for this was the interface at the railhead of two very different modes of transportation. Up to the railhead, supplies and reinforcements traveled on the industrial-age railroad. Beyond the railhead, transportation depended upon muscle power. In other words, it was often easier to move troops and supplies hundreds of miles from the home front to the railhead than it was to move even a few miles beyond it. Like water behind a dam, armies gathered in

Union Railheads In Virginia



Map 3

large, nearly unassailable masses around their railheads. The Union Army of the Potomac spent most of the war operating on one of two railheads—the Orange and Alexandria Railroad and the Aquia Creek section of the Richmond, Fredericksburg, and Potomac (see map 3). The Aquia Creek line was particularly noteworthy; railroad cars could run straight through Washington D.C. to Alexandria, where they were loaded onto barges carrying eight cars apiece. Steam-powered tugs took the barges to Aquia Creek where the cars were reassembled into trains and run to the front at Falmouth, opposite Fredericksburg. A sixteen-car train could travel from Washington to Falmouth in twelve hours. There was no transloading involved. By 1863 the Aquia Creek line averaged about 800 tons of supplies (eighty railroad cars) per day (see table 3). To advance beyond Falmouth meant that the army would have to resort to wagon-haul by 400 to 800 wagons per day. No wonder that so much of the fighting in Virginia occurred within the immediate area of Fredericksburg!

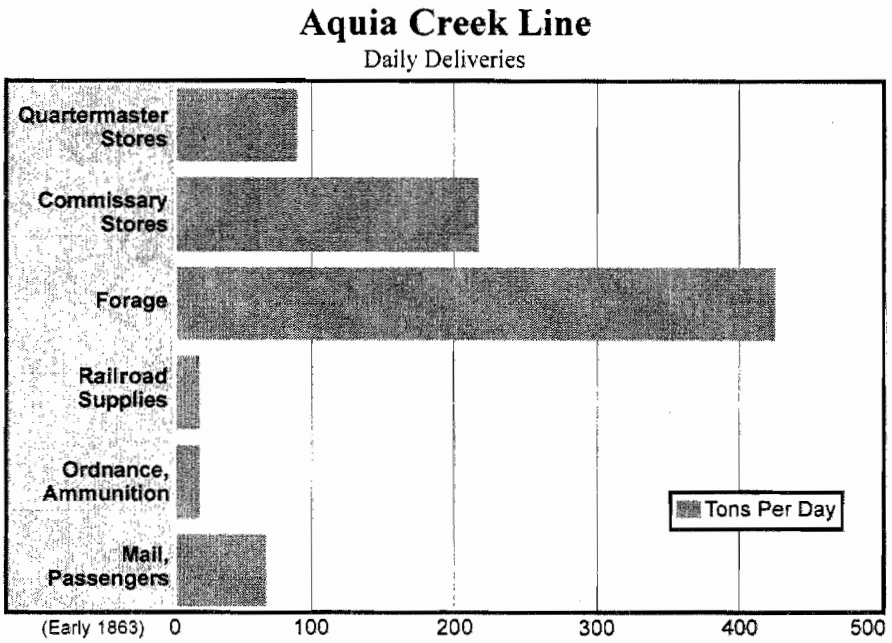
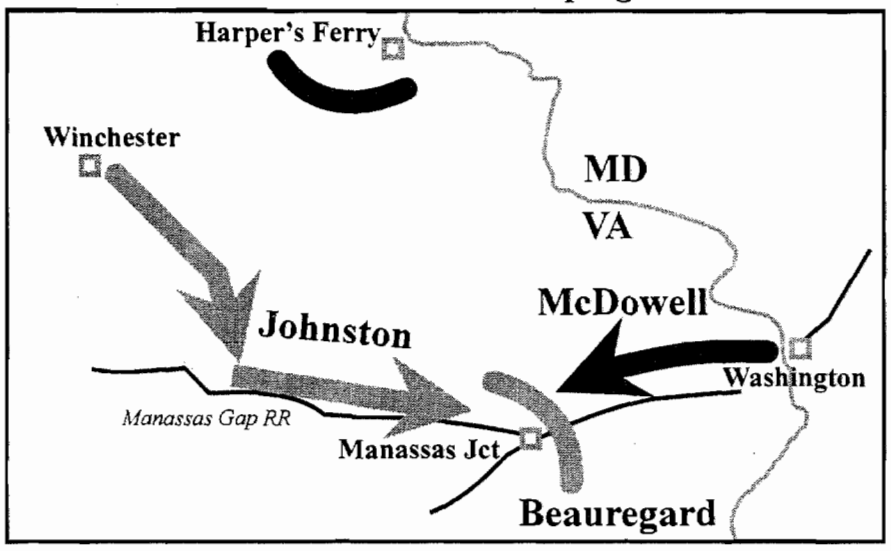


Table 3

On the other side of the coin, such logistical equations meant that it was harder to isolate an enemy field force for a battle of annihilation. An army sitting on a railhead, when threatened with attack by an enemy relying on wagons, often could be reinforced by rail before the muscle-powered attacker could destroy it. This became apparent early in the war at the Battle of First Bull Run (see map 4). In July 1861 Brigadier General Irwin McDowell's Union army, marching overland from Alexandria, threatened to destroy Brigadier General P. G. T. Beauregard's forces at Manassas. Using the Manassas Gap Railroad, Brigadier General Joseph E. Johnston's army traveled from the Shenandoah valley in time to reinforce Beauregard and foil McDowell's offensive.

