THE AMERICAN CIVIL WAR: A WAR OF LOGISTICS

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ABSTRACT

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The American Civil War was the first modern war. It was fought with weapons capable of dealing death on a scale never before seen. It was also the first war which saw the widespread use of the railroad. Across the country men, materials, and supplies were transported along the iron rails which industrial revolution swept in.

Without the railroads, the Union would have been unable to win the war. All of the resources, men, and materials available to the North mean little when they cannot be shipped across the great expanse which was the North during the Civil War.

The goals of this thesis are to examine the roles and issues faced by seemingly independent people in very different situations during the war, and to investigate how the problems which these people encountered were overcome.

The first chapter, centered in Ohio, gives insight into the roles which noncombatants played in the process. Farmers, bakers, and others behind the lines. Chapter two covers the journey across the rails, the challenges faced, and how they were overcome. This chapter looks at how those in command handled the railroad, how it affected the battles, especially Gettysburg, and how the railroads were defended over the course of the war, something which had never before needed to be considered. The final chapter investigates the final leg of the journey for our hardtack. The hardtack, first grown by Dey and baked by Varwig in Ohio, will finally be deposited in the hands of soldiers of the 8th Ohio Volunteer Infantry. Without the rails, such a journey would have been impossible.

Dedicated to my Mother, for offering constant support through everything.

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INTRODUCTION

Part I: Railroads Changed Warfare

During the American Civil War, the railroads allowed states far removed from the front to contribute. States such as New York and Ohio, far removed from conflicts in Virginia, Tennessee, and Georgia, were able to contribute large amounts of manpower and material where otherwise these states may have played only a limited role. This paper focuses primarily upon the role which Ohio was able to play as a direct result of the Union railroads. The production of hardtack will be tracked from the home front with farmers and bakers, and will end in the hands of the soldiers following the Battle of Gettysburg. I will examine how hardtack was produced, how it was sent to the battlefield, and what role the Union railroads played in the process.

Compared to previous wars, the American Civil War was the first modern war. Put on full display were weapons capable of dealing death on a scale never before seen, and soldiers mobilized in numbers and at a scale yet to be tested. Yet it was a modern war not only because of the type of weapons being used and the size of the conflict, but for the logistics employed. The use of telegraph lines to communicate across vast distances allowed those in command to relay orders almost instantly. Most especially, the use of railroads, for the first time ever, allowed nations to transport massive numbers of soldiers, supplies, and materials more quickly and efficiently to where they were needed. From the first battle of the war at Bull Run on 21 July, 1861, the use of railroads would become crucial to winning both battles and, ultimately, the war itself.

Quite simply, while the North had more men, more material, and more production capability, unless the Union could move those advantages to where it was most needed, those advantages would matter very little. Ninety percent of the manufacturing, 32 times as many firearms, and twice as many soldiers in the field. Hundreds of farms in Northern Ohio could not feed hungry soldiers on the front hundreds of miles away without the railroads, and the tens of thousands of soldiers from far-flung corners of the Union could not win the war unless they were shipped by railroad to where the fighting was. Without the railroads, the North would have had a far more difficult task in winning the war. This is a bold claim, and one which will be demonstrated over the course of this paper. First, though, we must look at the way wars were fought before the train, and how the railroads were absolutely crucial to victory for the North.

Prior to industrialization and the mass use of the railroads, wars of the past several centuries were nearly formulaic. There would be one or two large battles between opposing forces, and then the war would likely end. It was why George Washington kept his army out of direct engagements whenever possible during the Revolutionary War. Early defeats such as the Battle of New York nearly spelled the end of the Continental Army, and thus American independence. Instead, Washington developed a strategy of preservation of the army. Actions such as those taken at Trenton and Princeton, where forces under Washington harassed detachments of the British army, allowed Washington to keep his force intact while wearing upon the resources, patience, and manpower of the British. The Napoleonic Wars followed this almost perfectly, to the point where the wars of Napoleon were the primary case studies for warfare at West Point. If an opposing army were defeated in detail in the field, the war would be over. The Mexican-American War of the 1840s was nearly the same, with only a handful of smaller engagements and several large ones, such as the battle of Mexico City, before peace was achieved. Reinforcements could not be brought in from across the country fast enough, nor could supplies. By the time a new force could be assembled, trained, and equipped, the war was

decided. In the time between the Mexican-American War and the American Civil War, so much had changed.

The railroads caused this change. With the ability to send thousands of men and tons of supplies to the front, wars could be continued so long as the will and ability to of the people fight still remained. Only five years after the conclusion of the American Civil War the Prussians, using their own superior railroad system, would use similar tactics and advantages to win the Franco-Prussian War. Due to the superior ability of the Germans to mobilize and transport their troops and supplies to the fighting, the French forces were battered and overwhelmed almost immediately. They could not resist the withering offensive tempo of the Germans, who were simply able to put more men onto the field quicker. Railroads won the day.

Another excellent example of the way railroads changed warfare is the Second World War. The Red Army brought tens of millions of soldiers to the battlefield, almost all of them through the railroad system. During the war, the United States supplied the USSR with war material, including thousands of trains and railroad cars to transport men and material to where the fighting was thickest, and ultimately contribute greatly to the defeat of Nazi Germany. Without the trains, the full strength of Russia could not have been brought into the war.

Railroads, moving faster and more reliably than anything ever seen before, now cut across the United States. In the North especially this would be a tremendous boon, allowing the North to take advantage of its population and resources to the fullest extent. The American Civil War was rife with great battles across all theatres, and the advent of the railroad allowed the North to continue the campaign despite losses and defeats. As battles such as Shiloh and Antietam, Gettysburg and Cold Harbor wrecked terrible casualties upon both sides, the railroads allowed the North to replace lost men and supplies at a rate which the Confederacy was unable to. The Union had more men, more materials, and more production capacity, but it was Northern railroads, bringing two million fighting men with them from across the nation, which won the war.

Part II: Historiography

The historiography of Civil War railroad logistics is surprisingly thin, as many Civil War historians focus instead upon the battlefield. The works which do exist on this topic suffer largely from one of two flaws. The first type are very broad in scope, and as a result suffer from a lack of depth. The second type are focused upon a single topic in the war, such as looking at how the war affected a specific area, but thus lack a wider scope beyond the war itself.

Dr. Christopher Gabel's work *Railroad Generalship* is a brief but thorough example of why the railroads were critical to the war effort. Gabel's work goes into detail about the carrying capacity of the railroads as opposed to previous methods of transportation, speed, and reliability. Gabel goes into some detail about interior lines, meaning that lines of movement and supply within an area are short and faster, and how the railroads functioned in just such a manner for the Union, allowing the North to send supplies and men where they were needed at a faster rate than the opposition. The largest flaw in this work is the brevity of it. In less than thirty pages, Gabel must address the advantages of the railroads for the North, why railroads were useful at all, how they helped the Union, and also cover different battles over the course of the war where the railroads helped shape strategy and win the war. There is scant detail in the work, and Gabel must fly at breakneck speed in order to get everything into the work. As a result, the work suffers from having too broad a scope while being too short to adequately cover that scale.

The Sinews of War: Army Logistics, 1775-1953 by James A. Houston suffers from too much information, and thus lacks adequate development for each particular topic which is

covered. Houston records the U.S. Army's experiences in developing logistics for the battlefield. He sets this against the changing conditions of both war and peace. The goal is to give the reader an understanding of the significance of logistics over a large span of time, from Revolution to Korea. In this work Houston covers four elements: Supply, transportation, evacuation/hospitalization, and service. While Houston does an excellent job of making an accessible survey of logistics through this time period, he is unable to go into a large amount of detail, instead brushing the surface of logistics through nearly two centuries of warfare.

Charles Shrader's *Field Logistics in the Civil War* is an excellent example of Civil War logistics as it relates to the battlefield itself. Shrader goes into detail about the need to find reliable transportation and movement of troops and supplies leading up to and during the Battle of Antietam in 1862. This work primarily looks at the movement of soldiers in and around the immediate battlefield, however, and not at the long reach of the railroads in helping to transport troops and supplies. Shrader, much like Houston, instead examines the ability of the army to transport soldiers to Antietam and how those soldiers were armed and equipped.

Thomas Webber's *The Northern Railroads in the Civil War* is perhaps the premier work on the topic. Webber delves into the impact of the railroads on the American Civil War, and how the war impacted the railroads in turn. He looks at how the railroads materially helped the North to win the war through the movement of troops and material, but also how the war changed the way in which the railroads were built and organized. Webber's work is an excellent treatment, and is one which cannot be given enough praise. It is thorough, covers a short enough time, and has a narrow enough topic to go into depth. Using his work as a springboard, this paper focuses more locally, looking at Ohio as much as possible, and how the railroads affected the way in which Ohioans contributed to the war. Where Webber looked at how the North benefitted from the railroads in the broad sense, my goal has been, when possible, to look at it from a more localized perspective.

For the purpose of this paper, Festus Summers' *The Baltimore and Ohio in the Civil War* and Daniel Toomey's *The War Came by Train* were crucial additions. As this thesis looks primarily at the Baltimore and Ohio, these two works could not be ignored. Both of these works examine the Baltimore and Ohio Railroad, and how they were affected by the war. Both books go into detail about the railroad leading up to the war, the men involved in the decision-making for the railroad, how the railroad was affected during the war, and how the railroad company came out at the end of the war. What both of these works do not show, however, is the agency of the railroads during the war. Both depict the railroad and the B&O as being passive participants (and victims) of the war, while quite the opposite is true. Both works go into great detail about how the railroads were affected by the war, but do not express how the railroads really helped influence the wartime environment, with both Union and Confederate forces placing great importance upon the railroad lines, thus influencing where battles took place.

Part III: Purpose

The purpose of this paper is twofold. First, to examine the roles of different groups, organizations, and people during the war, and then, more specifically, to examine as much as possible the role which Ohioans played in the logistical process. These included Ohio farmers and bakers, railroad men, and Ohio soldiers. What these people did and how they reacted to their environment is crucial to understanding how they were all linked together. By examining seemingly unconnected individuals and the roles which they played, we will be able to create a web stretching from Northern Ohio to the battlefield of Gettysburg.

The second purpose of this paper is to look at how these individuals were connected via the railroads and, ultimately, how the railroads helped to win the war. As a new technology, the railroads were subject to a great deal of experimentation during the war. This paper will examine the ways which the railroads changed transportation and supply, the dangers faced, and the ways which the Union attempted to face these new challenges. Through the railroads, Ohio soldiers marched to war in Virginia, Tennessee, and Georgia. Through the railroads, Ohio farmers grew wheat to send to large bakeries, and those bakeries sent crates and barrels of hardtack to the farthest reaches of the war.

Ultimately, this paper is about incorporating the local history of Ohio into the larger framework of the Civil War. It is focused primarily upon Ohioans during the Civil War, and deviates from this only when necessary. From the homestead of Henry K. Dey in Genoa, Ohio, to the hands of the 8th Ohio Volunteer Infantry at Gettysburg, this is the story of how the railroads overcame danger and difficulty, and allowed Ohio to contribute toward victory in the American Civil War.

CHAPTER I: FROM FARM TO TRAIN

Ohio was, at the time of the Civil War, perfectly suited to the production and transportation of foodstuffs for the North. With great tracts of land ideal for farming, and many miles of rail running from the state throughout the country, Ohio was able to supply a large amount of goods to the cause. The process begins at the farm of Henry K. Dey of Genoa, Ohio. Dey could be considered typical of the Ohio farmer of this period, and so is a perfect example of where the process begins. We are able to get a look into his life, and see how the war changed his daily life. His wheat will eventually become the hardtack that fed the soldiers on the front lines.

Following Dey, we then look to Henry Varwig, a baker in Cincinnati, Ohio. Varwig's bakery was large, and capable of producing hundreds of loaves of hardtack every day. Contracted to produce 3 million pounds of hardtack, Varwig provides us with an excellent example of what the expectations would have been for a contractor producing a finished product, to then be shipped to the front.

Finally, this chapter will examine the supply depot located in Columbus, Ohio. Many of the finished materials produced within the state would be sent to this one centralized location before being sent out to other depots closer to where they would be needed.

In all, it was an effort on a massive scale never before seen or put to the test in United States history. Many different people had to all push toward the same goals in order for something as seemingly simple as hardtack to reach the soldiers at the front. Without the untold thousands working on the home front, it would have been very difficult to feed, clothe, and supply the nearly two million Union soldiers who fought during the war. Without the railroads and the trains, with standard sizes in the North and on a scale far more vast compared to the South, those supplies would have had a far more difficult journey to reach the soldiers on the front. This is where the journey begins.

Part I: The Farm

The homestead of Henry K. Dey, at 150 acres, was for the time a farm of medium size. With Geneva located just a few miles to the North, it would not have been uncommon for Dey to go into town on a daily basis to buy and sell goods as needed.

At the outset of the American Civil War, Geneva was excellent for farming, with rich soil perfect for growing grains which, as will be discussed later, was the staple crop of North Ohio farmers. Aided by agreeable weather and a long growing season, it was an excellent place to farm. Produce could be transported from Geneva via steamboats and canals, up to the Great Lakes, or by railroad to the major cities around the state.¹

Like most farmers, Dey placed his financial hopes upon cash crops. While Dey grew a variety of crops such as oats, barley, corn, and potatoes, raised beef, pork, and chickens, Dey's main crop, like most other farmers in Ohio, was wheat. The two varieties grown were called White Flint and Old Red.²

Prior to the American Civil War, competition coming from the Great Plains region was fierce, and made it more and more difficult to turn a profit from wheat farming. With the outbreak of war, however, there came a great and overflowing demand for any amount of wheat from anywhere, and at almost any price. Newspapers such as the Geneva *Courier* called out to the local farmers;

Farmers – At this crisis in our country's history let not the farmers forger to make ample provisions for food for the thousands now rallying to hold up untarnished and cause forever to float that Star

¹ Dey, Henry K. *Henry K. Dey papers, 1862-1967.* Ithaca: Cornell University Library. Diary, entries for December 19, 20, 21, 23, 24, 26, 27, 28, 1864.

