# The Civil War Diet

by

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#### **Abstract**

The soldier's diet in the Civil War has been known as poor, and a number of illnesses and disorders have been associated with it. However, a nutritional analysis placed within the context of mid-nineteenth century American nutrition has been lacking. Such an approach makes clear the connection between illness and diet during the war for the average soldier and defines the importance of nutrition's role in the war. It also provides a bridge from the American diet to the soldier diet, outlining correlations between the two and examining the influence of physicians, chemists, and health reformers on the Civil War diet.

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#### INTRODUCTION

America saw the loss of 260,000 of her sons in the Civil War. The number one killer was not the bullet, but rather disease. Illness accounted for sixty percent of all Union fatalities and sixty-seven percent of all deaths among Southern troops. The role played by unsanitary conditions, poor hygienic practices, and bacterial infections- all of which could be interrelated- should not be understressed. However, poor diets and inadequate nutrition, which were just as prevalent as disease among the men, had a strong correlation to much sickness during the war. As Civil War historian William C. Davis wrote, "[n]o one completely escaped the rotten meat, the worm-infested bread, the illness from want of fruits and vegetables, or the utter absence of even the basic principles of nutrition and a balanced diet."

Civil War nutrition has been a topic that many authors have flirted with but never really delved into in any great depth. The subject earns some recognition in Richard Cummings' 1940 work *American and His Food*, but only briefly. Richard Hooker's *Food and Drink in America: A History*, released in 1981, treats the topic with no more importance that Cummings- simply a chapter in a chronological account of America's eating habits. In *Hardtack and Homefries: An Uncommon History of American Cooks and Meals*, Barbara Haber only discusses hospital nutrition during the war. Soldiers' diets receive more attention in Mary Gillett's *Army Medical Department: 1818-1865*, the middle piece of a three-volume work. Gillett relates inadequate nutrition to the poor health of the soldiers but gives the subject more passing mention in a medical rather than nutritional account.

<sup>&</sup>lt;sup>1</sup> William C. Davis, A Taste for War: The Culinary History of the Blue and the Gray (Mechanicsburg, PA: 2003), ix.

In 2002 Alfred Bollet released *Civil War Medicine: Challenges and Triumphs*, a medical account of the war. Though the focus of the book is not on nutrition's impact, he gives it more space than did Gillett and in particular describes the connection between nutrition and certain afflictions. However, like his predecessors, Bollet gives very little attention to the actual diet of the soldiers. The following year this subject received its due focus in Davis' *A Taste for War: The Culinary History of the Blue and the Gray*. In his book, Davis outlines the diet of the soldiers, detailing the different foods and their sources, methods of preparation, and the difficulty in supplying the men with adequate provisions; he even includes recipes for various dishes. Davis concludes that while the diets of the soldiers were for the most part all together lacking, they did not contribute decisively to the outcome of the war.

"The biggest impact of food on the war, one still elusive of precise measurements, was its negative contribution through malnutrition," wrote Davis. This idea provided the impetus for this thesis. Absent in both Bollet's and Davis' works are nutritional analyses of the soldiers' diets and a framework of mid-nineteenth century nutritional habits and beliefs. The latter provides a connection between the American diet and the soldier diet as well as establishing an understanding of contemporary perceptions of nutrition and their relation to the war. Through analysis, the soldiers' diets can be explained in terms of nutritional sufficiency or insufficiency. The intake of macronutrients- fats, carbohydrates, and protein- as well as micronutrients- vitamins and minerals- can be compared to recommended values based on the average soldier's biostatistics and daily needs to determine the adequacy of his diet. Biostatistics in this sense refers to the average soldier's age, height, and weight, while daily needs is determined by daily caloric

expenditures- how many calories he burned in one day. Such an approach to discussing the average soldier during the Civil War creates a certain connection to the present-day public, when Americans are becoming more conscious of their nutritional intake and can relate to others in terms of calories and carbohydrates.<sup>2</sup>

The average soldier in this work is defined as the private or non-commissioned officer of the infantry. Officers generally ate better, and typically the higher-ranked the officer, the better he ate. Above the company level, they also usually did not march with their men, but instead rode horses. So too did the cavalry, which excludes them from the definition of the average soldier used in this thesis. The artillery often rode either on the caissons or horses hauling the guns.

The amount of macronutrients consumed in one day determines a person's daily caloric intake. One gram of fat yields nine Calories, while carbohydrates and protein provide four Calories per gram. In nutrition, a Calorie refers to one kilocalorie and is often written simply as calorie, which is how it will be used in the rest of this thesis. The activities performed by a person's body and the energy required in one day yields a daily caloric expenditure. Therefore, the recommended caloric intake is dictated by the recommended caloric expenditure.

The average soldier did not perform the same daily functions for the entire duration of the war. At times he was expending or burning more calories, such as during training camp or marching, than at others. Likewise, his diet often changed as well, including items on some days that he lacked on others. As such, no one value can be determined for daily caloric intake and daily caloric expenditure, and it will be shown

<sup>&</sup>lt;sup>2</sup> Davis, *Taste for War*, 126.

that at times the average soldier ate enough calories for his daily needs, and at times he did not.

Micronutrients, unlike macronutrients, are determined mostly by age and sex for normal populations. Therefore, these remained constant throughout. It should be noted that aging and weight loss will be factored into the nutritional needs of the average soldier. While the diets of the men more than sufficed in meeting recommended levels of some vitamins and minerals, it seriously lacked in others.<sup>3</sup>

Just as the focused definition excludes officers and cavalry, and artillery, the navy, prison camps, and black soldiers are not included. These populations are better left for a separate work where they would receive the amount of space and focus deserving of them. Absent in the discussion of diets and nutrition are certain items such as coffee and alcohol. The caffeine in coffee has thermogenic and diuretic effects that can impact dietary intake, but at such a level that it would not lend itself to a more comprehensive understanding of the nutrition's impact on health. Furthermore, Confederate units quickly ran short on coffee and many used peanuts, rye, and other substitutes in their place. The amount of carbohydrates such items would add to the diet is vague, because not only is the total quantity consumed in one sitting uncertain, but so too is the identity of the substitute, how much was used, and how often. Alcohol, though removed from the ration officially and prohibited in camp, was on occasion issued by the officers, and often sold by sutlers. Though it does provide seven calories per gram and also acts as a diuretic, it yields no nutritional benefits and is known as an 'empty calorie.'