Railroads also tended to diminish the significance of victory or defeat in battle. When defeated, an army supplied by rail often could be reinforced before the victor, traveling on muscle power, could exploit his success. Thus tactical victories seldom led to strategic gains. In the case of First Bull Run, when McDowell's defeated army retreated to Washington, it fell back on its replenishing railhead. This

First Bull Run Campaign

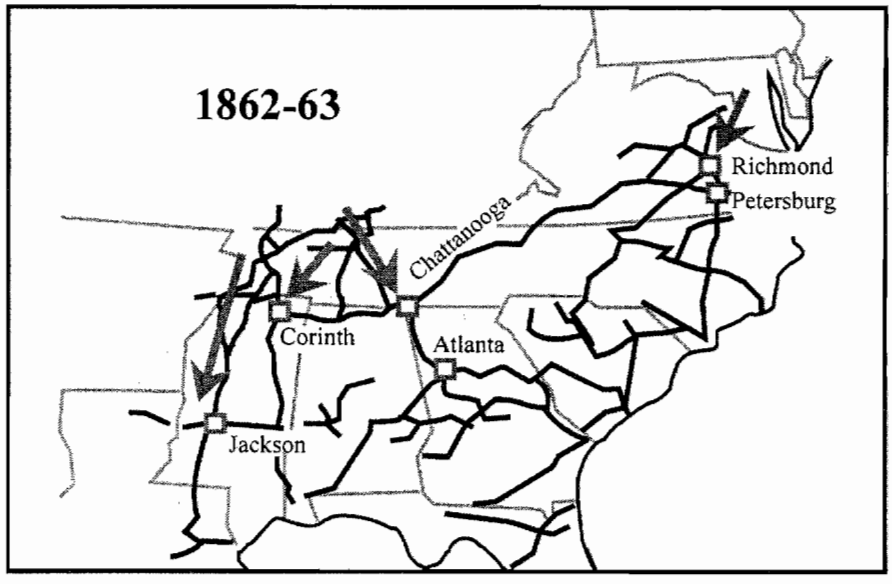


Map 4

left the Confederates with the wagon-haul problem, and forestalled any attempt by them to capitalize on their victory.

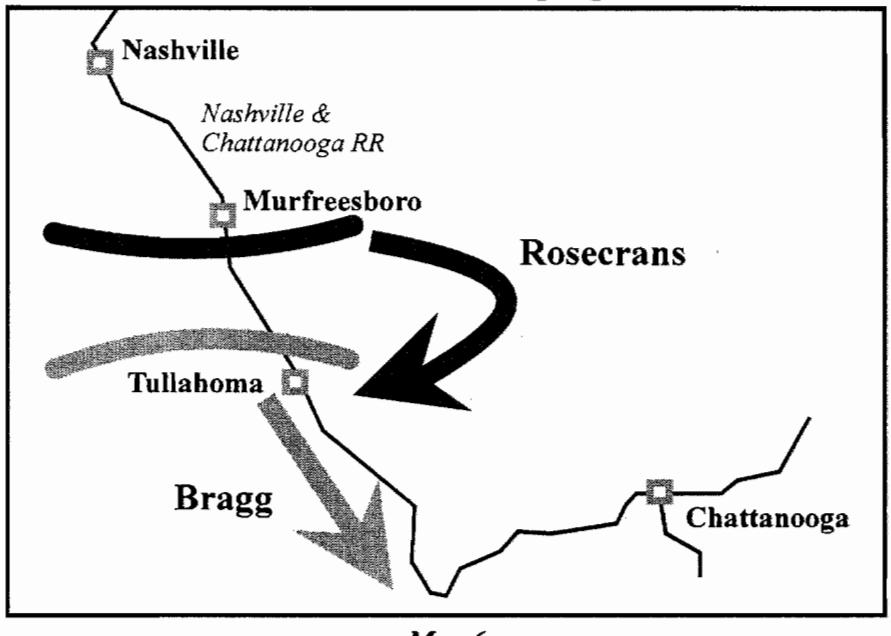
The general reliance on rail lines of communication, moreover, tended to channel offensive operations along clearly defined axes of advance. Through the first three years of the war, the Confederacy had little trouble predicting where Union offensives would come—along navigable water and along rail lines (see map 5). Thus, Union reliance on the railroad greatly reduced the element of strategic surprise, making it even more difficult to win a decisive victory. An exception to the rule occurred in the summer of 1863, when Major General William S. Rosecrans surprised Bragg's Army of Tennessee by moving away from the rail line into back country, flanking Bragg out of his defensive position at Tullahoma, Tennessee (see map 6). But Rosecrans was quick to get right back on the rail line once Bragg retreated. Generally speaking, offensives mounted *completely* beyond the capability of rail or water supply amounted to raids: armies could advance deep into enemy territory, but they could not stay. The great Confederate offensives of the war all fell into this pattern—Antietam and Gettysburg in the east, Perryville and