² Beecher, Henry W. Plain and Pleasant Talk About Fruit, Flowers, and Farming. New York: Derby and Jackson, 1859. 132-38.

Spangled Banner – the pride of the world... The farmers should double the amount of ground heretofore used for the various seeds and permit not a foot of soil to become accountless... We entreat every farmer in the town(s) of Seneca and old Ontario to feel that they have an individual responsibility resting upon them.³

By autumn, the *Courier* was writing that trade was revived by the prospects which the war had created. Throughout the war this sort of talk continued as wheat, corn, and wool continued to sell for prices much higher than before the war began.⁴ It appears that the war and the material demands would raise prices for the near future, even after the end of the war. By 1866, prices were nearly twice as high as they had been in 1860.⁵ Indeed, while the prices of items typically purchased from the South such as tobacco, cloth, and whiskey all increased, Dey never noted that he must go without, nor did he ever make note of the higher prices which he had to pay for these items. During the war, it appeared that the quality of life which Dey enjoyed instead rose, his fortunes rising with the tide of conflict. The lists of purchases which Dey made from others within Geneva indicates that he was able to buy more, better quality items when he made trips into town.⁶

To achieve the increase in his quality of life, Dey did work extremely hard in the fields, to the point of exhausting himself on a fairly regular basis. As frequently as every two weeks, Dey was forced to stop work due to what he describes as "sick headache." His symptoms are never treated by a doctor, and Dey never notes taking any sort of medicine for his illness despite them being severe enough to force him to his bed.

As stated before, wheat was the main crop which Dey planted. Dey would have planted this crop in September after plowing and preparing the land extensively during the summer. The

³ Geneva Courier, April 24, 1861.

⁴ Ibid, May 8, "Every dollar's worth of produce will find a ready market." September 18.

⁵ Geneva Gazette, May 17 (quoting the New York World); July 27, 1866.

⁶ Diary, August 20, 1862; August 22, 1862.

crop came in the next spring and would have been harvested in July. Oats, corn, or barley might have been sown every third or fourth year after the fields lay fallow, then the wheat cycle would be repeated again.

Harvesting was surprisingly unrefined during this time. While Dey owned a reaper, the machine, working best on flat ground, broke down frequently, forcing him to mow with a scythe. Dey noted that the fields were "stumpy," or difficult in places. As a result, the scythe, used for centuries before, was still in demand. During the harvest, Dey would hire seven or eight local men to help bring in the harvest. War profits were so good that Dey was able to purchase a better reaper in 1865, and thus needed only four men in 1866 to bring in the harvest.⁷

Production during the war years was quite good. In 1862 the farm brought in 578 bushels of wheat which would be kept for seed, turned into bread, and the vast majority (357 bushels) sold off. In 1863 the harvest was 504 bushels. 1865 saw a smaller but still profitable harvest of 348 bushels. In 1866 there was a total of 564 bushels brought in from 32 acres of land, which is the only time Dey notes the precise amount of land sown. Just shy of 18 bushels per acre, this amount was over the average harvest from Ohio during this time.⁸

During the war, prices varied considerably. In 1862, Dey was able to get one dollar per bushel, and \$1.30 per bushel in 1862. As the war continued on into 1864, Dey was able to get two dollars per bushel, and by 1866 prices had more than doubled to \$2.50 per bushel. To compare this to an urban worker, it meant that, after costs, Dey was doing well. Even in poor

⁷ *Diary*, June 8, 1865; June 22, 1866

⁸ "Report of the Statistician, J. R. Dodge," Report of the Commissioner of Agriculture for the Year 1865, Washington, 1866, 56, 64.

years, Dey's income was comparable to that of an urban worker. In those years where the farm did well, Dey was making two or three times as much as the average urban dweller.⁹

While wheat was the main crop of the Ohio farmer, it was common to diversify as Dey did. The farm had two barns where Dey would have kept his livestock. Cows were kept for milk and beef, hogs for pork, ham, and bacon, and chicken for their meat and eggs. These animals could form a large portion of the income of the farm. Hay was also sold during the war, and went for a good price. Lumber was used and sold for fuel, wagons, and fences. Goods which Dey sold during this time included oxen, beef hide, a horse, butter, sausage, and turkeys, fuel wood, hay, oats, and eggs. The farm also produced potatoes, cider, salt pork, beef, and all kinds of vegetables.

Farms of this scale were not operated by just one man. Hand tools were still used to complete much of the labor, and it was too much to do alone. Dey regularly hired people during this period. Dey had a hired girl, Barb, who worked the farm throughout the year, and who was paid \$1.25 a week. She worked within the home, and was paid extra if she helped with the harvest or with milking cows. Apparently, Dey regularly purchased items for her from town, for which she would repay him with work. On this matter Dey kept very detailed records. Every Saturday he made entries such as "Barb owes me \$6.37," or "I owe Barb \$2.50."¹⁰

Men whom Dey hired came from the locality. Often, these workers were the children of men with whom Dey was trading labor, and as such their wages were usually low. In 1862, Dey paid a hired man a total of seventy-five dollars for working from 1 April to 1 December.¹¹ He would have been expected to do anything on the farm, from splitting wood, plowing, and

⁹ These are from the figures in his diaries, and papers in the rear pockets, especially for 1863 and 1864. Before his father died he received only half the money each year. The prices which he received for wheat are comparable to those listed in the local paper. For 1862 when he does not give his price, the Geneva Courier quoted wheat at \$1.00 to \$1.06 for both July and August. ¹⁰ *Diarv*, April 1, 1862.

¹¹ Ibid.

harvesting to picking stone, hauling manure, and building fences as the occasion called. He could lose a day's pay if he went fishing, went to town for an auction, or was otherwise not engaged with duties on the farm. Dey advanced money when it was needed, purchased medicine and clothes, and paid the remainder in cash.¹² In 1862, he used one man for four and three-quarters days bringing in wheat, another to help bring in the wheat, three men to work on corn. During harvest time, field hands could draw a premium. In 1862, Dey had injured his hand and could not work. He paid one man \$1.25 a day to help with threshing, and another \$2.25 per day to draw and thresh oats. He would pay corn huskers one dollar per day, and paid another man eighteen dollars in August for general farm work. In addition, the wife of a hired hand husked corn at three cents a bushel.¹³

The above was somewhat unusual, however, and it was more common to hire just one man regularly, with others being brought in to help specifically during harvest time. In 1864, Dey was turning such a good profit that he was able to hire two workers, and 1866 saw two men and the son of one of these men who all remained through the summer.¹⁴ In 1863, Dey hired a man who worked for \$8.00 per month. As the war dragged on, the pay of able-bodied men went up as well. In 1864, the same man was paid eighteen dollars per month. By 1866, Dey hired a man to work on the farm for twenty dollars per month, plus cow pasturage for the man's cattle. This kind of work brought in a low income, and so the work was often done by children to supplement family income, or as a way for young men to save up and buy land of their own.¹⁵

Farming was, at times, a surprisingly communal effort. The Dey diary reveals just how much work was exchanged between farmers. Come time for the harvest, neighbors and their paid

¹² Diary and miscellaneous papers, 1862.

¹³ Dey believed the cost of his sore hand was \$32.25 without including the doctor.

¹⁴ Diary, March 25. 1863, and "Account of James & Joseph Howards work in 1863," paper in docket of 1863 diary.

¹⁵ Ibid, March 10, 1864, and April 26, 1864

labor would come in and help with the work. In the following weeks, the crops of all those who helped would be harvested in turn. As a result, the work could be done with minimum expense to the individual.¹⁶ Of course specialists were often called in for work which required skilled hands. This was even the case for things such as splitting rails and cutting timber. Hired hands only performed dirty and rough work. It took little skill to shovel manure, split wood, or swing a scythe.

There were a large number of specialists by this time who performed work on farms. Blacksmiths are the most well known, with every town or village having a smithy. Horses needed to be reshod, tools repaired or remade. Dey paid blacksmiths between thirty and forty dollars every year for this exact sort of work, with visits to the smithy being a near-weekly occurrence.¹⁷

Dey's dependence upon other people was common on farms of the period. While selfsufficiency was the norm on or near frontier farms, in Ohio the farmers had come to depend on others for specialized work. This was what allowed the farmer to focus in on cash crops. Dey purchased his sees from others, borrowed their machines and tools, purchased cattle, and was part of a larger community. As Dey's profits went up due to higher wheat prices, his spending at local stores grew in proportion. Dey was happily relying upon the work of others, giving up his own self-sufficiency, in exchange for a higher quality of life. In 1864 Dey was making trips into town for items which he needed or wanted such as rice or a tea steeper. By 1866, we see that his purchases include luxury items such as lemons, coconuts, and dried goods.¹⁸

¹⁶ *Diary*, April 2, 1866

¹⁷ Ibid, March, October, December, 1862, January, 1863, and "Memorandum" in rear of 1862 diary

¹⁸ In the 1866 diary, receipts for dry goods purchased in Geneva which include among other things satin, silk, alpaca, as well as gingham, and shirting.

While the Civil War was terrible for many across the country, it was clearly a good thing for Dey. While his status in the community may not have risen, his income certainly did, and he and his family were better off at the end of the war than when it began. Dey was able to purchase better, more reliable equipment, he was able to hire more hands to work, and he was able to buy more and better goods. It can be argued that the war sped up the process by which Dey prospered. The local newspapers saw the war as something from which local farmers could profit. The available evidence we have, such as the value of land and prices of crops, cause one to believe that Dey was not alone in this increase in economic wellbeing.

The best way to determine what being a farmer meant during the war is to examine what it was like to work the farm during the year, in particular at what would be expected of Dey and others like him daily and monthly. There were chores which needed to be done every day without fail: milking, cleaning the stables, feeding livestock. Dey would also have needed to gather eggs, carry wood, take the cattle to pasture when it was appropriate. When Dey was ill, his only notes would usually read "Did nothing but chores today."

If there was a slow time, it was during January and February. This was when repairs were done and plans made for the ensuing year. Oats still needed threshing to feed cattle, cows and pigs and chickens would be slaughtered for food for the farm, or else would be smoked and shipped off. Lumber would still need to be cut for fuel, not for that winter but for the next, and to make fence rails. In February several buildings were moved one year, presumably because the icy roads made the heavy work somewhat easier.¹⁹

During the month of March, it was common to split wood, shell corn, and generally get prepared for the work of the summer. One year, Dey built a watering trough for his cattle, hauled straw for the yard, served on the jury, and in 1866 repaired a house on the property.

¹⁹ Diary, April 17, 1863.

Work on the farm began in earnest in April. As soon as the fields were dry enough, the ground was plowed in preparation of planting. Stones were taken out of the field, fences repaired, stumps pulled and refuse burned. Sometimes the diary notes, "A warm and pleasant day and the grass & wheat begins to grow."²⁰

As May came and the weather continued to improve, the work increased. The last of the planting was done. Dey plowed fallow land. Fences were mended, and cattle would be bred. By June, the fields were constantly tended to, with manure brought in, pulling weeds, cultivating other fields, and digging ditches. In 1866, Dey put new shingles on the barn.²¹

The primary months of the harvest were July and August. Shortly after the Fourth of July, massive amounts of hay -50 or 60 tons - were cut and drawn.²² As soon as the hay was brought in, the men began harvesting wheat. Some of the wheat was cut by hand with a scythe, some by the reaper. Then, depending on the year, Dey harvested oats or barley. Others in the area, though not Dey, raised rye or buckwheat as well. Unless it rained, this sort of work happened every day for nearly two months until the end of August. By the end of August, with the harvest brought in, the rest of the month was spent bringing in wood, fallow land was plowed, and fences erected.

September was devoted to planting crops in preparation for the following year, as well as threshing the current year's crop in the barn. Dey planted between 52 and 62 bushels of wheat every year. Threshing always followed the fall planting. Neighbors helped to thresh the wheat, and they would be repaid in kind. The rest of September was spend planting potatoes, hauling lumber, and doing fall plowing on the corn and oats.

October was when the rest of the crops were brought in, such as potatoes, carrots, and other root vegetables. Corn was husked, oats threshed, and apples picked and turned into cider

²⁰ *Diary*, April 8, 1864

²¹ Ibid, June 1-13, 1866. They laid 21,000 shingles which cost \$5 per thousand

²² Ibid, June 5, 8, 1863

for the winter. Wheat was usually sold during this time and hauled or shipped to the purchaser.²³ When November came, the weather became colder, snow might begin to fall, and rain would definitely come. Much of the outdoor work was done by this time, no doubt to the relief of the middle-aged farmer.

As the weather grew colder, the pace began to slow. Manure might be spread if it was not too cold. Wood for the winter would be split, and hogs slaughtered for sausage or smoked for ham and bacon.²⁴ Chickens were slaughtered and sold in mid-December for the Christmas holidays. Corn always needed shelling, and equipment always needed upkeep. In 1864 much of the month was spent hauling wood to the mill. Toward the end of the year the work diminished. Diary entries such as the following were quite usual:

We took the pump & put it down again-& took the walnuts upstairs & took the vinegar down sellar & sheled some corn. Hulban made some mortar in the forenoon & Hulban plastered round the chimney & under the roof etc. I took six bushels of pigeon weed seed to Larses & sold it for 75 cts, per bush \$4.50.²⁵

It is very clear that the yearly work on such a farm was, even in the best of times, difficult and monotonous. Occasionally the family went into town or went to church, but daily life meant daily work for the family. It was important work to be certain, as it allowed others to pursue additional tasks, including fighting in the war. The days were long, usually 14 hours, and left little time for much else. Just how important the work was is shown by a month when Dey injured his hand. He went into town to get help, could not find it and, with the help of a neighbor, worked that day until it was too painful to continue. Dey hired a replacement for the month. In his diary, Dey wrote "Settled with John Ackerman & paid him up in full for his months work

²³ *Diary*, November 28, 1866.