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<sup>&</sup>lt;sup>3</sup> By the use of normal populations, lactating and pregnant women have been excluded. The micronutrient requirements for the average soldier at the beginning of the war would be the same at the end, because he would not have changed age brackets, even with four years of aging.

<sup>&</sup>lt;sup>4</sup> Substances with thermogenic properties temporarily enhance the body's metabolism, the process of

The staples of the rations issued the men had been in place well before the outbreak of the Civil War and were often similar to the staples of the American diet. However, logistical difficulties in supplying large armies and mobility necessitated a limited variety in the average soldier's diet. Other problems arose that further diminished an already inherently-deficient ration, creating nutritional insufficiencies. Attempts to seek outside food sources yielded little substantial improvement for the average soldier, resulting in widespread deficiency disorders and disease. Diagnoses and treatments prescribed by medical officers and advisors in the armies often reflected contemporary nutritional beliefs. Their recommendations at times provided temporary relief, but the lack of knowledge of micronutrients and the ignorance of military officers often thwarted their efforts and allowed dietary deficiencies to persist, having a serious impact of the health of the army.

The Iron and Stonewall Brigades are used as case study units to represent the armies of the North and South respectively. The men of both brigades left behind a wealth of letters and memoirs that lends itself to the development of diet over the course of the war. Though the soldiers of the two units became renowned as exceptional fighters, they were not exempt from the nutritional deficiencies that plagued their brothers-in-arms.

The Iron Brigade first formed under General Rufus King in October 1861 as part of the Army of the Potomac and was comprised of the 2<sup>nd</sup>, 6<sup>th</sup>, and 7<sup>th</sup> Wisconsin and the 19<sup>th</sup> Indiana regiments. Battery B of the 4<sup>th</sup> U.S. Light Artillery later became attached to

the brigade. The unit became physically distinguished by their black felt Hardee hats, which they wore in the place of the regulation blue kepis. The men of the Black Hat Brigade, as they became called, first saw action at Brawner's Farm on August 26, 1862, facing the Stonewall Brigade. Four days later they were again engaged at Second Manassas. On September 14 at South Mountain the unit earned its name the 'Iron Brigade' from its steadfast resolve and fierce fighting. The brigade lived up to its name at Antietam three days later and at Gettysburg the following July, where it helped to hold off two corps from General Robert E. Lee's army long enough for the Union army to establish defensive positions. Even with the addition of the its newest member, the 24<sup>th</sup> Michigan, the brigade was effectively destroyed at Gettysburg, suffering over sixty percent casualties. The Iron Brigade would retain its name throughout the war, but during the last summer it would be reorganized and consolidated with other units.

Under the leadership of General Thomas Jackson, the 2<sup>nd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 27<sup>th</sup>, and 33<sup>rd</sup>

Virginia regiments first saw action at First Manassas on July 21, 1861, where both they and their commander earned the nickname 'Stonewall.' The Rockbrigde Artillery was also attached to the brigade, and in late fall that year they moved over the Blue Ridge Mountains and fought with Jackson's army in the Shenandoah Valley. The following June, Jackson's army crossed back over the mountains and joined General Lee's Army of Northern Virginia. The brigade fought with Lee until after the fighting at the Bloody Angle at Spotsylvania on May 14, 1864 when it ceased to function as an independent unit and, like the Iron Brigade, was consolidated.<sup>5</sup>

Chapter 1 discusses the mid-nineteenth century diet of America and the prevailing notions of nutrition as held by physicians, chemists, and several of the outspoken

<sup>&</sup>lt;sup>5</sup> James I. Robertson, Jr., *Stonewall Brigade* (Baton Rouge, LA: 1963), 226.

members of the temperance movement. In chapter 2, the diets of the soldiers are defined and analyzed by nutritional content and in comparison to caloric expenditures. Their relation to prewar diets is also illustrated. The final chapter demonstrates the impact nutrition had not only on the health of the average solider but also other areas such as battles and even corpses.

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#### CHAPTER 1

### MEAT AND GREASE: AMERICAN DIET

The American diet in the mid-nineteenth century was governed by regional and social differences and preferences. The North had its rye breads and Irish potatoes; the South its cornmeal and sweet potatoes. Game was more prevalent on the tables in some areas, while other locales depended almost solely upon domestic animals. The poor could not afford certain luxuries enjoyed by the more affluent. Even the coming of the railroad in the 1840s and the improved shipping of foodstuffs that came with it had not quite erased these boundaries by the outbreak of the Civil War. However, overall trends existed to create some form of an American diet. Meat and grains were the chief items followed by some vegetables and fruit.

The temperance movement of the 1830s and early 1840s made its impact felt in several areas. Milk, coffee, and other beverages increased in usage as alcohol consumption decreased. A number of physicians and health reformers took up the cause of vegetarianism, and the writings and ideas that came from this period influenced many surgeons and physicians who later dedicated their services to the armies in the Civil War. However, the extremist approach of some in decreasing meat consumption fell mostly on deaf ears, though vegetables became more common in the diet of many.

Those who made their way out West lived upon a comparatively meager diet, limited in variety and nutriment. Their situation improved little upon reaching their destination, as these regions were less developed and lacked the same available food market as back East, and the logistics in supplying these areas was problematic and often

inefficient. Both North and South, and the latter more so, found themselves facing these same problems during the war, and the diet of the average soldier suffered for it.

## **The American Diet**

The staples of the mid-nineteenth century American diet remained much as they were two hundred years before. Cultural influences from other countries, such as French cuisine, were for the most part minimal and would not become more prominent until after the Civil War. Prior to the war French influence began to gain popularity, but only among the wealthy; to most Americans at the time it remained a relatively uninfluential part of the diet.<sup>1</sup>

German culture saw more impact in the middle class, mostly as a result of German emigration to the States. Many immigrants became tavern, saloon, or grocery owners or bakers. A number of German foods found their way into stomachs of Americans, such as lager beer, pumpernickel bread, liverwurst, and hamburgers, but like French cuisine these would not enter into the mainstream American diet until after the war.<sup>2</sup>

Most Americans regarded the Irish as generally poor cooks with little variety to their diet of Irish potatoes, oatmeal, buttermilk, and vegetables. They are very little meat, mostly because few could afford it in Ireland. America, however, was not Ireland.<sup>3</sup>

Americans had a propensity for meat and grease, according to theology historian Daniel Sack. Meat was very prominent in the American diet, with pork being the most popular. Beef came second and was more prominent in the North. Some of the most

<sup>&</sup>lt;sup>1</sup> Richard J. Hooker, Food and Drink in America: A History (Indianapolis, IN: 1981), 104-06.