Confederate Rail Net and Union Offensives



Map 5

Tullahoma Campaign



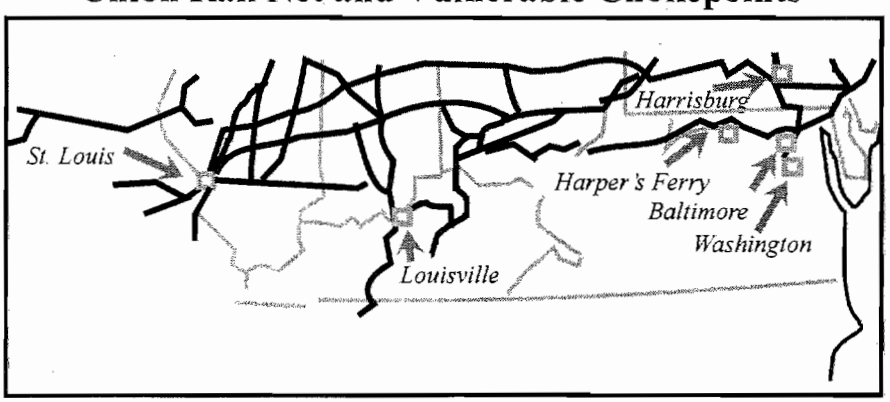
Map 6

Nashville in the west. Likewise, Sherman's famed "March to the Sea" was essentially a raid culminating in the establishment of a new line of supply.

With armies following rail lines of advance, it was natural that rail centers figured prominently as military objectives. Rail lines led to rail centers. Moreover, rail centers tended to be important both economically and politically. And, of course, cutting the enemy's transportation system by capturing his rail centers would impede his ability to wage war. Corinth, Jackson, Chattanooga, Atlanta, and Petersburg, all of which were targets in various Union offensives, owed much of their military significance to the railroads that passed through them. Likewise, the Confederates tried at different times to strike the Union rail centers of St. Louis, Louisville, and Harrisburg (see map 7). They did of course take Harper's Ferry more than once. Baltimore was another tempting target. Confederate control of Baltimore would have cut the only rail line linking Washington, D.C. to the rest of the Union. For that reason, the protection of Baltimore was almost as important to the Union as the defense of Washington.

In addition to the major offensives, smaller-scale raids against railroads were a common practice by both sides. Such operations were rarely decisive, but they were a very cost-effective way of producing "friction" within the enemy's war machine.

Union Rail Net and Vulnerable Chokepoints



Map 7

On a few memorable occasions, the interdiction of rail lines proved to be the deciding factor in a campaign. In December 1862 Major General Earl Van Dorn and Major General Nathan Bedford Forrest severed the rail line supporting the first Union campaign against Mississippi, causing the Union invaders, commanded by Major General Ulysses S. Grant, to break off the operation. In 1864, Sherman found that the only way to force General John B. Hood from Atlanta was to capture and hold the railroads supplying the city. And in 1865, it was the loss of the South Side Railroad that compelled General Robert E. Lee to abandon Petersburg and take the road that led to Appomattox.

Clearly, the railroad dominated strategic thinking in the Civil War. Other things being equal, most of the factors cited above should have favored the Confederates: they were on the strategic defensive, and the defender should have better access to rail communications than does an invader. However, in war, "other things" are never equal. As in all fields of military endeavor, possessing a crucial asset is not enough to ensure success. A great deal depends on how that asset is used.

Civil War generals had to learn "railroad generalship" in the field. Robert E. Lee graduated from West Point in 1829—the same year that the first steam locomotive ran in the United States. Needless to say, his formal military education included nothing on railroads. The situation had changed little, if at all, ten years later when Ulysses S. Grant graduated. These men, like other higher commanders, quickly learned that railroad generalship was a critical factor at all levels of war.

Railroad generalship at the strategic level dealt with long-distance movements of troops and war resources. Since most American railroads in the 1860s were still small-scale local enterprises, such movements typically involved coordination among multiple corporate entities. Naturally, the military desired priority treatment by the railroads, but railroad managers still had an obligation to show a profit and to maintain civilian traffic. Railroad corporations, civil

government, and the military were all involved in this delicate balancing act.

On the Union side, the solution to this challenge involved both formal legislation guaranteeing military priorities and an informal agreement that the railroads could support the war effort and still turn a fair profit. In January 1862, the United States Congress authorized President Abraham Lincoln to seize control of the railroads and telegraph for military use. The operation of any rail lines seized by the military was entrusted to a new War Department agency called the U.S. Military Rail Roads (USMRR). In practice, however, the USMRR restricted its authority to Southern rail lines captured in the course of the war. Except in time of extreme emergency, the military counted on cooperation rather than coercion in dealing with Northern railroads. Realistically, the military had no choice. Relatively few military men were experts in railroad transportation. The true experts in railroad generalship at the strategic level were the civilian executives who managed railroads as a profession.

The Union government went a step further, by actually commissioning civilian railroad men and placing them in positions of responsibility within the USMRR. For example, Daniel C. McCallum, one-time general superintendent of the Erie Railroad, became director and superintendent of the USMRR, with the rank of brigadier general. Herman Haupt, once the chief engineer of the Pennsylvania, became chief of construction and transportation in the Virginia theater. He also eventually attained the rank of brigadier general. At an even higher level, Thomas A. Scott, vice president of the Pennsylvania Railroad, served as an assistant secretary of war from 1861 to 1862. John W. Garrett, president of the vital and vulnerable Baltimore and Ohio Railroad, enjoyed direct access to the secretary of war, providing him with technical advice and administrative assistance.