²⁴ He usually killed three for himself and perhaps one to sell.

²⁵ *Diary*, November 28, 1866.

\$18 and am glad he is don and gon."²⁶ Dev clearly saw the money paid as coming directly from his own pocket.

Work was also difficult for women on the farms. Carrying water, churning butter, and making soap were all part of their routine. While Dev installed a pump on his farm in 1866, this was unusual for farms at the time. Willy, Dey's wife, did have a hired girl, Barb, but even then the work must have been strenuous.

While there was literature present in the house, one must wonder how much time any had to read. The local newspapers, a local subscription, the Bible, and the almanac would have been present in the home, but the only book Dey mentioned in four years of diary entries was the Bible ²⁷

When the wheat was brought in, as shown above, some of it was kept by the farmer. The great majority of it was sold to other farmers who might not grow wheat. It would also be sold to Europe, where the 1860-1862 crop failures made grain shipments from the Union a critically important issue for those living across the Atlantic. During this time, grain shipments to Britain doubled.²⁸ Most of all, grain was sold off to bakeries, where it would be made into bread, cakes, and hardtack. The last of these was made by the ton during the war, and would be shipped all across the Union in order to feed more than a million soldiers across the country.

As stated before, Dey saw an increase in his economic wellbeing as a result of the war. As demand grew, so too did the prices Dey was able to charge. Even foodstuffs which would have been subpar could now be sold for a premium. This was seen not only across Ohio, but across the North as a whole. From Ohio to Maine, the farmers of the Union were able to sell their

 ²⁶ *Diary*, September 24, 1862.
²⁷ Ibid, January 14, 1866. The text was Acts, 4:32.

²⁸ Ginzberg, Eli. "The Economics of British Neutrality during the American Civil War." Agricultural History Society 10.4 (1936): 147-56.

wares for prices never before seen. State governments and Federal procurers needed to rally every farmer across the country if they were to feed the furnaces and bakeries which would turn grain and flour into hardtack.

Part II: The Bakery

Henry Varwig was a baker in Cincinnati during the American Civil War. As the war grew in scale, Varwig's bakery was contracted to produce hardtack for the hundreds of thousands of soldiers swelling the ranks of the Union armies. While it is unlikely that the wheat or flour from a North Ohio farmer such as Dey would end up in Cincinnati, the Varwig Bakery typifies the type of individual and the process which would have gone into producing hardtack for the Union Army. During the war, Varwig had a contract for three million pounds of bread for the army and navy.

With millions of soldiers moving throughout the North and into the Confederate states, the quartermaster department required tons of food daily to keep the armies from grinding to a halt. In order to fulfill the massive requirements of feeding the armies of the North, contracts were sold to numerous bakers, farmers, clothiers, and a multitude of other suppliers.

Contracts at the time functioned in much the same manner as they do today. A state or federal contract would have come up for the production of hardtack (in this case 3 million pounds), with a cash reward of \$270,000. Varwig, with his large bakery, and believing he could make a large profit off of it, would have eagerly accepted the contract.

There were a large variety of ways which Varwig could have stretched his product in order to make even more money. Additives were commonplace during the war, replacing flour with sawdust, inferior grains, or adding more water to the hardtack than was called for. There is no evidence Varwig took these measures. Like so many Ohioans of that time, Varwig was born in what is today Germany, then the Kingdom of Hanover (and annexed only four years after the end of the Civil War into Prussia). In 1841 when Varwig was three years old, his father, Joseph Henry, took the young boy with him to Cincinnati. Early on, Joseph supported his family by making bricks, but later became a grocer at the corner of Linn and Findlay while Henry went to school.²⁹

At the age of twenty-one, Varwig went into business as a retail grocer on Findlay Street. In the 1860 city directory, Henry could be found in the meat business on the corner of 8th and West Row, which would later be called Central Avenue. In the 1861 directory, he was labeled as being a tinner.

That same year, Varwig seems to have finally found his calling, and he entered the bakery business. In 1862 his bakery was listed at 149 West Court. In 1863 and 1864, it is listed as being at 151 West Court. The location continued to change periodically between 1865 and 1881.

Varwig was a shrewd and successful businessman. During the Civil War, he held a contract for three million pounds of bread for the army and navy. This contract amounted to \$270,000, or about five million dollars in 2014.³⁰

The Varwig Bakery was large. Each day it was capable of taking two hundred barrels of flour and producing nearly eight hundred boxes of hardtack. While making hardtack for the army and navy, the Varwig bakery was also producing crackers for sale in Cincinnati. Traditionally, a barrel was able to hold 196 pounds of flour.³¹ Extrapolating this, the Varwig bakery could take in 39,200 pounds of flour per day and turn it into hardtack. Looking at the Dey harvests, a bushel of

²⁹ Ford, Henry A. *History of Cincinnati*. Cleveland: W.W. Williams Printing House, 1881. 470.

³⁰ History of Cincinnati and Hamilton County, Ohio; Their Past and Present. Cincinnati: S.B. Nelson & Co, 1894.

³¹ "CUSTOMARY (OLD) WEIGHTS & MEASURES." The Reformation. N.p., 1894. Web. 5 Feb. 2015.

<http://www.thereformation.info/cuswms.htm>.

wheat made about 60 pounds of flour. This means that an entire harvest from the Dey farm was only able to supply the Varwig bakery for a single day. It was of critical importance to the war effort that bakeries such as the one which Henry Varwig owned be continually supplied with the raw materials needed to produce hardtack for the army. If the logistical lines of supply and transportation from the farms to the bakery were severed for any extended period of time, it could spell trouble for the armies in the field. Wheat and flour from farms, dozens of cords of wood not only to stoke the fires of the bakery, but to produce the boxes to package the finished hardtack were needed.

Varwig, like many other bakers contracted with the army and navy, made hardtack. It was a dense, hard, durable bread which was known to last practically forever. During this time, means of preserving food were limited to salting, smoking, or canning, with the later being cumbersome and impractical to ship out to soldiers. Examples of hardtack from the Civil War survive today, and it was not uncommon for soldiers during the war to eat hardtack which had been produced during the Mexican-American War.³²

To soften hardtack, it was often soaked in coffee, water, bacon grease, or some other liquid. During the Civil War, Varwig and other bakers would have cooked their hardtack in three-inch square (8 cm square) loaves. While not very appetizing, it packed a high amount of carbohydrates and, because it was unlikely to spoil, it was a favorite of quartermasters and commissary officers. Many soldiers complained of the taste as well as the hardness, and the ration was sometimes called "teeth-dullers."³³

³² Hard to Swallow – A Brief History of Hardtack and Ship's Biscuit, Military History Now, 28 June 2012. Web, 18 Mar. 2015. <http://militaryhistorynow.com/2014/07/11/hard-to-swallow-a-brief-history-of-hardtack-and-ships-biscuit-2/>. ³³ "What Is Hardtack?." Office of Historic Alexandria, n.d. Web. 5 Feb. 2015.

<http://www.nps.gov/saga/forteachers/upload/Hardtack-Recipe.pdf>.

The recipe for hardtack was very simple, though it took a bakery such as the one owned by Henry Varwig to produce enough to satisfy the hunger of hundreds of thousands of Union troops. The Varwig bakery was large, with many industrial-size ovens, and the capability to produce hundreds of loaves of hardtack every day. There was approximately a four-to-one ratio of flour to water, with water brought in straight from the Ohio River. A small amount of salt would be used, with all of the ingredients mixed together. The resulting dough was elastic, but not sticky. This dough was then rolled out into great, thin sheets, cut into squares of about one inch. Holes were punched into the bread, and it would be set to cook. The dough expanded to the three inch squares. If bakers like Varwig did their job right, they would then let the bread slowcook in a kiln or oven in order to remove any additional moisture. After allowing the bread to cool and let any more water leave the bread, it would then be packaged into the seasoned boxes, ready to be shipped onward to Columbus.

Assistant Commissary General Lt. Colonel C.L. Kilburn made extensive notes on the specifications required to prepare hardtack. Varwig, in order to fulfill his end of the contract, needed to follow the standards established by the military. The flour needed to be of best or superfine quality, meaning the flour was held to a high standard. The hardtack was to be white, crisp, light, and have a flaky appearance when broken. It was at least expected to look like bread, and not "present the appearance of dried paste."³⁴ Whatever the case, it needed to be properly cooled and dried before being packed. Hardtack was either kiln or oven dried, which gave the hardtack both its tough texture and longevity. Kilburn went on to write about how steam was needed in order to make hardtack properly, as opposed to what he calls "hand work." The dough was to be mixed as dry as possible, and Kilburn stressed this in his statement. A barrel of

³⁴ Kilburn, C.L. Notes on Preparing Stores for the United States Army and on the Care of the Same, etc, with a few rules for Detecting Adulterations. Cincinatti: W.A. Webb, 1863, 8.

hardtack needed to weight no more than 80 pounds. More weight indicated that too much water was used. The less water used, the dryer the final product would be, and the longer it might be preserved. Salt could be added, but it needed to be added during the mixing of the dough and not after.³⁵

Hardtack was given a maximum thickness as well, because if it was too thick it would not dry properly.³⁶ Bakers used the term "sprung" when describing the hardtack, with the term meaning that the bread was raised or flaky, and the flour was of "good" stock.³⁷

When hardtack was made in this manner, the army expected it to stay good for up to a year, although conditions seldom allowed it to keep for so long. It was not uncommon for barrels and boxes of hardtack to be left in the elements or under poor shelter. Bakers would seldom wait for the bread to dry properly, exacerbating the decay process. As a result, hardtack would become moldy, infested, or otherwise might degrade in as little as three months.

Hardtack was shipped in 50 pound (22.67 kilogram) boxes. The wood was expected to be "thoroughly seasoned" so that the wood transferred no smell or taste to the bread inside, and needed to be reasonably tight when closed up. Hardtack was packed on its edge in order to prevent the bread from shaking inside of the box.³⁸

Moldy and weevil-ridden hardtack was very common, to the point where there were attempts made by the commissary to solve the issue. The solution was to expose the bread to the sun upon paulins (a heavy cloth). Before re-packing the bread, the barrel was to be rinsed with whiskey.³⁹ The effectiveness of this solution was not terribly great, as soldiers constantly complained of hardtack that was moldy and full of bugs.

³⁵ Ibid. 8.

³⁶ Ibid. 8.

³⁷ "Good" is a term Kilburn used in *Notes on Preparing Stores,* and does not define what "good" means.

³⁸ Ibid, 9.

³⁹ Ibid. 9.

Much like today, private business owners (or contractors) such as Henry Varwig made up the backbone of the supply line. Individuals who had the ability to produce food, clothes, guns, and every other kind of needed material by the tens of thousands for the soldiers in the field were needed. Yet it was the railroads which allowed all of these materials to flow ultimately toward the front.

Part III: Onward to Columbus

Shipping goods to Columbus from the multitude of towns and cities within Ohio was a matter of centralization and effective use of the roads, canals, rivers, and rail lines in the state. Quartermasters and commissary officers needed a central location from which goods could then be shipped out to where they were most needed. In this matter the railroads were quite often the most efficient method of shipment. Ohio possessed a large number of both short and long line railroads. The Cleveland and Pittsburgh, American Central, Ashtabula and New Lisbon, Atlantic and Great Western, the Baltimore and Ohio, Bellefontaine and Indiana, Carroll County, Central Ohio and a host of others all operated during the Civil War, contracting with the state and federal governments in order to send troops and freight to where they were needed.⁴⁰



Figure 1. Map of Three Major R.R. Lines in Ohio During the Civil War.⁴¹

⁴⁰ Cole, Wayne A. *Ghost rails, 1850-1980. Volume 1, Abandoned railroads, their industries, last runs, Eastern Ohio and Western Pennsylvania.* Darlington: Cole Books, 2005.

⁴¹ Welter, Franklin M. "Map of Three Major R.R. Lines in Ohio During the C." Map. *The American Civil War: A War of Logistics*. Bowling Green: Bowling Green State University, 2015

The shipping power of the railroads during the war cannot be overstated. A 16-car train, per ton of fuel, could move 5,250 ton-miles of material.⁴² One can compare this with a six mule wagon which, for that same ton of fuel (in this case, fodder), could only move about 500 ton-miles of material.⁴³ The locomotive could also travel at a faster speed, about five times that of the mule-drawn wagon. Faster travel meant more round trips and that supplies and troops arrived in better condition. Soldiers, ammunition, and food moving by foot or via horse or mule would be exposed to fatigue, the elements, straggling and desertion. Even though troops moving via train would not be very comfortable, it meant a far faster journey.



Figure 2. Change in Rates of Travel Due to Railroads.⁴⁴

The train was also far more reliable and dependable than mules and draft animals. A

train, when not in use, did not continue to require fuel (or in the case of an animal, fodder). The

⁴² A ton-mile is how many miles a ton of goods could be transported on a ton of fuel.

⁴³ Gabel, Christopher R. Railroad Generalship: Foundations of Civil War Strategy. Library of Congress, 1997. 2-5.

⁴⁴ Paullin, Charles O., and John K. Wright. *Atlas of the Historical Geography of the United States*. Washington D.C.: Carnegie Institute of Washington and the American Geographical Society of New York, 1932. 138.

trains could also be modified or repaired as the occasion demanded, whereas the mule only came in "factory setting." Trains also needed far fewer crew in order to get underway. A train needed an engineer, whose job it was to maintain the engines, conductor to keep track of stock, brakeman for stopping and reversing (usually in the caboose), at least one fireman. There may also have been guards on board depending on the location. For so much material, it may be surprising that only a crew of four was needed. For mule and wagon to have a comparable impact, hundreds of drivers and thousand of mules would be needed. Mules needed fodder, each wagon needs a driver, the whole wagon train needs guards, each wagon requires spare parts. A single train with cars was simply able to do the work of many wagon teams, and do it faster and more reliably.