<sup>&</sup>lt;sup>2</sup> Ibid, 106-07.

<sup>&</sup>lt;sup>3</sup> Ibid. 107-08.

popular methods of preparing and serving meat included corning, stewing, boiling, frying, and baking in either butter or lard. Meat and grease, indeed.<sup>4</sup>

Throughout the country, cornmeal was the most popular grain product, used mostly for breads but also for gruels, hoecakes, and other dishes. Only during the 1850s did wheat become a popular national grain used for baking. It was the appearance of baking soda during this time that allowed the breads to rise.<sup>5</sup>

"Compared to meat, the role of vegetables was negligible," wrote food historian Richard Hooker. This was particularly true up to the 1840s, and in fact during the midnineteenth century, the vegetable rarely ever achieved any other status than as a complement to meat dishes for most Americans. Of all vegetables, most Americans preferred the potato, which they prepared in a number of ways such as fried, boiled, mashed, and made into cakes. Sweet corn was another rather popular vegetable.

Tomatoes, however, were rarely eaten, as were salads. When these were eaten, they were usually cooked, as was true for most vegetables.

Fruits enjoyed only slightly more prominence in the American diet. Apples, grapes, peaches, strawberries, and other types of berries were most popular, but many Americans still regarded fruit with some suspicion. Polluted water sources used to rinse fruit and the fact that fruit was eaten most during the summer when outbreaks of cholera, diarrhea, and other diseases were common, most likely contributed to this notion.

<sup>6</sup> Ibid, 117-19; Sokolow, Eros and Modernization, 115.

<sup>&</sup>lt;sup>4</sup> Daniel Sack, Whitebread Protestants: Food and Religion in American Culture (New York, NY: 2000), 188; Jayme A. Sokolow, Eros and Modernization: Sylvester Graham, Health Reform, and the Origins of Victorian Sexuality in America (Cranbury, NJ: 1983), 119; Hooker, Food and Drink, 112-13; Hillel Schwartz, Never Satisfied: A Cultural History of Diets, Fantasies, and Fat (New York, NY: 1986), 41.

<sup>&</sup>lt;sup>5</sup> Hooker, *Food and Drink*, 119-20.

Bananas and tropical fruits were slowly finding their way into the marketplaces but had little impact on diet by the outbreak of the war.<sup>7</sup>

For dessert most people served fruits as well as other sweets. Sugary foodstuffs had been a popular part of the American diet since its emergence in the seventeenth century and had not lost any of their appeal by the mid-1800s. Puddings, pies, cakes, ice cream, as well as other sweet dishes were well-liked by most Americans and could be served at any meal. Many even used sweeteners such as molasses for flavoring in main dishes; other popular flavoring agents included butter, catsup, salt, pepper, and even pork.<sup>8</sup>

Despite national characteristics, prior to the 1840s, the perishable nature of food meant most Americans ate what was produced either by themselves, or what came from a relatively close location. Inadequate shipping and preservation methods and the costliness of shipping in bulk only allowed regional dietary differences that had developed 200 years previous to continue. Even up to the Civil War these differences were evident.

#### Regional differences in diet

Diet trends distinguished themselves during the mid-1800s by type of location as well as geographic location, although in some cases these two tended to be the same. The urban diet consisted mostly of meat, refined bread, and potatoes, and most urbanities looked to the markets and street vendors for their eatables. Many of the large cities had markets that boasted variety, but a number of markets could be only so various in the

<sup>&</sup>lt;sup>7</sup> Hooker, *Food and Drink*, 125-26.

<sup>&</sup>lt;sup>8</sup> Schwartz, Never Satisfied, 42; Hooker, Food and Drink, 120-22.

early decades of the century, given the perishable nature of most goods. Because of the difficulty in supplying fruits, vegetables, milk, and other such items in bulk, prior to the 1840s, most rural diets were likely better, with their gardens of potatoes, turnips, beans and peas.<sup>9</sup>

During the mid-1800s, urban and rural were descriptive terms that could in a general sense be replaced with North and South. This is not to say the South lacked any cities; indeed, New Orleans, Louisiana and Charleston, South Carolina, were among the largest twenty-five cities in the country in 1860. However, these two ranked six and twenty-two, respectively, and even with Richmond, Virginia, the South only possessed three of the top twenty-five cities. At this time, twenty-six percent of all Northerners and only ten percent of Southerners lived in cities; urbanity linked itself more with the North than the South.<sup>10</sup>

The North itself can be subdivided into varying regions-- New England, the Middle Atlantic, and the Northwest. Though beef was widely used, followed by lamb and mutton, seafood played a large role in the diet of a New Englander. The fish of choice for most was cod, and shellfish were also very popular. Many enjoyed chowder, a hallmark of New England eating, but favored even over this was the oyster, a dish not

<sup>&</sup>lt;sup>9</sup> Sokolow, Eros and Modernization, 114-15; Richard O. Cummings, The American and His Food (Chicago, IL: 1940), 27-28; Hooker, Food and Drink, 98; Sarah F. McMahon, "A Comfortable Subsistence: The Changing Composition of Diet in Rural New England, 1620-1840," The William and Mary Quarterly 42 (January 1985), 40-41; Sam Hillard, "Hog Meat and Cornpone: Food Habits in the Ante-Bellum South," Proceedings of the American Philosophical Society, 113 (February 1969), 10.