Under the broad authority granted by Congress, and with the expertise provided by northern railroad executives, the Union government could have created a truly centralized military railroad organization with a clear chain of command and effective

USMRR Organization

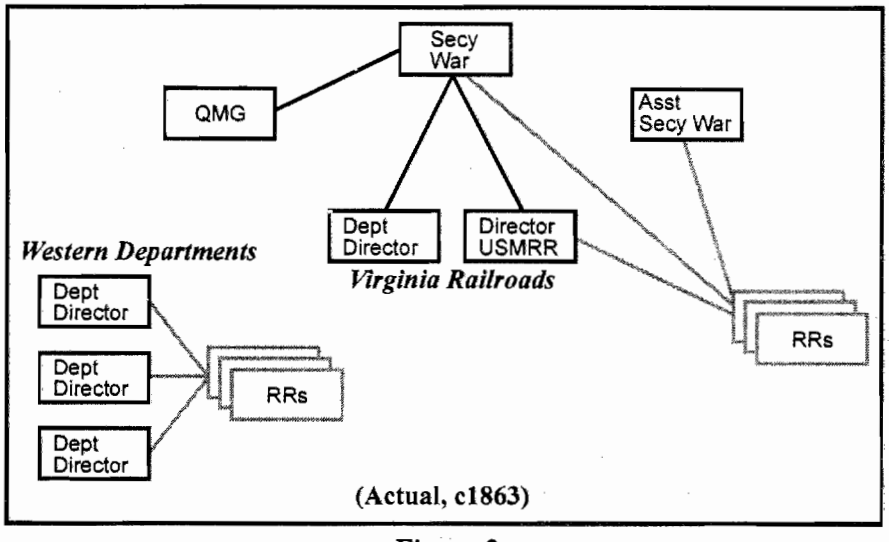
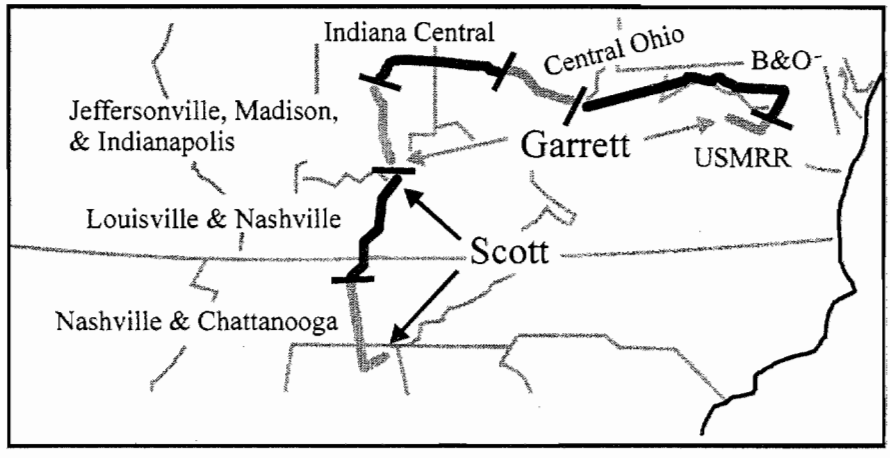


Figure 2

coordination across the various theaters of war. But the Civil War took place in an era when the Federal government had neither the desire nor the administrative ability to exercise such sweeping powers. Consequently, the Union military railroad establishment suffered from micromanagement by the secretary of war, overlapping authority over the military railroads in Virginia, western departments that operated autonomously, and railroads that tended to deal directly with local military authorities rather than with Washington, D.C. (see figure 2). Despite its flaws, the Union railroad system succeeded because it granted authority to individuals who knew how to make the trains run.

Perhaps the most impressive accomplishment of these civilian experts was the movement of XI and XII Corps from Virginia to Tennessee in 1863, mentioned above (see map 8). On 23 September, the president, the secretary of war, the general in chief, and the superintendent of the USMRR met to discuss the feasibility of moving 25,000 reinforcements to Tennessee. Planning began on 24 September. The transportation department of the Baltimore and Ohio Railroad, not the War Department, performed the planning and coordinated with the five other civilian railroads involved. On 25

Administration of XI and XII Corps Move



Map 8

September the first troops boarded cars in Virginia. McCallum, superintendent of the USMRR, handled the loading of troops. Garrett and the Baltimore and Ohio staff supervised the move as far as Louisville. Scott, who had returned to his position as vice president of the Pennsylvania Railroad the year before, accepted the special assignment of managing the movement from Louisville to the detraining point at Bridgeport, Alabama. From an organizational point of view, the most impressive aspect of this operation is that it began only two days after it was first proposed. Clearly, the Union enjoyed a high order of railroad generalship at the strategic level.

At the tactical level, railroad generalship meant providing and maintaining supply lines for the front-line troops. In many ways, this task was even more difficult than strategic-level railroading. Problems near the front lines could not be solved by "networking" the bigwigs. They called for hands-on expertise and hard work.