More than anything else the train, and the amount of rail which had been laid down across the nation, allowed the Civil War to be fought across nearly the entirety of the country. It also allowed the North to utilize resources even far removed from the front, such as Northern Ohio or Maine. Cities and peoples hundreds of miles away from the fighting could be put to the task of production, and the fruits of that labor could then be sent, via train, to the soldiers at the front. Armies supplied by railroad could operate many miles away from their main base of supply and conduct campaigns unthinkable even a decade and a half prior during the Mexican-American War. For instance, in 1864, Sherman's campaign to Atlanta was based off of a single rail line extending 473 miles from Louisville to Atlanta. Sherman estimated that this single rail line did the work of 36,800 wagons and 220,800 mules.⁴⁵ The South did have railroads as well, but the railroads of the Confederacy could not compete with the organization, standardization, and scale of those which the Union had. While the rail line had it's own disadvantages, as we will examine in chapter II, the ability to move so much food, ammunition, men, and a host of

⁴⁵ Gabel, Railroad Generalship, 6.

other supplies so quickly and with so little additional support made a colossal difference in the Union's ability to secure victory.

The matter was complicated somewhat by bureaucracy. As the war progressed four departments developed to meet the requirements of the Union forces. Each in turn had their own arena which they supervised and jealously guarded, and each often acted out of concert and without the coordination of the others. The Quartermaster General oversaw animals and forage, clothing, and equipment, transportation, and housing. Rations and foodstuffs were overseen by the Commissary General. The Chief of Ordnance was responsible for weapons, ammunition, and other related equipment. Finally, medical supplies such as bandages, ether, morphine, and care of soldiers was the realm of the Surgeon General. On top of this was the Director of Military Railroads. Ultimately, each of these groups depended upon the Quartermaster, because it was he who oversaw transportation and approved all requests for locomotives. Adjuncts were assigned by the Quartermaster General to the other departments in order to help coordinate their logistical requirements.

In order to get materials loaded onto the trains, workers used a variety of methods. Behind the lines, it was most common for paid employees of the railroad to load any freight onto the cars as the cars were brought to the station. Contracted suppliers such as Varwig would be expected to produce a certain allotment of contracted material on a weekly or monthly basis. Bread, guns, clothes, and all the paraphernalia of war would be brought to the station on a regular basis.⁴⁶ Often, the station would be along a local railroad line going from one city to another, such as Cleveland or Toledo to Columbus, with stops along the way at towns such as Perrysburg.

⁴⁶ Ibid, 6-8.

Volunteers, such as the Sanitary Commission, would also work to produce, pack, and ship materials for the soldiers. The Cleveland Branch was organized in 1861, and would serve as a model to other aid organizations, serving not only as the first permanent branch of the commission, but also as the first to enter the field. Starting with only two dollars in gold, the Cleveland Branch would, by the end of the war, prove capable of raising tens of thousands of dollars in a matter of weeks. One such example is a fair held in February 1864 which, in only two weeks, raised \$100,000. This money would go toward aid and supplies for the soldiers, including hospitals to care for the wounded, clothes, and fresh food.⁴⁷

Less often, but still common, was the use of soldiers and civilian volunteers to load trains. This was more common in locations which had a garrison, or in areas where the army had an official supply depot. Cities such as Louisville, Kentucky in the West, or the Frankford Arsenal, located in Florida or Hagerstown, Pennsylvania in the East, would have a full-time garrison of soldiers. These soldiers would be expected, as needed, to assist in the loading and unloading of material.⁴⁸ If the army were in the field nearby, army corps (the largest building block of the Union armies), would also often detach several regiments to act as guards for their depot. These regiments were often "played out," too undermanned by fighting to be an effective force. The men assigned to the supply depot would inevitably be used to load or unload trains and wagons as they arrived.

Columbus, Ohio, could be considered a depot. By 1863 there was an advanced system which held and shipped supplies. In Columbus, the man in charge of organizing all of these supplies was a captain, a surprisingly low rank for a person in command of such a huge amount

⁴⁷ "U.S. SANITARY COMMISSION." *The Encyclopedia of Cleveland History*. Case Western Reserve University, n.d. Web. 5 Feb. 2015. ">http://ech.case.edu/cgi/article.pl?id=USC>.

⁴⁸ Haupt, Herman. Reminiscences of General Herman Haupt. Milwaukee: Wright & Joy Co., 1901. 208.

of material.⁴⁹ This captain answered either to an adjunct, or else to the Quartermaster General directly as supplies were unloaded locally, loaded onto outgoing locomotives, and shipped out. Their organization could become very complex. The Washington Depot, for example, had twelve branches, each with its own responsibilities and requirements.⁵⁰ Especially with depots behind the lines, it was very uncommon for armies to draw supplies directly from the depot. Instead, depots closer to the front were used. If a depot was not available, one was made in order to keep supplies flowing. The Quartermaster valued the network of rails and trains beyond almost anything else.

Every day over 300 tons of material could be shipped out of Columbus. With so much material being shipped, the owners of the railroads had the potential to become very rich. Like the farmers, the government paid a premium for the services of the railroads, and encouraged the railroad executives to open their tracks to federal shipping.

In 1862, Lincoln signed the transcontinental railroad bill, making it more affordable and lucrative to lay down railroad track. Railroads were paid by the mile to lay down track. The railroads were also paid per ton-mile for which their rail was used. As a result, there was an incentive to create mileage, but not quality mileage. Railroad track would wind through territory in a meandering path, or else over hilly terrain that made if difficult for trains to pass. Yet, the speed with which rail could be built was undeniable. The Central Pacific could lay down 10 miles of track every day.⁵¹

There was also money to be made in transportation. Recall the ton-miles capable for a train (5,250 ton miles); during the Civil War, shipping by rail could cost as little as one cent per

⁴⁹ Shrader, Charles R. *Field Logistics in the Civil War*. New York: U.S. Army War College, 1987. 257-58.

⁵⁰ Houston, James A. *The Sinews of War: Army Logistics, 1775-1953.* Washington DC: U.S> Government Printing Office, 2004. 175-77.

⁵¹ "Building the Transcontinental Railroad." *Digital History*. Ed. Sara McNeil. N.p., 2013. Web. 5 Feb. 2015.

<http://www.digitalhistory.uh.edu/disp_textbook.cfm?smtID=2&psid=3147>.
ton-mile. A ton of fuel was good for about 35 miles for a train, which meant that every 35 miles brought in about \$1,837 dollars for the potential railroad company. We can compare this to the cost of a ton of coal in 1860, which stood at \$6.40, or a half-cord (about 1 ton) of hardwood, which was about \$3.25.⁵² A railroad company stood to gain a large amount of money, especially for the relatively secure lines in Northern Ohio. The further south the lines went, however, the more dangerous and less profitable it became, as will be seen in chapter II.

The trains arriving in Columbus, their boxcars empty or near enough to it, would have needed time for the boilers to cool. Water was hauled up to fill the boilers, and coal shoveled up to fuel the journey. In cities near the front, such as Baltimore or Washington, trains could be expected to arrive hourly.⁵³ A depot such as Columbus might expect to send out a 10 to 16-car train once a day, which arrive in Baltimore, Washington, or Louisville several days later. It was some 200 miles to Louisville, and 400 to get to Baltimore. Trains during this period moved at an average speed of 13 miles per hour.⁵⁴ Just how long it took to get from Columbus to Baltimore, for example, varied considerably. In theory, it could take as little as one or two days to travel from Columbus to Baltimore.⁵⁵ In practice, this was not always the case. Breakdowns, the need to refuel, sabotage, and unforeseen problems could extend the time on the road. Depending on the location, whether different gauges were used, and the frequency of stops, a journey of 100 miles could take three or four days. Hardtack did not care how long the journey was, packed

⁵² "Prices for 1860, 1872, 1878 and 1882 — Groceries, Provisions, Dry Goods & More." *Choosing Voluntary Simplicity*. N.p., n.d. Web. 2015. http://www.choosingvoluntarysimplicity.com/prices-for-1860-1872-1878-and-1882-groceries-provisions-dry-goods-more/.

goods-more/>. ⁵³Houston, James A. *The Sinews of War: Army Logistics, 1775-1953*. Washington DC: U.S> Government Printing Office, 2004. 181.

⁵⁴ Gabel, Christopher R. Railroad Generalship. 8.

⁵⁵ "How fast could you travel across the U.S. in the 1800s? Read more: http://www.mnn.com/green-

tech/transportation/stories/how-fast-could-you-travel-across-the-us-in-the-1800s#ixzz3Qu6vCDUg." *Mother Nature Network*. N.p., n.d. Web. 5 Feb. 2015. http://www.mnn.com/green-tech/transportation/stories/how-fast-could-you-travel-across-the-us-in-the-1800s.

together in a stiflingly hot or freezing cold cabin. Soldiers, though, in heavy wool jackets in the early July heat, were surely a different story.

The first major stages of the supply process have been examined. Dey, working through every season, sold his wheat at a premium price to Federals who needed to feed the growing Union army, or directly to bakeries under Federal contract. Varwig at his bakery fired up the kilns and ovens, and produced hundreds of loaves of hardtack, sending them to Columbus nearly as fast as they could be packed away. Loaded onto one of several local rail lines, they were then shipped to Columbus. There, the captain in charge, an officer of the Quartermaster, organized the materials, and received his orders on where it needs to be shipped. He has received word not only from Montgomery C. Meigs, Quartermaster General, but also from Herman Haupt, Brigadier General in command of the Bureau of Military Railroads. All supplies are to be sent with the greatest urgency East. The Army of the Potomac, the pride of the East, whose soldiers have weathered multiple humiliations at the hand of Robert E. Lee, has been drawn into an unexpected and unanticipated battle at the town of Gettysburg.

CHAPTER II: THE RAILROAD

The journey from the depot at Columbus, Ohio to the depot at Westminster, Maryland was the most dangerous leg of the journey. This was where there existed the greatest opportunity for disaster. Railroad lines torn up, bridges destroyed, Confederate raiders and sympathizers lying in ambush. From nearly the onset, efforts were made by the Confederacy to disable the railroads, while the Union made efforts to protect them and keep the lines open. During this chapter, we will look at several key individuals who played a role in this, particularly Herman Haupt, General of Military Railroads. The situation for the railroads leading up to and beyond the Battle of Gettysburg will be examined. Finally, we will examine the threats and dangers of railroad transportation, and efforts made to guard the rails during the Civil War. Despite the Confederate opposition, and in the face of differing goals on the Union side, a sophisticated system of transportation and defense would be developed which would provide the Union with a military advantage.

Part I: The Men

On the 18th and 19th of August, 1862, an important set of orders were issued by Major General Pope, then commander of the Army of Virginia, and by Secretary of War Edwin Stanton. The orders issued by Pope read "All railroads, and especially the Orange and Alexandria Railroad, within the limits of the Army of Virginia, are placed under the exclusive charge of Colonel Herman Haupt..." The order issued the next day by Stanton read that "...the Department of Colonel Herman Haupt... is hereby extended to embrace all the railroads which are or may hereafter be included within the lines of operation of the Army of Virginia..."⁵⁶

While the Army of Virginia would later be absorbed into the Army of the Potomac, these orders carried forward in important ways. Looming largest was the fact that, if a rail line was

⁵⁶ Haupt. Reminiscences of General Herman Haupt. 70.

seen as important or useful to the army, it could, and often did, come under the command of Haupt. His agency, the United States Military Railroads, would go on to operate 2,105 miles of railroad, 419 engines, 6,330 cars, 642 miles of track⁵⁷, and 26 miles of bridges, all built or rebuilt. Few would be capable of handling such an enormous task. Haupt, however, was just the man for the job.

As former chief engineer of the Pennsylvania Railroad, Haupt was already well suited to making sure that railroads ran well and on time. Early on, Haupt repaired and fortified damaged railroads around Washington D.C., trained railroad staff, and improved telegraph communications.⁵⁸ One of his earliest accomplishments, and the one which caught the eye of President Lincoln, was the reconstruction of the Richmond, Fredericksburg, and Potomac Railroad's Potomac Creek Bridge. Using unskilled infantry and inadequate supplies, Haupt facilitated the construction of a bridge eighty feet high and four hundred feet long using only, as Lincoln said "nothing but cornstalks and beanpoles." The bridge would go on to carry up to 20 trains every day.⁵⁹

Yet Haupt was not the only one upon which the success of the railroads relied. On May 15, 1862, Montgomery C. Meigs was made Quartermaster General. The Department of the Quartermaster was responsible for providing all the transportation needs of the soldiers and of the war material. Prior to the outbreak of war, the department had been manned ably and professionally. Yet the Civil War, and the influx of volunteers into the army, overwhelmed the department, which was used to a far smaller professional force. It was a problem which demanded a person with business training and extreme ability. Meigs met these qualifications in

⁵⁷ "Track" referred to less permanent or temporary railroads, sometimes made to be portable, or made of lighter materials.

⁵⁸ Haupt. Reminiscences of General Herman Haupt. 43-48.

⁵⁹ Pfeiffer, David A. "Working Magic with Cornstalks and Beanpoles." *National Archives*. Prologue Magazine, 2011. Web. 2014. http://www.archives.gov/publications/prologue/2011/summer/usmrr.html.

spades. The descendant of doctors and Yale graduates, Meigs had been one of the top students in his 1836 West Point class, and spent most of his career prior to the Civil War working on engineering projects. Forts Mifflin, Delaware, and Detroit were all built with his aid, and he served under Robert E. Lee when navigational improvements were made to the Mississippi river.⁶⁰ He supervised the construction of the Washington Aqueduct and the Union Arch Bridge, which today spans four lanes of highway with room to spare, and was for fifty years the largest masonry arch in the world.⁶¹ Most noticeable today, he supervised the building of two wings and the dome of the White House. Meigs was a man who had the organizational ability to make ready the Quartermaster's Department for the largest war which the United States had ever seen.