Margaret Wagner, The Library of Congress Civil War Desk Reference (New York, NY: 2002), 71-72; Baltimore, Maryland, St. Louis, Missouri, and Louisville, Kentucky were also among the top twenty-five most populated American cities in 1860 at four, eight, and twelve, respectively. Even though these three cities were in Border States, Maryland, Missouri, and Kentucky officially remained in the Union.

only enjoyed in New England, but throughout the country. Pork saw its largest usage during the winter and as a flavor-enhancer to dishes.<sup>11</sup>

The main vegetables were limited to corn, dried peas, dried beans, and potatoes; leafy greens typically did not appear on the plates of New Englanders. Corn could also be used in two types of bread-- cornbread and 'the third bread.' Cornbread, of course, consists of just corn as its grain source, but 'the third bread' consisted of rye, wheat, and corn in equal thirds. The most popular bread, however, was rye.<sup>12</sup>

New York, New Jersey, Pennsylvania, and Delaware made up the Middle Atlantic, and with its geography, their diet was almost a blending or middle-ground between the New England and the South. Most favored pork and fried foods. Cabbage was quite frequent as were potatoes, which people used for breads and soups among other dishes. Because wheat grew better in this region than in New England, it was a more prominent grain and bread, though rye still remained popular. 13

Just as in the rest of the North, beef and pork were the meats of choice in the Northwest. Pork however, was used more as main dish and less as a flavorer; that role went to butter. One soldier from the Sixth Wisconsin remembered many suppers of salt pork and buckwheat cakes and dinners of salt pork and boiled potatoes as a child. Many also hunted wild game, and veal was well-liked; after the deer became more scarce, a number of Northwesterners began hunting squirrel, which were plentiful.

Northwesterners also enjoyed a wider variety of vegetables, and most favored the Irish

<sup>&</sup>lt;sup>11</sup> Hooker, Food and Drink, 114-15, 168-70; Sokolow, Eros and Modernization, 114; Cummings, The American, 27.

<sup>&</sup>lt;sup>12</sup> Hooker, *Food and Drink*, 169-70; McMahon, "A Comfortable Subsistence," 52, 58; Cummings, *American*. 27.

<sup>&</sup>lt;sup>13</sup> Hooker, *Food and Drink*, 170-71.

potato. As the region became the country's largest producer of this grain, wheat found its way into more breads and other dishes than did corn.<sup>14</sup>

Just as the North, the South could be subdivided into a number of regions, but the clearest dietary lines of demarcation were between the states along and near the Gulf of Mexico and everywhere else in the South. These states developed their characteristic Creole style of dishes with a diet based on rice, fish, shellfish, tropical fruits, and vegetables.<sup>15</sup>

Other Southern states enjoyed seafood as well, especially the coastal states such as Virginia, the Carolinas, and Georgia. Pork was the ever popular meat of the South and was typically eaten salted. There was little fresh meat, including beef; most of the cows, instead, were used for dairy. Among the poorer whites in the South, beef most likely was not common in their diet. Poultry added some variety, but like beef, was less prevalent among the less affluent. As in the Gulf states, rice was the staple grain in Georgia and the Carolinas. Unlike the Gulf states, however, corn also found its way into the diet of these states, as it did throughout most of the South and was used chiefly for cornbread, the most popular bread in the South. As the Northwest had the Irish potato, the South had the sweet potato. Most Southerners preferred this over all other vegetables, just as they preferred the peach over all other fruit.<sup>16</sup>

## Land of abundance

One of the things that amazed European visitors to the United States was the great amount of food Americans ate. "In the eyes of ... observers, especially European visitors,

<sup>&</sup>lt;sup>14</sup> Ibid, 177-78; William H. Washburn, The Life and Writings of Jerome A. Watrous: Soldier-Reporter Adjutant of the Iron Brigade (Appleton, WI: 1992), 7, 10, 15; Cummings, The American, 112.

<sup>&</sup>lt;sup>15</sup> Hooker, Food and Drink, 174.

<sup>&</sup>lt;sup>16</sup> Ibid, 117, 125, 172-74; Hillard, "Hog Meat and Cornpone," 5-7; Sokolow, Eros and Modernization, 114.

Americans took almost obscene advantage of this plenty [of food sources]...The

American way of eating...drew on the abundance of the continent," claimed historian

Jayme Sokolow. Americans, indeed, did eat abundantly, especially of meat. This could
be served three to four times a day, and in fact, per capita meat consumption from 1830
to 1839 was 178 pounds per year, a level of consumption that would not be reached again
until the 1970s.<sup>17</sup>

This abundance was especially evident at dinner parties or special gatherings. A certain dinner party in Boston had as its first course, cod, parsnips, jelly, pies, and marrow pudding. Second course was turkey, scalloped oysters, roast rabbit, wild duck, lamb, smelts, mutton, vegetables, cherry tarts, and stewed pippins. Of course, there was always room for dessert of ice cream.<sup>18</sup>

Not one to be outdone in gluttonous eating, Virginians entertained their guests with just as much food. The following items filled the table of one party at a plantation:

...Virginia hams, saddle of mutton, turkey, canvasback ducks, beef, oysters, the choicest celery, sparkling champagne, desserts of plum pudding, tarts, ice cream, peaches preserved in brandy, figs, almonds, raisins, the richest Madeira, the best port, the softest Malmsey, and innumerable other delicacies.<sup>19</sup>

This habit of dietary overindulgence began to capture the concerns of a number of people in the early 1830s, people whose concerns already lay with other perceived social ills and who were part of a social activist group known as the temperance movement.

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<sup>&</sup>lt;sup>17</sup> Sack, Whitebread Protestants, 187; Sokolow, Eros and Modernization, 115; Schwartz, Never Satisfied, 41.

<sup>&</sup>lt;sup>18</sup> Hooker, *Food and Drink*, 155.

<sup>&</sup>lt;sup>19</sup> Ibid, 155.