Ideally, a tactical rail line would have numerous sidings to allow opposing trains to pass, spacious platforms to facilitate unloading, a "wye" for turning trains (a three-point-turn, so to speak), and a telegraph system to coordinate train movements (see figure 3). Typically, railroads near the front lacked most or all of these amenities. Additional problems usually included track that was in

Tactical Rail Line: Ideal

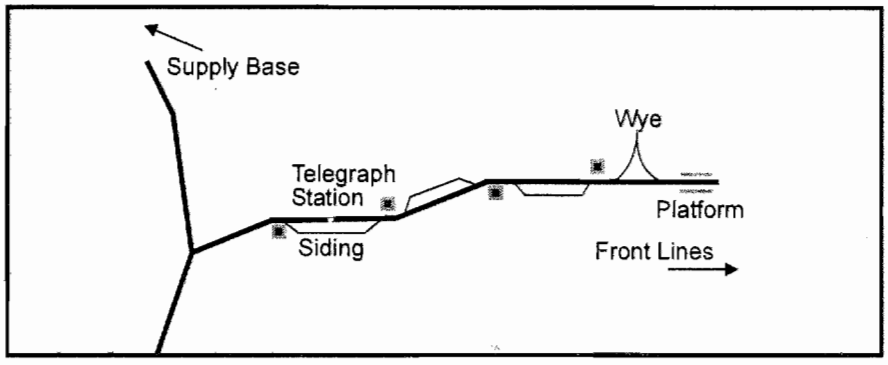
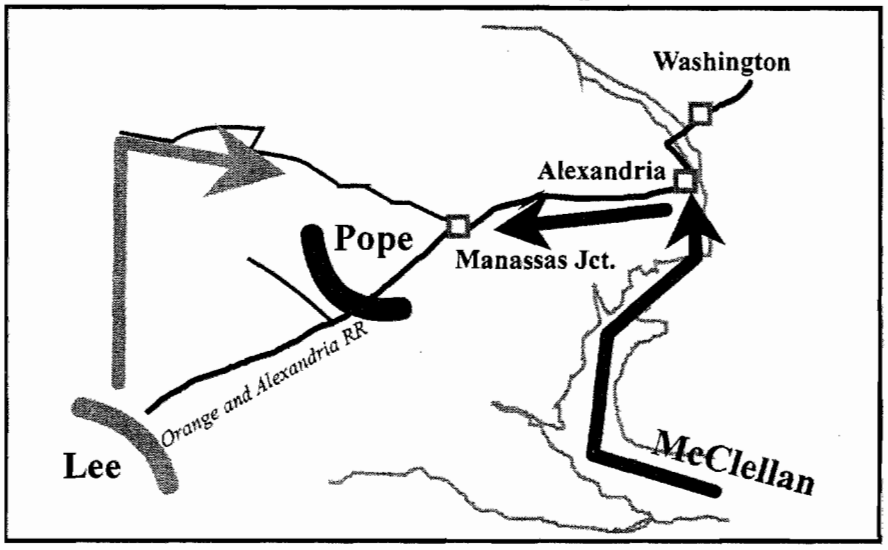


Figure 3

poor condition when acquired, not to mention track and bridges destroyed by enemy action. Even more serious could be the interference of military officers who understood nothing of rail operations. Quartermasters at the front would overtax the system by demanding supplies in excess of actual requirements, and then insist on rail transportation to evacuate those same supplies when threatened by enemy capture. Line officers sometimes commandeered trains for their units, snarling traffic on single-track lines. (During the Confederate evacuation of Atlanta, one officer who commandeered a train for his wounded, without telling the railroad, caused a head-on collision.) Military officers would sometimes refuse to detail their men for the purpose of unloading trains, creating congestion that could tie up the entire line. Others would seize railroad cars for their own use. Boxcars made fine offices and warehouses, but such misuse aggravated an already chronic shortage of rolling stock. On top of it all, enemy forces, uniformed or irregular, found these tactical rail lines to be lucrative targets for sabotage.

Perhaps no episode illustrates the hazards of tactical rail operations quite so well as the Second Bull Run campaign (see map 9). In the last days of August 1862, Major General John Pope's isolated Union army was about to receive a pounding from Lee's Army of Northern Virginia. Meanwhile, Union reinforcements from Major General George B. McClellan's Army of the Potomac rushed north by water from the failed Peninsula campaign. Upon arrival in Alexandria, McClellan's troops

Second Bull Run Campaign



Map 9

should have marched the twenty miles or so to Pope's beleaguered force, but instead they jammed into Alexandria and waited for train transport. McClellan himself sat on his hands and allowed Herman Haupt, Pope's railroad director, to sort out the mess. Haupt performed miracles in rushing troops forward and evacuating supplies threatened with capture, but not everybody appreciated his efforts. One commander bringing up reinforcements, Brigadier General Samuel D. Sturgis, stopped four trains on the main line near Alexandria and ordered them to transport his brigade to the front immediately, even though the troops were not even ready to board. Once at the front, Sturgis' men took their time disembarking. The actions of this one irresponsible commander completely disrupted Haupt's work and blocked all other traffic for the better part of a day. When Haupt explained to him the importance of maintaining rail traffic for Pope's endangered army, Sturgis uttered the immortal words, "I don't care for John Pope one pinch of owl dung."