Both of these men had a shared interest and responsibility for the railroads. Cannons, generals, and soldiers were critical to the war effort, but men such as Haupt and Meigs saw the need for the railroads. They could move everything from (in our case) hardtack, to siege artillery weighing a ton or more. One of these railroads, which will be our focus, was the Baltimore & Ohio Railroad.

At the outbreak of the American Civil War, the president of the B&O Railroad was John W. Garrett. From the onset Garrett would be at the head of much of the drama and turmoil surrounding transportation during the war. The B&O received an early taste of what was to come during John Brown's raid on Harpers Ferry, when Brown and his men stopped a B&O train. Soon after, Colonel Robert E. Lee would ride with U.S. marines aboard a B&O train to put down Brown and his raiders. As the war came to a close, a B&O train would also serve as the funeral train for President Lincoln.

 ⁶⁰ Ulbrich, David. "Montgomery Cunningham Meigs." In *Encyclopedia of the American Civil War: A Political, Social, and Military History*. David S. Heidler, and Jeanne T. Heidler, eds. New York: W. W. Norton & Company, 2000. 1312.
⁶¹ Kelly, John. "Md. bridge history includes breach that couldn't be spanned." The Washington Post, 21 Apr. 2010. Web.

Prior to the outbreak of the Civil War, Garrett considered the B&O to be a "southern railroad" and his sympathies lay with the South during the war. His reasons for choosing to support northern logistics and transportation were examined from the perspective of a shrewd businessman. At the onset almost all of the B&O lay within Union borders, making it all but impossible for Confederate soldiers to hold any amount of rail which would prove useful.⁶² Garrett's Union sympathies would only grow with time, as Confederate raiders destroyed track, captured material, and overall harmed the investments and profits of the company.

By the onset of the American Civil War, the B&O stretched from Baltimore on the East Coast, to the Ohio River in the West. The company owned 75 engines, 2,000 cars, and 100 passenger cars. In all, the company had more than \$30 million in assets.⁶³



Figure 3. Map of Baltimore & Ohio Railroad During the Civil War⁶⁴

During the war, the B&O was under constant attack, both from within the Union and

from the Confederacy. When the Union advanced, the lines were often sabotaged by Confederate

sympathizers or Confederate cavalry. Raiders such as Morgan and Mosby could tear up miles of

⁶² Summers, Festus P. *The Baltimore and Ohio in the Civil War*. Gettysburg: Stan Clark Military Books, 1993. 57-60.

⁶³ Toomey, Daniel C. *The War Came By Train: The Baltimore & Ohio Railroad During The Civil War*. Baltimore: B&O Railroad Museum, 2013. 21-30.

^{*}It is difficult to determine the value of this \$30 million in today's currency. According to the Consumer Price Index, one dollar in 1861 was equal to \$27 in 2014. By GDP per capita, that number grows to \$368. Yet by using it as a relative share of GDP, that dollar is valued at \$3,610 in 2014. Needless to say, the B&O commanded substantial wealth.

⁶⁴ Summers. The Baltimore and Ohio in the Civil War. 58

track and destroy multiple bridges in a single day, while it took two or three days to repair the damage done, diverting resources and slowing the shipment of supplies. When Confederate forces advanced, such as during the Antietam and Gettysburg campaigns, the damage was done by both sides. Union forces, seeking to deny the Confederates the use of bridges and rail lines, destroyed any railroads and bridges which they thought Lee might use. For the most part the B&O was helpless to prevent these damages, and were subject to the ebb and flow of the war. Privately, Garrett was furious at the damages being done to the rail line. While the railroad was not losing money, profits were slowed considerably, the damages and repairs mitigating the profits brought on by the war. Yet there was no reasonable alternative. Haupt and the USMRR had already shown their willingness to take control of any rail lines which they deemed were necessary. If Garrett tried to keep the B&O neutral, it would undoubtedly mean seizure, as would siding with the Confederacy. Both of these alternatives also meant that Garrett and other B&O executives would, at the least, lose their positions and influence, and might mean imprisonment. For much of the war, the B&O was thus an impotent titan, critical to the Union war effort, yet unable to defend itself from internal or external threats.

From the onset, the South viewed the B&O as a war target. The Governor of Virginia, John Letcher, said that "The Baltimore and Ohio rail road has been a positive nuisance to this state, from the opening of this war to the present time; and unless its management shall hereafter be in friendly hands... it must be abated..."⁶⁵

At the beginning of the Civil War, both the Union and the Confederacy claimed the railroad. The Confederacy wanted the railroad to secure important locations such as Harpers Ferry. The Union, meanwhile, wanted the railroad due to its expansive reach. As stated before, the railroad was the largest in the country at the time, and ran from Illinois, through Indiana and

⁶⁵ Called Session of 1862." Journal of the House of Delegates of Virginia 1862: 88

Ohio, West Virginia, Pennsylvania, had branches in Virginia, and terminated in Maryland. The situation was not helped by the B&O President, John Garrett. In the end, the decision by Garrett to remain with the Union was one of financial, not personal, loyalties. This happened as a result of General Benjamin Butler arresting Confederate sympathizers in Baltimore. The B&O executives stood to lose their personal wealth and station should they side with the South. Baltimore's location also helped to prevent the B&O from lending aid to the Confederacy.⁶⁶ Simply put, it was too far North to be of any real aid. Due to these factors, Garrett put his support behind the Union when Lincoln and the North called. Garrett would end up working closely with both Haupt and Meigs, though seldom agreeably, and not always willingly.

In spite on the decision to side with the North, the B&O came under the suspicion of both the North and the South. From the onset, Garrett received threats, promises to destroy tracks, burn bridges, and demolish buildings which the B&O owned if the company continued to transport Union soldiers and supplies. That same week, Garrett read an editorial which was critical of the willingness of the railroad to transport Confederate soldiers.⁶⁷

Following the surrender of Fort Sumter, President Lincoln called for 75,000 volunteers. Garrett was quick to not only offer the services of the B&O to the Union cause, but also assure investors and share holders that the line, as well as any products being carried, would be secure and insured. Soon after the call for volunteers, Garrett and Ohio Governor William Dennison made arrangements for the transportation of 800 Ohio volunteers, to be sent from Parkersburg, West Virginia, and Wheeling, West Virginia to Washington D.C. The preparations were nearly complete when Garrett abruptly canceled the undertaking. All cars had become suddenly

⁶⁶ Toomey, The War Came by Train. 14-17.

⁶⁷ Ibid. 45-46.

occupied by 2,500 Federal troops bound from Baltimore to Washington. All available cars would be needed in the East.⁶⁸

While Governor Dennison could barely contain his anger at these events, Garrett would soon be vindicated. On 18 April, Garrett received word that, should troops from the West be brought in through B&O lines, troops be transported through Virginia, or B&O lines be used to remove munitions from Harpers Ferry, the company's bridge at Harpers Ferry and other places nearby would be destroyed. One such letter read as follows:⁶⁹

One Hundred of us... have determined & Sworn to each other, to destroy "*every*" Bridge & tear up your Track on both lines of your Road... between this City & their head points-If you carry another Soldiers over either line of your Road after Saturday April 20th... We have a large force ready to answer out calls.

As the month of April progressed, the railroad situation in the East only became more desperate. Following the Baltimore Riot on 19 April, all of the railroads in Maryland lay undefended and open to destruction.

In response to this, the Department of Annapolis was established on 27 April, 1861. Their mission was a simple one: guard the railroads to ensure the flow of troops and supplies. The scope of their operations was limited, consisting primarily of the Washington branch of the B&O. Throughout 1861 troops would flow through Annapolis on their way South.⁷⁰ Over time, this department would grow in size and in the scale of operations being undertaken. By May 1862, the Railroad Brigade would include 207 officers and over 4,500 enlisted men.⁷¹ The Railroad Brigade would often be hard-pressed to ensure that troops and supplies remained protected while on the rails.

⁶⁸ Summers. The Baltimore and Ohio in the Civil War. 51.

⁶⁹ Ibid. 52-55.

⁷⁰ Toomey, *The War Came by Train.* 85.

⁷¹ Scott, Robert N., U.S. War Dept. The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies. Washington: Government Printing Office, 1902. Vol. 12 Part III. 211

As a result of these measures, Confederate forces were generally held at bay during the

early stages of the war, and most of the fighting was done a safe distance from B&O lines. As

such, damages were at a minimum. The first true test of these defensive measures came in

September 1862, when Confederate forces under Lee would advance in force into Maryland.

The Confederates were thorough in their attacks upon the railroads. The tracks were

destroyed by heating them to a white hot temperature in improvised furnaces, and were then bent

around nearby trees or other stationary objects. In his annual report to the stockholders of the

B&O, Garrett detailed the losses of the company:⁷²

Great destruction of the company's property at Martinsburg. The polygonal engine house, the half round engine house, the large and costly machine shops, warehouses, ticket and telegraph offices, the Company's hotel and dining and wash house, master mechanic's house, coal bins, sand houses, blacksmith shop and tool houses, pumping engine for water station and connecting pipes were all destroyed. The destruction of tracks near the 87^{th} to the $108 \frac{1}{2}$ mile, and the second track from Martinsburg to $108 \frac{1}{2}$ mile, and all the siding and switches at Duffields, Kearneysville, Vanclievesville, Martinsburg, and other points destroyed, making a total of $37 \frac{1}{2}$ miles of track, the crosses from which were burned to heat and bend the iron.

In addition to these physical losses, the company also suffered from Confederate occupation

of some ninety miles of captured or destroyed telegraph lines, destroyed water stations, sand

houses, and other company property.⁷³

It would not be until late 1862 that the company's fortunes would improve, and the last Confederate detachments were driven from the immediate area of the B&O lines, being pushed back from the Shenandoah Valley area and Winchester, Virginia, freeing the B&O in the area from immediate Confederate threats.⁷⁴ The B&O would be faced once again with the task of

⁷² Garrett, John W. "Thirty Seventh Annual Report." Baltimore and Ohio Railroad Company. Baltimore. Oct. 1862.42.

⁷³ Ibid." 41.

⁷⁴ Ropes, John C. *The Story of the Civil War, Vol. II.* London: G.P. Putnams Sons London, 1907. 454.

rebuilding. This particular line was of vital importance, for it was a double-track line, allowing trains to come and go from the front simultaneously.

To accomplish this, the B&O used stockpiled materials from the Washington area. Originally intended to expand the tracks around Washington, they were instead diverted for emergency repairs.⁷⁵ Because of this decision, the track was able to resume operations six weeks after the Confederates left the area. With materials on hand, the track was reopened in January 1863.⁷⁶

Working hand in hand (and often in command of) with the Railroad Brigade was the United States Military Railroad. Formed when Assistant Secretary of War Thomas A. Scott took control of the Annapolis & Elk Ridge Railroad and the Washington Branch of the B&O, the USMRR was responsible for the maintenance of the railroads and telegraph service as required by the government in order to wage war.

One of the names associated with the success of the USMRR is that of Herman Haupt, Chief Construction Engineer of the USMRR. As noted above, Haupt was called into service in April 1862, and began work right away on repairing destroyed lines. His first task was to repair a downed rail line stretching from the Rappahannock River to Fredericksburg, a distance of over 50 miles located in hostile territory. Upon Haupt's landing, it soon became apparent that Haupt was the right man for the job. As previously indicated, he first built the bridge across the Potomac. Realizing Haupt's talent, he was soon given the rank of colonel, and appointed Chief of Construction and Transportation.^{77 78 79}

⁷⁵ Garrett, John W. Address of John W. Garrett, on his Re-Election as President of the Baltimore & Ohio R.R. Co. On the 23rd November, 1864, Sketching the Policy and Prospects of the Company. 1864. 5.

⁷⁶ Garrett. "Thirty Seventh Annual Report." 43.

⁷⁷ Webber, Thomas. *The Northern Railroad in the Civil War*. New York: Indiana University Press, 1952. 135-36.

⁷⁸ Hunt, Roger D., and Jack R. Brown. *Brevet Brigadier General in Blue*. Gaithersburg: Olde Soldiers Books, 1990. 390.

⁷⁹ Lord, Francis A. Lincoln's Railroad Man: Herman Haupt. Rutherford: Dickinson University Press, 1969. 42-43.

For his part, Haupt seemed ill at ease in uniform. Haupt had at first offered to perform the service without commission and without pay in order to try and avoid the bureaucracy and politics of holding rank. He had resigned from the army in 1835 for that exact reason. As the war progressed and Haupt gained more influence and the USMRR grew, those misgivings would come to fruition. For the moment though, Haupt threw himself into his work.

Haupt's next major accomplishment was the creation of a Construction Corps. Rather than being pressganged soldiers or civilian volunteers ill-trained in the art of railroad construction, the Construction Corps was specially trained and equipped to build, repair, and, if needed, destroy a railroad. The original Construction Corps was filled out by soldiers more interested in fighting than the manual labor of railroad construction. Soon enough, Haupt found a more eager and willing group to replace the lethargic and apathetic soldiers, and became one of the first Army officers to latch onto the potential of runaway slaves and free blacks. The Military Act of 17 July, 1862 allowed for persons of "African Descent" to be employed at a rate of ten dollars a month. Haupt employed these men by the hundreds, and they went at it with a fervor. These were men used to manual labor as farm hands, railroad workers, stone masons, and a host of other physically demanding positions. These runaway slaves were eager to work without the threat of the lash. For the free black population of the North, yet unable to serve in the military, it was a way to make a clear, concrete contribution to victory. As the war dragged on, the permanency of the Construction Corps meant that there was a stable, trained body of men, black and white, who had the skillset required in order to become an efficient work force. By war's end, the Construction Corps employed nearly 10,000 men.^{80 81}

⁸⁰ Danaway, William A. *The African American Family in Slavery and Emancipation*. Cambridge: Cambridge University Press, 2003. 189, 205.