## **The Temperance Movement**

With is greatest support in the Northeast, the temperance movement was focused mostly upon the growing consumption of alcohol, citing it as a social ill that needed reforming. The period from 1790 to 1830 witnessed an incredible use of alcohol, with a per capita consumption of 5.9 gallons in 1790 and a slightly lower per capita of 5.0 in 1830. As a result of the temperance movement this number dropped to 2.0 gallons by 1845. With decreasing alcoholic consumption, a number of other drinks began to take its place.<sup>20</sup>

In addition to coffee and tea, milk consumption increased, but prior to the 1840s, almost all milk in cities came from cows housed in stables within city limits and fed distillery mash. Furthermore, merchants, looking to maximize profits, would add other ingredients to the milk, such as water to expand the volume and plaster of Paris or chalk to improve its color. This kind of doctored milk became known as swill milk, and it was not the only food item being tainted. Urbanites would also tend to purchase their bread from markets, bread that was mass produced with commercial flour. Because the prices of this flour tended to fluctuate, commercial bakers, like milk merchants, would turn to adulteration to make an extra dollar. Bakers often mixed flour with zinc or alum, using the familiar plaster of Paris or chalk to hide their dishonest deeds.<sup>21</sup>

As with alcohol consumption the temperance advocates turned their sights to the growing problem of food adulteration in cities, as well as a number of other areas they felt threatened American society, such as slavery, growing markets, and dietary habits.

<sup>20</sup> Hooker, Food and Drink, 103-04, 129-30; Sokolow, Eros and Modernization, 119; James Henretta, America: A Concise History, Second Edition (Boston, MA: 2002), 303.

<sup>&</sup>lt;sup>21</sup> Cummings, *The American*, 53, 55; Hooker, *Food and Drink*, 98, 102, 129; Sokolow, *Eros and Modernization*, 115; Stephen Nissenbaum, *Sex, Diet, and Debility in Jacksonian America: Sylvester Graham and Health Reform* (Westport, CT: 1980), 4, 6.

In this sense the movement became one of general reform, with one of its most prominent supporters a New Jersey Presbyterian minister remembered best for a cracker.

### Sylvester Graham and the health reformers

Less than two years after being ordained a minister, Sylvester Graham decided to take up the cause of the temperance movement, starting his lecturers in Philadelphia in 1830. Rather than restrict his teachings to temperance, Graham looked to reform the diet of many Americans, conjecturing that if alcohol led to the downfall of many, surely poor eating habits must have done the same. Graham viewed the favoring of meat and excessive eating as causes of a number of ills, both social and physical.

All kinds of stimulating and heating substances; high-seasoned foods; rich dishes; the free use of flesh; and even the excess of aliment; all, more or less,- and some to a very good degree-increase the concupiscent excitability and sensibility of the genital organs, and augment their influence on the functions of organic life, and on the intellectual and moral facilities.<sup>22</sup>

In short, improper eating made people sex-craved and morally deviant. It robbed the human body of its health and vigor and led to masturbation and even excess marital sex. These in turn could cause a list of afflictions and diseases including indigestion, blindness, epilepsy, and insanity.<sup>23</sup>

Dyspepsia, an uncomfortable sensation in the stomach, was a condition of general concern during the period. Graham claimed the human body contained two types of nerves- the brain and spinal marrow as one, and the ganglions and plexuses as the other.

James C. Whorton, Crusaders for Fitness: The History of American Health Reformers (Princeton, NJ: 1982), 39; Richard H. Shryock, "Sylvester Graham and the Popular Health Movement, 1830-1870," The Mississippi Valley Historical Review 18 (September 1931), 172-73; Hooker, Food and Drink, 103; Nissenbaum, Sex, Diet, and Debility, 100; Sokolow, Eros and Modernization, 114; Graham, Lecture, 35.

<sup>&</sup>lt;sup>22</sup> Sylvester Graham, A Lecture to Young Men, Reprint (1833; repr., New York, NY: 1974), 18-19.

Because Graham saw the stomach as the focal point of the latter group, which was responsible for innervating all the other major organs, these intestinal afflictions could manifest themselves and cause disorders elsewhere in the body.

The stomach being more immediately connected with the great centre of the nerves of organic life, and more largely supplied with nerves and blood-vessels than any other organ in the body, may be considered the grand central organ, whose peculiar endowments, relations and duties are such as to render it of the utmost importance to the general system...<sup>24</sup>

Without reform of eating habits, inflammation and consumption of the bowels could lead to disorders of various other organs via the nervous system and could ultimately result in death.<sup>25</sup>

Rather than continuing their current dietary trend, Graham claimed people should instead "subsist on a plain, simple, unstimulating, vegetable and water diet." Meals were to be small and chewing was slow and deliberate to ensure proper digestion. Having supposedly studied man in his natural environment, Graham was convinced that humans were primarily herbivorous and therefore, should eat vegetables, whole wheat products, fruits, and nuts. Water was the drink of choice; alcohol was completely abstained from, and even coffee and tea were seen as too stimulating. Milk was to be avoided in more advanced cases of intestinal and sexual disorders. Graham believed that only by living in such a natural state as God intended, could Americans achieve full health and vigor. <sup>26</sup>

Poor diets were not only the cause but also the result of disorders. The heart of the problem lay in society. Graham feared American society was becoming too

<sup>&</sup>lt;sup>24</sup> Graham, *Lecture*, 45.

<sup>&</sup>lt;sup>25</sup> Ibid, 15, 18, 49; Nissenbaum, *Sex, Diet, and Debility*, 98; Sack, *Whitebread Protestants*, 189; Consumption of the bowels refers to the inflammation and ulceration of the intestines that results from tuberculosis.

<sup>&</sup>lt;sup>26</sup> Graham, Lecture, 72, 76; Sack, Whitebread Protestants, 188-89.

capitalistic, too materialistic as it become more complex. This incited people to entertain certain indulgences, namely meats, rich foods, and the like. Graham believed eating meat gave people an unnatural and seemingly-insatiable hunger in both a dietary and sexual sense, a metaphor he felt applied to the growing materialism and capitalism of the country that destroyed the self-sufficiency of the past. In a less symbolic sense, such a way of life led to the perversion of the Americans diet. The rigors placed on man by such a society exhausted him. Looking for the energy to make it from one day to the next, he turned to foodstuffs that were the products of a commercialized society and that provided him with quick but temporary stimulation. Ultimately, however, such a diet developed a cycle of exhaustion followed by short stimulation followed again by exhaustion, a cycle that could only be broken by reforming one's eating habits to a more natural state.<sup>27</sup>

From this theory Graham derived his trademark food item, Graham bread, better known as Graham crackers. Graham noticed that the commercial flour being used for the mass-produced breads sold in city markets was stripped of the bran. This, he believed, was a descent from natural to unnatural and the product of a commercialized society. That this type of bread was popular in cities and was commonly adulterated only increased its connection with materialism, capitalism, and the degradation of American society. Instead, bread should be made from rolled, unbolted wheat flour, which was given the name Graham flour. Commercial flour, which was granulated and had the bran removed from it, was too concentrated a form of nutriment to eat, Graham argued. Foods too pure or near to pure in nutriment could cause intestinal disorders by forcing the digestive system to work harder and become weaker quicker. Instead, people should choose foods that contained an equal or near equal amount of nutritious and non-

<sup>&</sup>lt;sup>27</sup> Sack, Whitebread Protestants, 188; Nissenbaum, Sex, Diet, and Debility, 127-28.

nutritious substances. The bran in flour was this non-nutritious substance, and eating bread of this type would increase health while commercialized bread would only cause the deterioration of the body.<sup>28</sup>

Graham began to extend his lectures to areas of New York and New England.