It was Herman Haupt, the civilian railroad man in uniform, who established a system for tactical rail generalship that eventually came into use throughout both the eastern and western theaters. His

Haupt System: Organization

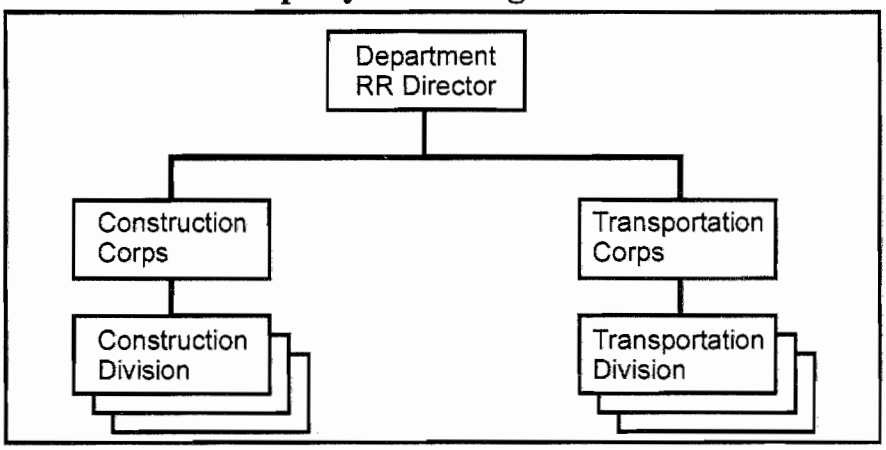


Figure 4

principles were simple and direct and received the blessing of the secretary of war.

1. No military officers were to interfere in the running of trains.

2. Supplies would be sent forward only as needed.

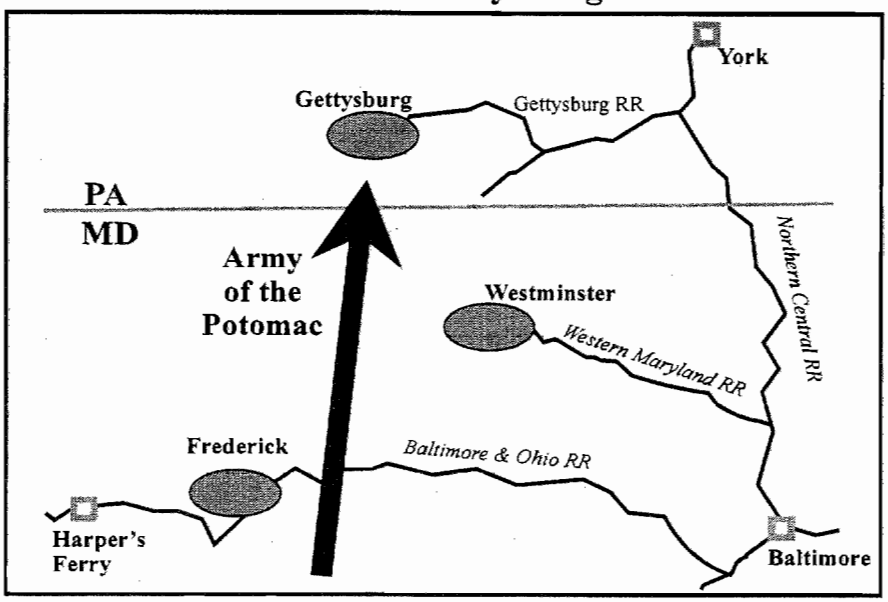
3. Trains reaching the front were to be unloaded immediately by anyone available. Officers who refused to cooperate faced dismissal.

4. Where telegraph communications were unavailable, trains would run according to a rigid schedule. All trains departed on schedule, fully loaded or not. Extra trains would pick up the slack.

5. On lines where the absence of sidings prevented opposing trains from passing each other, convoys of five or six trains would travel as a group. Each convoy delivered its cargo and returned to base before the next convoy started out.

By 1863, Haupt controlled an organization of full-time transportation experts to run the military railroads in Virginia. He organized his work force into distinct construction and operations functions (see figure 4). The Construction Corps was responsible for making rail lines fit for military use. It consisted of professional civil engineers, skilled workmen, and manual laborers who were provided with stocks of materials, tools, and their own transport. Among their

Rails to Gettysburg



Map 10

materials were prefabricated components to speed the repair of damaged track and bridges. The corps was organized into self-sufficient divisions, any one of which could respond to a crisis in its assigned sector and put rails in order without outside assistance or detailed direction from above. The Construction Corps stressed speed, not permanence, in its work. By war's end, construction corps in the various theaters employed 10,000 men, many of whom were ex-slaves.

The Transportation Corps performed routine maintenance and operated the trains just as the Transportation Department of a civilian railroad would do. In fact, most of its personnel were civilian railroad men hired for government service. It too was organized into divisions with responsibility for specific sections of the line.

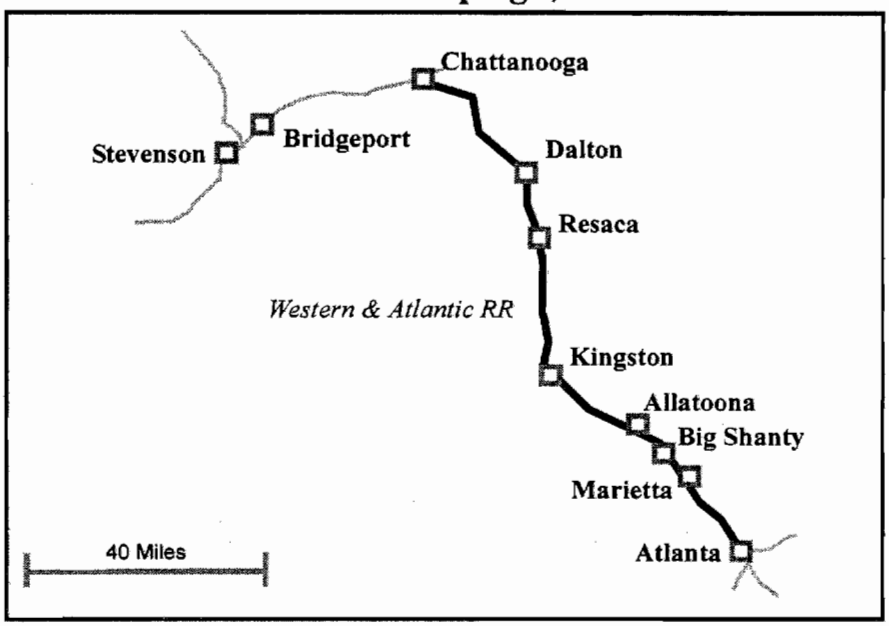
Haupt's finest hour came during the Gettysburg campaign of 1863 (see map 10). The campaign began with the Union Army of the Potomac situated near its railhead at Aquia Creek. As the army marched north, railheads opened successively on the Baltimore and Ohio, Western Maryland, and Gettysburg lines. The Baltimore and