⁸¹ Lord, *Lincoln's Railroad Man.* 96-98,100.

In addition to repairing and building rail lines, Haupt's USMRR also established a complex in Alexandria where locomotives and railcars were repaired, equipment and supplies were collected for deployment, and prefabricated bridges were constructed. In this way, Haupt made it possible for almost anything which was needed to be sent out quickly and in nearly any situation or circumstance. For his efforts, Haupt was promoted to the rank of Brigadier General on 5 September, 1862. Again, Haupt refused the promotion or pay upgrade, though he wore the uniform and signed all of his letters as a general officer. Officially, he claimed this was so he could accept civilian projects, though he privately continued to bridle at the protocol and politics of the Army. His skills would be on full display in July of 1863, when the unexpected Battle of Gettysburg erupted. It was a town which Haupt was intimately familiar. He and his wife had married there over twenty years before.

Part II: Gettysburg and Beyond

As Lee's veteran Army of Northern Virginia advanced once more into the North, they took rail cars and nearly seventy miles of track stretching from Martinsburg to Sykesville, with the important depot of Harpers Ferry between, leaving the potential to assault Baltimore. Flanking guards went as far West as the Alleghenies. In all, the Confederates occupied a front of one hundred and sixty miles.⁸²

From the onset of what would become the Battle of Gettysburg, the B&O was in it to the hilt. As they advanced, the Confederates burned cars and bent the rails, the campaign kicking off with the capture of a B&O train and fifteen cars, all of which would be destroyed. Fuel stations and water supplies for the steam engines were put to the torch. Depots to hold the supplies and smithing shops to repair the trains were raised to the ground.⁸³ While only seven total miles of

⁸² Garrett. "Thirty Seventh Annual Report." 48.

⁸³ Garrett. "Thirty Seventh Annual Report." 48-53: American Railroad Journal, August 15, 1863.

track were destroyed, the army knew that the bridges were of true value, and would be the most difficult to repair. Every bridge and crossing between Cumberland and Harpers Ferry met with destruction.⁸⁴

During the battle Haupt remained in near constant contact with Quartermaster General Meigs, in order to ensure that the movement of wounded, supplies, and material was uninterrupted. With no telegraph in the area due to the unexpected advance, all trains heading for the front needed to be sent with an armed escort. B&O trains ran almost nonstop for the duration of the battle, with conductors, firemen, and engineers going with very little or no sleep for the entirety of the engagement.⁸⁵

Aside from armed escorts, one of the ways which Haupt kept losses to a minimum was the lack of a train schedule. Simply put, if the Confederates knew that a train was coming through every hour, they would know exactly where and when to strike. Instead, Haupt sent trains in convoys, and did not send another convoy until the last one had reported safe arrival at a location where telegraph lines had been established.⁸⁶ Haupt stressed the importance of rapid unloading of trains upon arrival at their destination, as the method used would otherwise drastically slow the arrival of supplies to the front.

In addition to this, when the battle began, Haupt personally helped establish a temporary supply depot at Westminster, which lay only 23 miles South of Gettysburg. This also allowed Haupt to send messages via horse to both Gettysburg as well as Baltimore until telegraph lines could be established. By the second day of the battle, Haupt was able to move 15 engines through Westminster, with 150 cars. As supplies arrived and were unloaded, Haupt was able to send between 2,000 and 4,000 wounded away from the front to be treated. Despite his efforts,

⁸⁴ Ibid. 49.

⁸⁵ Scott. The War of the Rebellion, Vol. 25 Part III. 575.

⁸⁶ Haupt. Reminiscences of General Herman Haupt. 215.

Haupt was unable to establish a direct rail line to Gettysburg itself, the fighting around the town made it impossible for his men to repair a direct line to the Union army.⁸⁷

As the battle at Gettysburg grew in intensity, Haupt faced growing problems with supplies. No less than thirteen bridges had been destroyed in the first day and a half of fighting, while he could only repair two or three at a time, each of which would take two or three days to bring back to a useable condition. As a result he was forced to become more creative with how supplies were sent to Westminster, and from where those supplies came. Two thousand tons of supplies had arrived by 2 July, and Haupt expected another two to three thousand tons in the next day. As a result, Haupt did something which he had not done previously, though he had the power to do, as given to him on 27 June by General Halleck.

Brig. Gen. H. Haupt, U.S. Volunteers, is hereby authorized and directed to do whatever he may deem expedient to facilitate the transportation of troops and supplies to aid the armies in the field in Virginia, Maryland, and Pennsylvania.⁸⁸

With the Army of the Potomac in an unanticipated battle and in need of supplies, Haupt temporarily commandeered railroad lines, stitching together reliable routes stretching from Ohio to Baltimore and New York in order to ensure that the army had what it needed.

The result was a success, though at a cost. The army found itself in excess of supplies, and the remainder was left behind for the use of hospitals. On 4 July, Haupt met up with Meade as the last bridge to Gettysburg was repaired. The next day, trains began to come in to give direct supplies and care to the soldiers. There, he saw what he believed to be Meade dragging his feet, not perusing the Army of Northern Virginia. Haupt would personally speak with President Lincoln on 6 July to both receive congratulations on his work, as well as to give Lincoln his own thoughts on the battle.

⁸⁷ Ibid. 216.

⁸⁸ Scott. The War of the Rebellion, Vol. 27 Part III. 369.

Haupt urged that the Army of the Potomac attack while Lee was pinned against the river. Haupt claimed that he could build a bridge across it in one day, and that Lee had engineers as skilled as Haupt. Lincoln in turn asked Haupt what would be required in order to ensure such effective use of the railroads in the future. The answer which Haupt gave was straightforward: Militarize all railroads in the country for the duration of the war.⁸⁹ Private railroads had screamed at the temporary takeover, and Haupt knew that such an action on such a scale would not be tolerated again. While Lincoln may have understood why Haupt made such a request, it could not be granted. A few months later in September 1863, Haupt resigned his position, his frustrations with the army having reached a peak.

Haupt was smart, honest, and strong-willed. He had a talent for both engineering and administration. Previous to his army service, Haupt had been overseeing construction of the Hoosac Tunnel in Massachusetts. He had become wealthy in railroad, mining and real estate ventures in Pennsylvania, but lost most of his fortune in bad business decisions and complicated politics surrounding the tunnel. The tunnel continued to be his fiscal albatross after the war but he had successful ventures in railroading in Pennsylvania and the West. He also built the nation's first extensive oil pipeline.⁹⁰

With Lee's retreat, the Confederates were once more forced from the Union, and the B&O faced the task of rebuilding. They had learned well from past experiences, however, and were well prepared for the day when rebuilding would come. Once more, materials were brought in from the Washington branch as well as from elsewhere, reserves of lumber, crosswise⁹¹, and bridge material being brought in. By August 1863, the B&O was once again operational.

⁸⁹ Haupt. Reminiscences of General Herman Haupt. 223-236.

⁹⁰ Pratt, Fletcher. Stanton: Lincoln's Secretary of War. Santa Barbara: Greenwood Press, 1963. 216.

⁹¹ Crosswise was lumber in a cross or X shape, used to strengthen bridges spanning large or deep rivers, canyons, etc.

The Gettysburg Campaign would be the first time in the war that the B&O had the chance to fight back and defend itself. Rogers Meigs, son of the Quartermaster General, suggested that the railroad produce iron cars capable of defending themselves in the event of attack. Working in two twelve hour shifts, B&O laborers worked around the clock to produce ironclad railcars armed with howitzers and six pound artillery pieces.

Iron rails were placed on flat cars to form a protective shell. At the ends of the flat cars were openings which allowed the artillery pieces to fire in three directions. Firing ports were also made so that infantry defending the cars could fire their own weapons without exposing themselves to danger. In just six days, five armored cars were produced. Most would be named after Union victories. The *Port Royal, Antietam, Vicksburg,* and *Gettysburg* would all soon take to the rails in defense of the Union and the B&O Railroad.⁹²



Figure 4. 1863 Photograph of Armored Railcar. Taken by Andrew J. Russel⁹³

The sixth of July would be the first time which these new ironclad trains would see

action. General Kenly was ordered to reoccupy the Maryland heights, a well-defended position

⁹² Toomey, The War Came by Train. 177.

⁹³ Russell, Andrew J. Atlas of the Historical Geography of the United States. 1863. Library of Congress, Washington D.C. Rebels destroyed Federal ironclad railcar at York. By Scott Mingus. N.p.: =, 2012. Web. 6 Mar. 2015.

http://www.yorkblog.com/cannonball/2012/03/15/rebels-destroyed-federal-ironclad-railcar-at-york/>.

taken by Lee during his advance. As Kenly's Maryland brigade ascended the heights, Rogers Meigs arrived with his "armored column." With cannon cars positioned at the front of each train, and flatbeds of protected infantry behind them, Meigs began to open fire on the heights. The attack was a success, and Kenly captured the heights. For the remainder of the war, Harpers Ferry would be the "home port" of the land-based ironclads. For the next year they would be assigned as protection for work crews building and repairing rail lines.

After Gettysburg, the B&O would go back to the familiar task of rebuilding. Union as well as Confederate soldiers had burned bridges and railcars during the Confederate advance, and it would take over a month before all damages were repaired.

One of the last major attacks on the B&O would come in the summer of 1864, almost a full year after the costly Gettysburg Campaign. General Jubal A. Early advanced into the Shenandoah, and would hold the area from July through September 1864. While in the valley, Early's troops removed select segments of track, destroyed telegraph lines, bridges, buildings, and rail cars.⁹⁴ As Early advanced toward Washington, advance forces entered the Washington Branch's territory and here also destroyed telegraph, burned camp trains, and destroyed other property of the B&O.⁹⁵ Early destroyed over thirty bridges, a half mile of track, and all platforms between Martinsburg and Hancock. As Early's forces appeared to withdraw in mid July, the B&O began repairs, only for their work to be undone as Early and his forces advanced once more in Late July, undoing all of the repairs that had been done in his absence. Over a distance of seventy-five miles they again destroyed telegraph, engine houses, bridges, and rolling stock, destroying eleven miles of track.⁹⁶ It was with the arrival of General Phillip Sheridan and the

⁹⁴ Garrett, John W. "Thirty Eighth Annual Report." 57-58.

⁹⁵ Ibid. 62.

⁹⁶ Ibid. 59-62.

Battle of Winchester that Early would be driven out and the last large-scale Confederate operations around the B&O Railroad brought to an end.

Despite Early's defeat, small-scale forces still acted to sabotage telegraph lines and destroy track and cars. Of great value were bridges, which could take days to repair. Also valuable were stretches of track, miles of which could be quickly torn up and demolished with barely a trace. One such noteworthy raider was Confederate Colonel John S. Mosby, who in late 1864 proved to be a constant thorn in the side of railroad operations. Known for incursions such as the "Greenback Raid" of October 1864, Mosby was infamous for slipping through Union lines with small forces. In the Greenback Raid Mosby captured a passenger train and took an estimated \$173,000 before destroying the train.⁹⁷ In a move worthy of 21st century theatrics, the train's boiler exploded as it left the rails.

Part III: Defense of the Railroads

Over the course of the war, a variety of different plans were enacted to try and protect the valuable railroads from damage and destruction. Never a true failure, but seldom a genuine success, defense of the railroads would face the same ills of political and incompetent commanders which the Army of the Potomac faced.

Defending the railroads was a herculean task. Never before had such a vital means of transportation and communication needed defending. There were no manuals on the matter, no past experiences upon which to draw. To make matters worse, they were under constant harassment not only by an aggressive opponent, but also aided by sympathetic locals as well as the land itself.

The geography of Virginia was a natural ally of the Confederates. With the main stem of the B&O passing through the lower Shenandoah Valley, the lines there were practically defenseless.

⁹⁷ Scott. The War of the Rebellion, Vol. 37 Part I. 383- 409.

Mirroring the curves of the Potomac River and the various tributary rivers which fed it, the railroad went through valleys which made convenient points of rendezvous which the Confederates could endlessly exploit.

To combat this, the Union needed to continuously occupy the Shenandoah Valley. Even then, the geography aided the Confederate forces. Entire armies could appear and vanish in the valleys, overwhelming forces charged with guarding the valley area. In this way Stonewall Jackson was able to swiftly defeat three Union armies in 1862. Divided by high mountains and low valleys, the Shenandoah was a perfect example of the importance of maneuver in the Civil War.⁹⁸ The area needed sheer volume of numbers in order to repel an attack of any magnitude. Because of this, the Confederates were able to use the Shenandoah to advance into Maryland and Pennsylvania nearly at will, and destroy great stretches of the B&O.

Throughout the war, the military tried a variety of methods to defend the railroads. Strategically, they defended those lines which allowed for expediency and speed of delivery. Tactically, though, the North tried many different possibilities. The first such experiment began in March of 1862. Military jurisdictions were established, with subordinate districts created and charged with the defense of a specific line of track. The top tier divisions were the Mountain Department, going from the Shenandoah to the Ohio River, and the Potomac Department, which focused primarily on the Washington area. In theory, these divisions meant that those defending them relied upon successful defense for their own supplies. In practice, though, the plan fell short. There was always constant temptation to use troops charged with defending the railroads to reinforce field armies.⁹⁹

⁹⁸ Ropes, The Story of the Civil War, Vol. I. 123-124.

⁹⁹ Scott. The War of the Rebellion, Vol. 12, Part III. 30-31.