These were areas where health reform was most successful, and a respectable number of people attended many of his lectures, with some audiences as large as 2,000. His followers became known as 'Grahamites,' a sign of his success, according to historian Stephen Nissenbaum.<sup>29</sup>

Graham was not the first advocate of vegetarianism-- the first being an English clergyman by the name of William Metcalfe-- but Graham was the most influential of his time in campaigning the principle. A number of other reformers took up the cause and began spreading the word of the vegetable and wheat diet, including William A. Alcott and Asenath Nicholson. Alcott, the cousin of Bronson and uncle of Louisa May as well as the president of the American Physiological Society, adopted Graham's vegetarianism and became an ardent advocate of the diet. Alcott, though, expanded his teachings to a broad hygienic program that included personal cleanliness, sleep, and other principles as well as vegetarianism. Nicholson, a Protestant missionary and health reform advocate, traveled to Ireland in 1844, just on the eve of the Irish famine. Already a supporter of Graham and vegetarianism, she observed the diet of Irish families, and though less than pleased with their use of alcohol and tobacco, she found much to praise in their potatobased diet, which was supplemented by buttermilk and oatmeal. Nicholson lauded the

<sup>28</sup> Whorton, Crusaders for Fitness, 47; Nissenbaum, Sex, Diet, and Debility, 98.

<sup>&</sup>lt;sup>29</sup> Shryock, "Sylvester Graham," 175; Nissenbaum, Sex, Diet, and Debility, 87.

Irish potato, attributing the health and vigor of the Irish laborers to it and their simple diet.<sup>30</sup>

Another group that fell in with the health reform were the horticulturists. Also most prominent in New England, they looked to save America from growing materialism, restlessness, and intemperance. This group of well-to-do, gentlemanly cultivators saw the growing of fruit, especially, as an act of benevolence that benefited both the fruit industry and the American diet as part of vegetarianism. Since they felt materialism fostered a culturally narrow society, unappreciative of beauty, horticulture could help to rectify this. Furthermore, growing fruit or growing anything for that matter created a sense of connection to the land and would counter the "worrisome penchant to be always on the move," as historian Tamara Thornton stated.<sup>31</sup>

Not all physiologists and health advocates bought into the strict vegetarianism as preached by Graham and Alcott; the faith had its share of challenges. In 1833 a surgeon by the name of William Beaumont published a work called *Experiments and Observations on the Gastric Juice and the Physiology of Digestion*, detailing his findings on his patient, Alex St. Martin. St. Martin, a French Canadian trapper suffered a hunting accident, leaving him with a hole in his stomach. Beaumont seized this rare opportunity and with St. Martin's cooperation performed a series of experiments. In one of these Beaumont tied different foods to a piece of string, placing them into St. Martin's stomach

Nissenbaum, Sex, Diet, and Debility, 39, 146; Whorton, Crusaders for Fitness, 49; Sokolow, Eros and Modernization, 155; Barbara Haber, From Hardtack to Homefries: An Uncommon History of American Cooks and Meals (New York, NY: 2002), 7, 9, 11-12.

<sup>&</sup>lt;sup>31</sup> Tamara P. Thornton, "The Moral Dimensions of Horticulture in Antebellum America," *The New England Quarterly* 54 (March 1984), 4, 7, 9-10.

via the fistula, and pulling them back out after a certain period of time. In this way, Beaumont determined the rate of digestion for different types of food.<sup>32</sup>

Through these experiments, Beaumont reached a number of conclusions. He reiterated the commonly-held notion that Americans in general overate, leading to dyspepsia as well as other disorders. Of greater notice, especially to the vegetarians, was his claim that not only did meat and vegetables involve the same digestion process, but that the former generally supplied more nutriment than the latter. Furthermore, while both used the same digestion process, "vegetable aliment requires more time, and probably greater powers of the gastric organs, than animal." Americans should, as a general rule, look to a diet that involved a mixture of meat and vegetables, as "[t]his want of variety is induced by long habit, which it would probably be unsafe to break through." A mixed diet, according to Beaumont, was natural, and any attempts to alter it could be physically detrimental. These claims were direct blows to the strict vegetarians who had been preaching that meat overtaxed the digestive system, and a vegetable diet would help alleviate this.<sup>33</sup>

Not surprisingly, Beaumont's harshest criticism came from the radical vegetarians. Some simply dismissed his conclusions, arguing that they were inapplicable since his experiments involved a diseased rather than healthy stomach. Graham claimed Beaumont was not a "truly scientific physiologist" and accused him of reducing physiology to chemistry, placing emphasis on time of digestion rather than the effort required. Trying to turn Beaumont's evidence against him, Graham reasoned that since

<sup>32</sup> A fistula is an abnormal opening between an organ and the exterior of the body. In St. Martin, this was the hole in his stomach.