Ohio was a first-class railroad, but neither the Western Maryland nor the Gettysburg was fit for heavy-duty use. The government seized control of both lines, and Haupt went to work. Construction teams replaced bridges and repaired track torn up by Confederate raiders. Transportation crews brought in locomotives and cars from the USMRR lines in Virginia. By 4 July Haupt had the decrepit Western Maryland running at five times its normal capacity. It delivered 1,500 tons of supplies per day to Westminster in the days following the battle. The Gettysburg Railroad opened for traffic in time to assist in the evacuation of 16,000 wounded soldiers. It is important to remember that when the Army of the Potomac started marching north from Virginia, not even the army commander knew where it would end up, but Haupt and the USMRR were able to maintain virtually continuous rail support throughout the campaign of maneuver.

During the Gettysburg campaign Haupt had the advantage of falling back on pre-existing rail lines already under friendly control. But by 1864, construction crews of the USMRR, organized along the lines established by Haupt (who had returned to civilian life), were actually able to keep pace with armies invading the Confederate heartland. They repaired track as fast as the combat troops could advance and maintained a plentiful flow of supplies. Sherman's campaign from Chattanooga to Atlanta in the spring and summer of that year is perhaps the best example of a rail line being rebuilt as part of an army's advance, and then maintained despite repeated disruption by enemy raiders (see map 11). Construction crews laid a total of seventy-five miles of new track and built eleven major bridges during the campaign. Union supply trains rolled into Atlanta one day after Sherman's troops entered the city. Subsequently, full-time repair teams, posted at intervals along the track, plus construction trains stationed at each end of the line, kept the rails open despite incessant raids by the Confederates.

Also in 1864, the USMRR allowed Grant's army in Virginia to finally crack the Rappahannock River line and drive toward Richmond. During the Wilderness and Spotsylvania battles, Grant relied on the old Aquia Creek line of supply. He then shifted his base to Port Royal on the Rappahannock where water transport served as

Atlanta Campaign, 1864

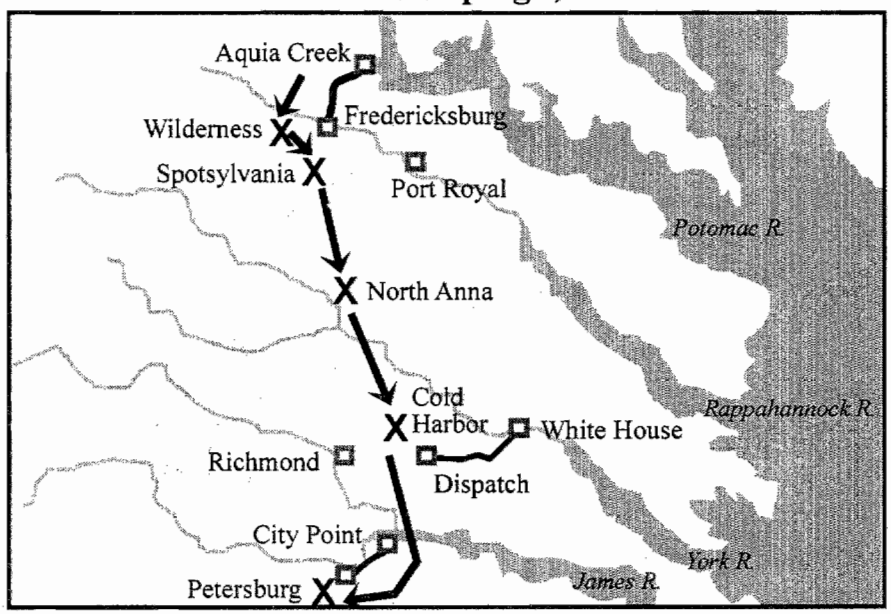


Map 11

his line of communications. Upon moving south from the North Anna River toward Cold Harbor, Grant directed elements of Major General Benjamin Butler's Army of the James to occupy White House on the Pamunkey River (a tributary of the York River) deep in enemy territory (see map 12). The USMRR opened and operated a section of the Richmond and York River Railroad from White House to Dispatch. Grant then *advanced toward* this new supply base. Later, when Grant passed south of the James River, the USMRR put the City Point and Petersburg Railroad into operation (see map 13). In the ensuing months, as Grant's army extended its siege lines south and west around Petersburg, the USMRR laid new track to facilitate supply of the Union left wing. Grant's army, supplied by one jerry-built but professionally operated railroad, fared better logistically than did Lee's Confederates in Petersburg, who had several pre-existing rail lines at their disposal.