Following Union defeats in 1862, these defects were examined and revised. The railroad departments were separated from the regular command structure. Defense of the Mountain and Potomac Departments(further divided into a "Middle" district in 1862) as well as the rest of the B&O railroad, were put under the command of General John E. Wool, an aged veteran of the army. Wool had exclusive control of all troops assigned to the defense of the railroad.¹⁰⁰

This had the effect of uniting command between the disparate districts. It did not, however, relieve tensions with the field commanders, who still viewed railroad troops as a reserve to be drawn upon when needed. These issues are evident in a dispatch which Wool sent to Secretary of War Stanton in July of 1862, where he complained about the infringements upon his command:¹⁰¹

Since I have assumed command I have found myself embarrassed by orders from Major-Generals Banks and Sigel, who, disregarding me as a commander, have frequently given orders for the removal of officers and troops on the Baltimore and Ohio railroad without the slightest notice to myself... This interference has compelled my to issue orders forbidding any officer on the roads placed under my charge from obeying any orders from any general without my sanction or approval, excepting supplies designed for the command of those generals...

While this maintained the integrity of Wool's command, it also halted the effective

cooperation between him and the commanders at the front. To alleviate this, certain key outposts and garrisons were taken from Wool's command structure and placed back in the command of

the field generals.¹⁰²

Another weakness in the defense of the railroads stemmed from the lack of influence which

Wool had beyond the railroads themselves. Wool was thus unable to respond to thrusts by

Confederate forces and pursue them as they withdrew from the area. This came from the

¹⁰⁰ Stanton, Edwin M. Special Orders No. 146 Issued June 27, 1862. Washington D.C.: U.S. Department of War, 1862.

¹⁰¹ Scott. The War of the Rebellion, Vol. 12, Part III. 477

¹⁰² Scott. *The War of the Rebellion*, Vol. 51 Part I. 713-714.

unfounded belief that the B&O was safely behind the lines. Such notions were destroyed with the Confederate advances in the Autumn of 1862.

As a result of this, in December 1862 the authority of the new commander of the railroads, General Schenck, was expanded to include the lower Shenandoah, the upper Potomac into Maryland, and all of Northwest Virginia.¹⁰³ More and more, the B&O was coming to be seen as an indispensable line of supply and operations. This was exemplified in the Spring of 1863, when additional troops were added to Schenk's command to reinforce and defend the rails.¹⁰⁴

While far better than previous incarnations, the newest defense structure under Schenk still had flaws. Even with 45,000 soldiers under his command, Schenk could not have concentration of force upon every mile of track and at every bridge. Small forces of Confederate raiders could still hit undefended stretches of rail, or overwhelm garrison forces at bridges and stations. Before a large enough force could respond, the raiders had gone as swiftly as they had arrived.¹⁰⁵ These issues made the War Department come up, once again, with a new plan.

The newest plan once again broke up the defense of the railroad into departments. What it allowed, however, was for the commanders to take offensive action in defense of the railroads with which they had been charged. This allowed for the concentration of force against raiders, and allowed for greater flexibility. Maintaining these theoretical advantages would prove to be another matter. Due to the continued small-scale attacks which plagued the rails, the new system again faced difficulty in handling the attacks.

¹⁰³ Scott. *The War of the Rebellion*, Vol. 21 Part I. 864-874.

¹⁰⁴ Scott. The War of the Rebellion, Vol. 25 Part II. 158-159.

¹⁰⁵ Scott. The War of the Rebellion, Vol. 25 Part II. 295.

In response to these issues, Federal authorities strengthened garrisons at several key stations and depots.¹⁰⁶ It was said that guards patrolled every quarter mile of track from the Eastern to Western ends of the B&O.¹⁰⁷

As the Confederates advanced in force in 1862, 1863, and 1864, those charged with defense of the railroad soon learned that it was not necessary to defend every yard of track with a thin blue line of troops. Instead, forces became concentrated at key points such as bridges, tunnels, and depots, which were of great value to both Union and Confederate forces. This had the effect of leaving great swathes of track undefended, it proved that the constant defense of the entire track was not needed. Rather, only vigilance supplied by regular railroad employees was needed to find destroyed track and have it repaired. Instead of small numbers of guards along the track who could be overwhelmed, defense of key areas became prominent, and concentration of force the norm.¹⁰⁸

Blockhouses also became a common sight in the opening months of 1863. Essentially the size of barns and constructed of large logs, they were approximately fifty feet square and twelve feet high. With a strong door and firing ports in the sides, a stone and earth wall was also thrown up around them to protect against artillery, with a ditch between the wall and the blockhouse. Obstacles such as trees, stakes, and pits were placed before the wall to further slow any attackers.¹⁰⁹

¹⁰⁶ Scott. *The War of the Rebellion*, Vol. 12 Part III. 24, 25, 28.

¹⁰⁷ Baltimore Sun, March 31, 1862.

¹⁰⁸ "Letters from Commanding Generals in Relation to Military Protection of Baltimore and Ohio Railroad and Chesapeake and Ohio Canal," in *Miscellaneous Documents of the House of Representatives*, 3d Sess. 37th Cong. No. 15. 4.

¹⁰⁹ Mackey, Robert R. *The Uncivil War: Irregular Warfare in the Upper South, 1861-1865.* Norman: University of Oklahoma Press, 2004. 232

As discussed previously, armored cars also came into use. Like the blockhouses, they were used to defend key areas of the track, and to add extra weight to attacking or defending troops in times of crises.¹¹⁰

Ultimately, a major factor in the constantly troubled defense of the B&O lay in the human element. The troops on the line were untested forces and raw militia sent to guard the rails for experience. Many regiments saw service on the B&O before being sent off to more lethal service in other theaters of the war.

Aside from seasoning forces, many railroad guards were simply dissatisfied with the deployment. These were men who had enlisted to see active service, not guard bridges and track which might never see a single shot fired during the entirety of the conflict. As a result, there were issues with discipline and morale. More than once a disorganized or dispirited guard regiment was driven from the field by the sudden appearance of hardened raiders and the Rebel Yell.¹¹¹

Unfortunately, the ultimate conclusion of the defense of the B&O was that unseasoned and undesirable soldiers were sent to guard the railways. Generals such as Wool were too old to be of effective field service. Schenk was there due to his ties to Ohio Republican politics. Franz Sigel gained favor due to his influence over the German immigrant population. Combined with the difficult terrain, the ultimate destiny of the B&O railroad lay with the soldiers at the front. Yet for long periods of time the line remained open. Much of the Western branch of the B&O beyond the Shenandoah remained unmolested, allowing supplies to travel South toward armies under the command of Grant, and East toward General Meade.

¹¹⁰ Scott. The War of the Rebellion, Vol. 37 Part II. 397.

¹¹¹ Scott. The War of the Rebellion, Vol. 25 Part II. 482.

Our supply of hardtack, sent with urgency from Columbus has, on the morning of July 5th 1863, found itself finally in Westminster, two days after serious fighting has ended, and a day after Lee began his withdrawal from Gettysburg. The train, crewed by engineers and firemen who have had almost no sleep in the last four days, comes to a stop at the station. They have made a winding journey across lengths of track which they normally would not, as the invading Confederates have made the traditional routes inaccessible. With many of the bridges and tracks still destroyed, the railroad to Gettysburg out of commission still, and Lee's forces still causing havoc along the railroads, much of the supplies must now be sent to the army via the traditional method of wagon and mule. The last leg of the journey must be done in the same way it has been since the Romans millennia ago: upon dirt roads and wagon wheels.

CHAPTER III: THE FINAL JOURNEY

While the most dangerous phase of the journey has been examined, the final few miles to the battlefield could be the most arduous. As was shown in chapter I, trains could travel six times faster than mules. Wagon trains were slower, less reliable, and incredibly exposed despite their proximity to the army. Poorly defended and unable to maneuver away from the roads, wagon trains were vulnerable to Confederate raiders, weather, and even something as simple as an irritable mule or a broken wheel. All of these could slow the wagon train down to a crawl, and the final miles of the journey could take days to complete.

Part I: Westminster

Although the route from Westminster to Gettysburg was less than thirty miles, it would take as much time or longer to finish this last leg of the journey as it took to get from Columbus to Westminster. The final thirty miles had difficulties unique to the situation which needed to be overcome as well. Forage for the animals, organizing and defending a wagon train stretching for miles, and finally getting the supplies to the regiments were all things to consider. More than at any other time, the supplies here are vulnerable. The enemy is closer than ever, and speed is no longer something which those moving the supplies can count on.

As the train and cars arrive at Westminster, they are greeted by a cacophony of noise and action. Likely, there is a train steaming out as this new one arrives, carrying away the wounded to hospitals in Washington D.C., Baltimore, or Philedelphia. With more than 45,000 killed and wounded, facilities for miles around were bursting with those in need of care. The engineers aboard the train would see even more soldiers lying upon the ground, waiting for the newest train to be unloaded and then loaded again with more wounded.

The efficiency of Haupt was again on display. The train would need water for the boilers and coal for the fires. It would need supplies unloaded and put into wagons, and the wounded would be brought in and taken away. In all of this Haupt was the master of controlled chaos.

In order to facilitate restocking the boilers with water and the engines with coal, Haupt employed volunteers from the civilian population. Excess coal was one of the first things which had been brought in to Westminster, and water was brought up from Longwell Run, a branch of the Patapsco River which ran through the town. As the trains arrived, bucket brigades filled the boilers once more, and coal was replenished for the outbound journey.¹¹² In this way the trains were able to leave almost as soon as the wounded were loaded on.

In addition, Haupt had at his disposal both his own men of the USMRR, as well as the rear guards of the Army of the Potomac. The 400 men of the USMRR were the planners and overseers, while the rear guard did the hard labor. The USMRR men would build temporary storage for arriving supplies before being sent off to repair the damage done by the invading Confederate forces.¹¹³ The rear guards would remain. Corps were expected to leave behind a regiment for defense of supplies and to assist in transportation. Unfortunately, this usually meant the dregs. Regiments which had been fought out (too depleted to be of use in the field), regiments which did not perform well, or were otherwise unable to be used in combat. This meant that Haupt was commanding soldiers who were bitter at being left behind, and those unable or unwilling to fight for whatever reason. It also meant an initial lack of cohesion between the disparate regiments.

During the American Civil War, a regiment was (at least ideally) commanded by a colonel. With seven infantry corps in the Army of the Potomac during Gettysburg, this meant

¹¹² Haupt. Reminiscences of General Herman Haupt. 216.

¹¹³ Ibid. 221.

seven regiments of varying strength and effectiveness behind the lines, with no officer in true command. Haupt's original plan seems to have been to give command to J.N. Du Barry, Superintendent of the Northern Central Railroad, though this man was relieved at his own request. As a result, Haupt placed one of his own men, Adna Anderson, in command of the USMRR men and the supply regiments.¹¹⁴

To these soldiers was given the arduous task of unloading the trains as they arrived, sorting what was on board, loading it onto the waiting wagon trains, and then loading the wounded back into the trains to depart. This was to be done five trains at a time, each with between 10 and 15 cars attached, at least four times a day. Each train could carry as much as 150 tons of supplies.¹¹⁵ Each crate held fifty pounds of hardtack, not including the weight of the crate itself. If we assume that a train is carrying nothing but hardtack, that means there are six thousand crates of hardtack on each train of 10-15 cars, with four or five trains per convoy. That means there are between 40-75 cars, and the potential for 30,000 crates in a single convoy. In a single day, this means that around 150,000 crates of supplies could arrive to be delivered to the army for support. It would have been back-breaking labor.

Once these supplies were unloaded, they would have been sorted according to what was inside. Hardtack, as per the U.S. Army Regulations of 1861, would have been labeled as "subsistence," and would be placed alongside desiccated vegetables, coffee, salt pork, and all of the other sundry foodstuffs used to feed man and beast.¹¹⁶

Waiting to be loaded up and sent on their way were the wagon teams, who would have numbered in the thousands. During the Overland Campaign less than a year later, Grant would

¹¹⁴ Ibid. 213-214.

¹¹⁵ Gabel, Christopher R. Railroad Generalship: Foundations of Civil War Strategy. Ft. Leavenworth: U.S. Army Command and General Staff College, 1997. 3. ¹¹⁶ U.S. War Dept. *Revised United States Army regulations of 1861*. Ann Arbor: University of Michigan Library, 2005. 301-02.

have 5,000 wagons, 56,000 horses and mules, and 2,800 head of cattle.¹¹⁷ While this was with the army on the move and not behind the lines, it gives one an idea of just how large the task was of keeping the army supplied and able to function. Westminster would have been flooded with wagons and pack animals waiting to be sent off to the Army of the Potomac. The braying of mules, the sounds of men cursing and yelling as they loaded supplies, the crack of the whip as the wagons began to move, would have been roaring in the ears if one stood at the heart of it all. It would have looked like madness as the trains arrived and were unloaded and sorted, and the wagons loaded up. Yet it did the job, for the Army of the Potomac, even at the height of the battle and the confusion, never had less than three days of rations.¹¹⁸

Part II: The Road

It is an understatement to say that the army was in constant need of supply. Keeping the army supplied was very expensive. A man ate 90 rations a month, and that would have been the poor fare of coffee, hardtack, and salt pork. He would also have craved vegetables, fruit, milk, fresh beef, and a host of other things that supplied the body. Imagine the amount of food required to feed an entire regiment, let alone an entire army. Tons of food were needed to keep the men fed, let alone the animals. For one Ohio regiment, over the course of one month, there was consumed or used 90 rations per man. In 1863, regiments averaged around 600-750 men. This means between 54,000 and 67,500 rations were consumed per regiment per month. In addition 5,000 rounds of ammunition were required by the 21st OVI for a three month period. Other items would also need to be replaced as they were lost or worn out. Hats, coats, pants, drawers, boots, stockings, greatcoats, and a wide variety of other supplies. This is only for the men in a typical infantry regiment. Cavalry regiments required much more. While the horses could feed on grass,

¹¹⁷ Welcher, Frank J. *The Union Army, 1861–1865 Organization and Operations*. Vol. 1, *The Eastern Theater*. Bloomington: Indiana University Press, 1989. 998-999.