<sup>&</sup>lt;sup>33</sup> William Beaumont, *Experiments and Observations on the Gastric Juice and the Physiology of Digestion* (Plattsburgh, NY: 1833), 34, 36, 50-51.

meat was digested more quickly, it produced more excitement in the digestive system, leading to its debilitation sooner. Vegetables, on the other hand, with their slower rate of digestion, taxed the stomach and intestines less, an idea taken up by a number of other reformers.<sup>34</sup>

Nevertheless, Beaumont made a marked influence on Americans' beliefs on digestion and especially in the area of dietetics. Despite the criticism from the radical reformers, Beaumont received much acclaim from the popular press, and the general reading public soon became very familiar with *Experiments and Observations*. Almost every physiology and hygiene textbook referred to Beaumont, and he was often discussed in medical lectures. Before the second printing of *Experiments and Observations* in 1847, the 3,000 first edition copies had sold out, and by the time the Civil War broke out, 100,000 had been distributed.<sup>35</sup>

The radical reformers had a little more choice on which way to lean when German chemist Justus von Liebig published his *Animal Chemistry* in 1842. Liebig claimed that protein, which had been first mentioned by Dutch chemist G.J. Mulder five years previously, was the body's source of energy, which Liebig called 'force.' Starch and sugar, which became known as carbohydrates, and fat were used by the body for heat. Furthermore, protein formed the bulk of tissues, while starch, sugar, and fat did not.<sup>36</sup>

In 1816, French scientist Francois Magendie performed several experiments in which he concluded that nitrogen, a necessary element of life in humans, could only be obtained from food. Mid-nineteenth century physiologists and chemists thought of

<sup>&</sup>lt;sup>34</sup> Ronald L. Numbers, "William Beaumont's Reception at Home and Abroad," *Isis* 72 (December 1981), 594; Whorton, *Crusaders for Fitness*, 80; Sokolow, *Eros and Modernization*, 109.

<sup>35</sup> Numbers, "Beaumont's Reception," 591-92, 594-95, 597.

<sup>&</sup>lt;sup>36</sup> Justus von Liebig, *Animal Chemistry: or Organic Chemistry in its Application to Physiology and Pathology*, Reprint (1842; repr., New York, NY: 1964), xvii, xlix, 1, 101.

protein, in a most simplistic way, as a nitrogen-based or nitrogenized compound; therefore, protein was an integral substance to the human body. Early into *Animal Chemistry* Liebig seemed to dismiss vegetarianism as inferior.

The process of nutrition in graminivorous animals appears at first sight altogether different. Their digestive organs are less simple, and their food consists of vegetables, the great mass of which contains but little nitrogen.<sup>37</sup>

According to this passage, there was little benefit derived from eating vegetables, since they contained very little of the necessary compound for life.<sup>38</sup>

Liebig also showed how humans needed a higher protein-to-starch, sugar, and fat intake ratio. The latter compounds came from grains and vegetables, according to Liebig, and whereas protein was nitrogen-based, these were carbon-based. The carbon in the food would through the process of oxidation mix with oxygen and yield water, carbon dioxide and heat. Liebig argued that when too little oxygen or too much carbon-based food was taken in by an individual, what could not be converted through oxidation would be stored by the body as fat. The only way to counter this occurrence was through exercise and physical activity, which required protein for energy. Therefore, people had to eat more protein than starch, sugar, and fat, another slap in the face of vegetarianism. In fact, one of the reasons pork was such a staple in the American diet, particularly of the working class and laborers, was its perceived high energy yield.<sup>39</sup>

The radical reformers did not have to look far, however, for support. In his book, Liebig actually showed how vegetables, while not containing as much nitrogenized

<sup>38</sup> Sokolow, *Eros and Modernization*, 108; Whorton, *Crusaders for Fitness*, 83; The health reformers turned Magendie's research around and showed how in the same experiments, which involved dogs, the subjects failed to survive on just nitrogen-based compounds, also, lending weight to their idea of nutriment with bulk; Liebig, *Animal Chemistry*, 102.

<sup>&</sup>lt;sup>37</sup> Liebig, Animal Chemistry, 44.

<sup>&</sup>lt;sup>39</sup> Ibid, 1, 75, 85; Hilliard, "Hog Meat and Cornpone," 4.

compounds as animal products, were their ultimate source. Protein was considered a larger grouping of three nitrogen-based compounds called casein, albumen, and fibrin. Liebig found that, though in smaller amounts, the vegetable nitrogenized compounds were equal to those in animals and were equally as digestible in carnivorous beings. The true support for vegetarianism came from his food chain of the vegetable.

Vegetables produce in their organism the blood of all animals, for the carnivore, in consuming the blood and flesh of the graminivora, consume, strictly speaking, only the vegetable principles which have served for the nutrition of the latter...The animal organism is a higher kind of vegetable.<sup>40</sup>

The true source of nutriment was the vegetable. Even in eating meat, people would be in effect eating a vegetable, since the nutriment in that meat ultimately came from vegetables.<sup>41</sup>

The preachings of Graham and the strict vegetarians began to fade and lose appeal in the 1840s and 1850s. Although the advances in transportation and refrigeration improved the variety of many Americans' diets, meat was not an item they were willing to forego. The fact that per capita meat consumption from 1830 to 1839, when Graham was most influential, was the highest it would be until the 1970s shows the ineffectiveness of Graham in convincing Americans to discontinue this dietary habit. Strict vegetarianism simply did not appeal to the mass; those who did accept the teachings of the health reformers chose the more moderate route. 42

Another reason Graham's strict vegetarianism failed to foster widespread support during the 1840s and especially the 1850s may have been one of image. During the 1830s, manhood was a social construction in terms of class. Popular was the thin, pale,

<sup>&</sup>lt;sup>40</sup> Liebig, Animal Chemistry, 48.

<sup>&</sup>lt;sup>41</sup> Ibid, xvii, 47.

<sup>&</sup>lt;sup>42</sup> Hooker, Food and Drink, 104; Sokolow, Eros and Modernization, 118, 120.

and languid appearance, one that was widely noticed and reported by many European visitors to the United States. According to historian Hillel Schwartz, "the men here seemed [to European tourists] pale, thin, long, [and] spindle-shanked..." Muscular bodies were frowned upon, perceived as the result of labor.<sup>43</sup>

This concept of manhood began to change in the 1840s and 1850s, becoming a rejection of the feminine. Women were viewed as the domesticators of boys, teaching them to grow up to become effeminate, submissive men. Beards and mustaches became popular, as did derision and scorn of the feminized urban male. Many saw in western expansion a means to regain masculinity by pitting themselves against the forces of nature. At the same time striking out for the frontier carried a certain Jeffersonian appeal, allowing men to propel themselves upward socially via perceived infinite opportunities. In April of 1861, many would reassert their manhood by enlisting for service and placing themselves in an arena of masculine competition.<sup>44</sup>

The Graham diet simply did not work with this construct of masculinity. Many saw a diet devoid of meat as a sure way to become little but lethargic skeletons. While certainly a skewed perception, it did little to encourage the adoption of such a diet. Not only did the diet make skeletons out of people, it caused regression back to childhood.