What of the Confederates? They too relied heavily on railroads at both the strategic and tactical levels and conducted many noteworthy

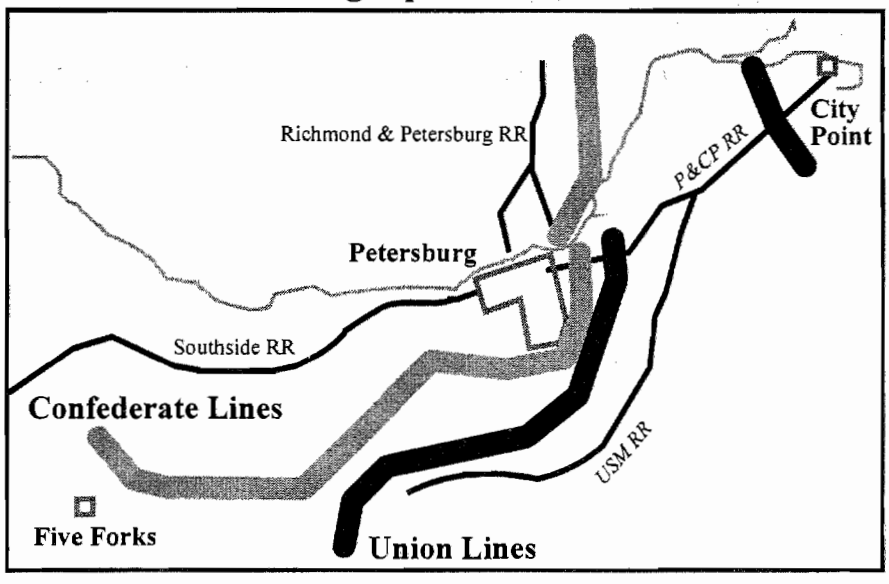
Grant's Campaign, 1864



Map 12

troop movements in the course of the war. However, the Confederacy began the war with a fragmented and incomplete rail system (9,000 miles, as opposed to 20,000 miles in the north). Unlike the Union, the Confederacy lacked the manufacturing capacity to expand, or even maintain, its railroad infrastructure once the fighting began. Moreover, it was not until February 1865 that the Confederate government asserted its authority over the railroads. For most of the war, military traffic moved only at the discretion of civilian railroad managers. There was no Confederate equivalent of Thomas A. Scott or John W. Garrett who possessed both the expertise and the authority to mesh military requirements with corporate capabilities. There was no Confederate Herman A. Haupt to institutionalize and enforce the procedures for effective tactical rail operations, and no Confederate Military Rail Roads to operate lines in immediate support of the armies. The Confederate military rail effort operated under all of the problems that plagued its Union counterpart, but it lacked the expert, centralized guidance that enabled Union railroads to do their job. One example serves to illustrate the point: during the winter of 1863–64,

Petersburg Operations, 1864–65



Map 13

when the Union Army of the Potomac subsisted happily on the deliveries of the Aquia Creek line, Lee's Army of Northern Virginia suffered hunger, even though it had a direct, thirty-mile rail link to the national capital. Supplies for the troops were available, but the Confederate authorities could not get them to the front.

Clearly, the railroad was a major factor in shaping strategy during the Civil War. Railroads dictated the strength and direction of many military operations. Railroads may have helped to protract the war by making it difficult to win battles of annihilation. And Union superiority in railroad generalship provided the logistical foundation for the campaigns of 1864 and 1865 that doomed the Confederacy to defeat.

The railroad remained a vital element of military science after Appomattox. When we look ahead in time and across the ocean to the outbreak of World War I, we find that Germany's Schlieffen Plan and France's Plan XVII consisted largely of highly detailed railroad timetables for the mobilization and deployment of troops. In a very real sense, railway transportation was no longer just a part of strategy,

it had become strategy in its own right. The American Civil War was the first conflict in which railroads played a dominant role, thus introducing to the world a military instrument that changed the face of warfare forever.

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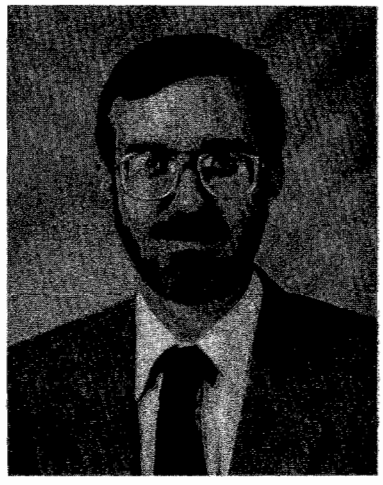
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Dr. Christopher R. Gabel

Dr. Gabel received his undergraduate education at The Pennsylvania State University and earned his M.A. and Ph.D. at The Ohio State University. He joined the U.S. Army Command and General Staff College's Combat Studies Institute in 1983. Dr. Gabel teaches military history in the core curriculum and conducts staff rides to various Civil War battlefields. In 1994 he was recognized as the U.S. Army Training and Doctrine Command Civilian Instructor of the Year. His publications include *The U.S. Army GHQ Maneuvers of 1941* and *Seek, Strike, and Destroy: U.S. Army Tank Destroyer Doctrine in World War II.*

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