¹¹⁸ Haupt. Reminiscences of General Herman Haupt. 213.

it would not give the same quality as oats, grain, or hay. The 2nd Brigade of Cavalry, for three months, required 12,000 pounds of oats, 55,450 pounds of hay, and 63,236 pounds of grain.¹¹⁹ All of this needed to be brought to the army for every regiment, if the forces concentrated there were to continue fighting.

As the wagon trains headed out from Westminster, they were often lightly guarded, unable to truly defend against a coordinated attack of much size. This is evidenced by Jeb Stuart, Lee's cavalry commander, and his capture of 140 wagons at Rockville, some 57 miles northeast of Gettysburg, on the 28th of June.¹²⁰ Stuart's ride was done intentionally and with a large amount of dash and display, to show just how ineffective his Union counterparts were in stopping him. All but in sight of the Union army, Stuart was able to raid with near impunity. Even so close to the main body of Union troops, this final leg of the journey was still fraught with peril.

In addition to being only lightly guarded, speed was not on the side of the wagon trains. Railroad trains were able to move faster than a horse, and at a constant speed. They could outrun them. During the Gettysburg campaign, the trains were also more heavily guarded. Wagon trains moved at a comparably sluggish pace of only two miles per hour. If a mule were injured, or a wagon broke a wheel or spoke, it could delay the entire train of hundreds or thousands of wagons for hours at a time. This made the wagon train vulnerable, stationary targets for opportunistic raiders such as Stuart. With the railroads inoperable or inaccessible closer to the front, however, there was no choice but to take the chance.

¹¹⁹ William S. Sullivan Collection, 1861-1866. 21st Ohio Volunteer Infantry. Box 6, Folder 6: Quarterly return of clothing, camp, and garrison equipage, March 31, 1863, June 30, 1863. Center for Archival Collections, Bowling Green State University. 22 hats, 41 coats, 67 pants, 85 drawers, 43 boots, 147 stockinhs, 16 greatcoats, and other goods were replaced. Warren Russel Papers. 2nd Brigade, First Divison, 11th Army Corps. Box 1, Folder 5: Monthly Report of Forage – March-Aug

^{1863.} Center for Archival Collections, Bowling Green State University.

¹²⁰ Wittenberg, Eric J., and J. David Petruzzi. Plenty of Blame to Go Around: Jeb Stuart's Controversial Ride to Gettysburg. New York: Savas Beatie, 2006. 130-131.

The roads themselves were an obstacle all their own which needed to be overcome. The wagon trains would be fortunate to find a road with crushed stone or gravel to move upon. If the army had been through, and wanted to keep using the road, the road might be macadamized. This process used smaller stones atop larger ones, then solidified with a binding agent. Under ideal circumstances this made for a fairly good road which wagons, animals, and people could travel on. The U.S. Army wanted roads put down quickly, however, and cared less for quality. Soldiers and animals were likely to be injured while travelling across the poorly constructed macadamized roads. More often, the roads were dirt, worn from the passage of hundreds of wagons, animals, and people. In the best conditions these roads were dusty, narrow, and rutted. After rain or when the snow melted, these roads became near impassable quagmires of mud, as thousands of animals and wagons tried to pass through carrying everything from hardtack to cannonballs. In the days following Gettysburg, rain did exactly this, making it all the more difficult for Meade to pursue Lee's retreating Army of Northern Virginia.¹²¹ In these situations, travel could be slowed to less than one mile per hour. So while the journey from Westminster to Gettysburg might be less than forty miles, it could take days of travel along narrow, rutted, boggy roads before the first wagons ever arrived in the camps.

As the wagon trains drew closer to the battlefield, the threat would only grow. Skirmishers, scouts, and cavalry would be spread out in smaller units, probing for weak points in the army's defenses, seeking spots to exploit and areas which could be struck to greatest effect. If the raid or attack had enough effect, it was capable of crippling the entire army, costing them initiative in a fight or the loss of deployable soldiers to the field due to lack of supplies, or the

¹²¹ Wittenberg, Eric J., J. David Petruzzi, and Michael F. Nugent. One Continuous Fight: The Retreat from Gettysburg and the Pursuit of Lee's Army of Northern Virginia, July 4–14, 1863. New York: Savas Beatie. 25-26.

need to guard additional supplies to replace those lost.¹²² At Gettysburg this would have been a problem for the Army of the Potomac, since the battle took place at an unexpected location, and so supply lines were hastily formed and were especially ill defended. Their one advantage was that the army was on home territory, and so were able to get supplies more quickly than Lee was able to. On the attack this would have been compounded by the need to defend extensive and lengthy supply lines.

Again, the railroads proved their value, and the armies (especially Union armies) worked hard to either stay near existing rail lines, or else construct them as they secured territory. During the Atlanta Campaign, Sherman's entire supply line consisted of a single-track railroad which ran over 450 miles from Louisville to his operations near Atlanta. Sherman said that the line did the work of 36,800 wagons and 220,800 mules.¹²³ Hundreds of miles from the actual base of supply, with resources streaming in from all across the country, armies were able to operate on a scale never before possible.

On the afternoon of July 5th, Haupt and his men repaired the last bridges and railroad lines, and linked Westminster and Gettysburg, allowing trains to arrive directly into the city. Wagon trains were streaming in as well, all carrying hundreds of tons of supplies to the Union army. As these supplies arrived, they would again need to be sorted, divided, and sent to the appropriate corps, divisions, brigades, and regiments.

Part III: Into the Hands of the Soldiers

As the wagons (and later, the trains) arrived at Gettysburg, they would be greeted by the Chief Quartermaster of the Army of the Potomac. With him would likely have been the Assistant

¹²² William S. Sullivan Collection. Oversize file 8 number 8.

¹²³ Gabel Railroad Generalship. 5.

Quartermaster, as well as a host of aides and assistants to log all of the materials arriving, where they were going, and in what quantity they were being sent.

Like everything else in the army, the distribution of supplies worked in a top-down fashion. The army had a chief quartermaster, as did every corps, division, brigade, and regiment. Our focus will be upon the Second Corps. With them was the 8th Ohio Volunteer Infantry, who saw heavy action during Pickett's Charge on 3 July. The 8th Ohio had been given a salute of arms as they returned to the lines after the fighting of 3 July.

The Chief Quartermaster of Second Corps was Lieutenant Colonel Bachelder. Bachelder had the responsibility of keeping record of everything the corps consumed, be it food, ammunition, clothes, or anything else used. He would report directly to the Chief Quartermaster of the Army of the Potomac, reporting what his corps needed. With the corps heavily engaged on the second and third day of fighting at Gettysburg, they would have been in need of nearly everything imaginable. Ammunition, food, water, bandages, ether, and medical supplies were all needed.¹²⁴

The corps quartermaster compiled his lists from those of the division quartermasters, who in turn received their lists from the brigades, and they theirs from the regiments. In this fashion the supply system was fairly efficient and, so long as the supplies were available, each unit down to the regiment was able to get what it needed.

Unfortunately, this was seldom the case. The army often received surplus of unneeded supplies, not enough of what was truly needed, or else poor quality items. As was brought up previously, hardtack could arrive moldy, stale, full of weevils and bugs, and otherwise entirely

¹²⁴ "Reorganization of the Quartermaster's Department, Army of the Potomac.; QUARTERMASTER'S DEPARTMENT, SECOND ARMY CORPS." *New York Times.* N.p., 10 Apr. 1864. Web. 22 Jan. 2015.

http://www.nytimes.com/1864/04/10/news/reorganization-quartermaster-s-department-army-potomac-quartermaster-s.html>

unappetizing to the soldiers in the field. Regimental quartermasters would have to request additional supplies, as those which they had received were unserviceable. This could be food which had decayed, animals unfit for service, damaged or destroyed weapons and ammunition, or anything else which had become damaged between the home front and arriving upon the field.¹²⁵ Supplies which did not pass inspection would usually be returned to the brigade quartermaster, and sent back up the line with the written reason for their return. Sometimes, as with hardtack, the soldiers had to simply deal with it. The Civil War is rife with stories of soldiers boiling their rations or soaking them in water, and then scooping the bugs out before eating.

Supplies filtered down through the ranks, from the corps quartermaster to division, and division to brigade, the brigade quartermaster. At last, the brigade quartermaster delegated supplies to each regimental quartermaster. At this final stage, each regiment typically had one or two wagons of supplies. While the quartermasters higher up would have been higher ranking officers – Lieutenant Colonels, Captains, etc - the regimental quartermaster would have been a lieutenant, or potentially a non-commissioned officer.¹²⁶ It is a very important task which has been delegated to somebody of comparatively low rank.

It was ultimately up to the regimental quartermasters to keep track of what their regiment was using from day to day, make accurate logs, and send those up the chain of command to be replaced. Consumables such as rations were fairly easy to keep track of, at least as far as hardtack and salt pork was concerned. You knew that a man was issued a set amount every day, and that was what he had. In the field, a soldier was given about one pound each of hardtack and salt pork, along with a small amount of desiccated vegetables or potatoes. In addition, this would

¹²⁵ Warren Russel Papers. Box 4, Folder 8.

¹²⁶ Hartzell, Stephen J. "ROSTER of the 8th Regt. Ohio Volunteer Infantry ." *History Notebook*. N.p., n.d. Web. 5 Nov. 2014. http://www.historynotebook.com/8thOVI.html.

be supplemented by beans or peas, rice, coffee, sugar, salt, condensed milk, and vinegar.¹²⁷ While the soldier might keep some of this for a later time – food was not always in abundant supply – the Quartermaster knew how much each soldier was given, and thus it was easy to request replacements. It was also fairly simply to know how much ammunition needed replacing, and other materials that were easy to keep track of. Clothes, canteens, hats, and other personal items were more difficult to keep track of, and doing so required individual soldiers to express a need for replacement.

Finally, the hardtack has arrived. The battered 8th Ohio Volunteer Infantry, who fought hard during the Battle of Gettysburg, are given additional supplies to feed the weary men and care for the wounded. After resting on July 4th, the day of the nation's independence, the 8th begins to rouse itself once more to pursue Robert E. Lee and the retreating Army of Northern Virginia. In doing so, they place additional ammunition in belt bags, and pocket squares of hardtack. It is entirely possible that some of the hardtack in the haversacks and pouches of Ohio men has come nearly 350 miles from Ohio, from the farms and bakeries which they knew back home.

¹²⁷ Ken Burns - The Civil War - PBS - Summer 2004 - http://www.pbs.org/civilwar/film/

CONCLUSION

It is argued that the American Civil War is one of the first modern wars. A war of logistics and of machines. Had the war been fought fifteen years prior, when the Mexican-American war was waged, the outcome may have been very different. The North had more soldiers, more materials, and a greater ability to produce very nearly everything. Yet without the logistical means to send those troops, supplies, and materials to the front, it means little. Without the use of the trains, many states in the North may have had a much more limited role. States such as Ohio, Pennsylvania, and New York, which contributed much to the war, would possibly have sat on the sidelines, too far removed from the conflict to play a key role. Only through the use of the railroads were states such as these capable of sending troops and supplies to battlefields hundreds of miles away. After the American Civil War, the use of the railroad in warfare only became more prevelant. The German Empire was founded on the backs of the trains, as the defeat of France led to the declaration of the Germanic Power. During World War II, the Red Army had ten million soldiers fighting against Nazi Germany on the Eastern Front. The American Lend-Lease program sent thousands of locomotives and railcars to Russia, which gave that nation the ability to send enough soldiers to the front to overwhelm the Wehrmacht.¹²⁸

The Union may have had twice the number of soldiers, two and a half times the population, and ninety percent of the manufacturing output, but that means nothing if that capability cannot be translated into materials in the hands of the soldiers doing the fighting. This is where the North truly won the war. At the outset of the war, the North had seventy-one percent of the nation's railroad tracks, and laid down hundreds of miles more over the course of the

¹²⁸ Kotelnokov B.P. "Using Anglo-American Aviation Equipment in USSR during WWII and its impact on Soviet Aviation Development." 30 July 1993, Issue 65, p. 58.
war.¹²⁹ This advantage allowed the Union to leverage production from across the country, and put it toward winning the war. States far removed from the war, which may otherwise have played minor roles, instead sent thousands of soldiers and tons of supplies into the hands of soldiers in Maryland, Virginia, Tennessee, Mississippi, and anywhere else that the soldiers were sent. Where the Mexican-American War was fought primarily by states in the southwest, the Civil War was fought by every state in the Union. Where Napoleon, the great general studied by every West Pointer, was supplied by wagon trains stretching for miles, the Civil War was supplied by trains, with supplies placed almost directly into the hands of the soldiers.

When looked at from this perspective, the Southern cause was doomed nearly from the start. From the onset, one of the things the Confederacy relied upon as an advantage was the size of their newborn country. It was simply too big to be conquered, it was thought. In the time of Napoleon, that may have been true. Soldiers marching on foot and supplied by wagon trains, which needed to go hundreds of miles would not have worked. It happened to Napoleon when he invaded Russia. It would probably have happened to an invading Union force, if they had needed to do the same.

Such, though, was not to be. As Union forces advanced, men such as Herman Haupt and the thousands of men in the USMRR repaired or laid down rail lines to keep them supplied. A single rail line, stretching hundreds of miles, could do the work of tens of thousands of pack animals and wagons. The Union had more rail lines by orders of magnitude. The Union not only had more men and materials, but through standardized railroads, more miles of rail, and better use and expansion of this great asset, they could send them where they were needed faster than

¹²⁹ Arrington, Benjamin T. "Industry and Economy during the Civil War." *National Park Service*. N.p., 21 Mar. 2015. Web. 23 Feb. 2015. http://www.nps.gov/resources/story.htm?id=251.

the Confederacy could ever hope to achieve. From the farm to the field of battle, the North won the war because of the trains.

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