<sup>&</sup>lt;sup>43</sup> Michael Kimmel, *Manhood in America: A Cultural History* (New York, NY: 1996), 28; Schwartz, Never Satisfied, 39; Schwartz later explains that in actuality, Americans' average height was about two inches taller than their European counterparts while their height-to-weight ratio remained relatively the same, giving Americans a taller and thinner appearance. He also states that despite Americans' tendency to overindulge with food, they were able to keep their lean physique because they ate so much, it could not be properly digested. He bases this theory not on nutritional knowledge available to him during the mid-1980s, but instead on a theory put forth by S.W. Avery in 1830; a theory that was not too different than the general contemporary belief that overeating leads to impairment of the digestive system. Considering the time he wrote this book, relying on a 156-year old theory for nutritional evidence seems rather poor research. People do not stay lean by overeating to the point of indigestion; by the time the body has rid itself of any waste, nutrients have already been absorbed. Unless most Americans were in a constant state of chronic diarrhea, in which they would continually lose nutrients as well as weight through watery stools, this theory is not a realistic option.

<sup>&</sup>lt;sup>44</sup> Kimmel, *Manhood*, 60-61, 120.

Dry breads, mush, and vegetables were all seen as parts of a childlike diet, not a diet of a growing and maturing American society, and certainly not a diet of masculinity.<sup>45</sup>

It also did not help that Graham's teachings, though unintended, were largely taken up by many women as part of the general health reform movement combined with the dress reform and women's rights movement. As a result of the health concern over dyspepsia and general intestinal ailments, people tried to find ways to avoid the sinking, heavy feeling that accompanied the affliction. The logical response against a sinking feeling was one of buoyancy and free-flowing, which was achieved through a number of means other than dietetic. Health reformers advocated exercise as a means to excrete poisons from the body via perspiration, similar to a fluid digestive system. Hydropathy, or the water-cure, became extremely popular and was an obvious means of achieving a sense of buoyancy. Likewise, the dress reform called for an end to the form-restricting, constraining garments worn by women, promoting looser, more free-flowing outfits. Crinoline became a popular material in women's dresses, giving a sense of volume without weight, a sense of buoyancy. Since it was more popular among females, becoming stigmatized by some as a component of the women's rights movement, and masculinity and manhood was a construction of the anti-feminine, the Graham diet may have lost a firm base of support among men for this reason.<sup>46</sup>

<sup>&</sup>lt;sup>45</sup> Schwartz, Never Satisfied, 26-27, 45.

Hooker, Food and Drink, 103; Shryock, "Sylvester Graham," 176; Schwartz, Never Satisfied, 47, 57-58,
 66; Amy Kesselman, "The 'Freedom Suit': Feminism and Dress Reform in the United States,
 1848-1875," Gender and Society 5 (December 1991), 495-97.

### **Restricted Diets**

Even in a land of plenty where overeating was generally considered a problem, there were those who lived on a diet of monotony and often insufficiency. Be it the bonds of slavery or the logistical limitations of the great trek west, many of these individuals found themselves in situations resulting in restricted diets; dyspepsia was the least of their worries.

#### Slave diet

"Everywhere the slaves ate the food of the poor," wrote food historian Richard Hooker. The slave diet consisted of the staples pork and corn, issued as cornmeal. Occasionally, the masters issued wheat in lieu of cornmeal, but generally wheat was less popular. The rationed diet tended to vary by plantation and state, but would usually include pork and corn. According to Hooker, the standard weekly ration for many slaves consisted of three pounds of pork, a peck of cornmeal, salt, and sometimes a little molasses. This worked out to an average daily ration of just under half a pound of pork and just over one quart of cornmeal, not including the salt and molasses.<sup>47</sup>

On a typical Virginia plantation, each workhand received a weekly ration of one and one-half pecks of corn and three and one-half pounds of bacon or pork, working out to an average daily ration of between one and one and one-half quarts of cornmeal and one-half pound of bacon or pork. Many Alabama slaves received a more generous weekly ration, composed of four pounds of bacon, one peck of cornmeal, one pint of molasses, three salted fish, a supply of fresh meat, and when available, vegetables. There

<sup>&</sup>lt;sup>47</sup> Hooker, Food and Drink, 178-79; Todd L. Savitt, Medicine and Slavery: The Diseases and Health Care of Blacks in Antebellum Virginia (Urbana, IL: 1978), 90, 94.

were some plantations where the masters did not give their slaves either a lot or any meat.<sup>48</sup>

Pork and cornmeal diets were inadequate and a sure way to develop nutritional deficiencies. Because it was not in the master's best interests to kill his investment, many supplemented their slaves' diet with other eatables and encouraged their slaves to keep private gardens for vegetables. Masters in coastal areas supplemented the pork in their slaves' diet with oysters or fresh fish. Fresh meat and molasses, on plantations that did not typically supply these as rations, would also be used as supplements to the diet.

During winter, some masters used sweet potatoes to supplement cornmeal.<sup>49</sup>

Despite this supplementation, slaves suffered from a number of diet-induced diseases and afflictions, the result of insufficient knowledge on the subject of nutrition rather than the cruelty of masters. Medical historian Todd Savitt raises issues with nutritional deficiencies of the slave diet, calling the evidence for its existence "often tenuous and unconvincing [as well as] complex, confusing, and often subject to debate." He goes on to state that because a number of deficiency diseases exhibit symptoms of other illnesses, it is difficult to determine the exact cause of affliction. This may be true to an extent; diarrhea and dysentery can occur as the result of poor sanitation and contaminated food and water sources. However, they also occur as the result of inadequate nutrition and can lead to the loss of nutrients through watery stools. Given the nature of the slave diet, even with supplementation, nutrition deficiencies existed. <sup>50</sup>

The Southern slave ration of just under one-half pound of pork and just over one quart of cornmeal per day lacked adequate levels of vitamins A, C, D, E, and folate, as

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<sup>&</sup>lt;sup>48</sup> Savitt, *Medicine and Slavery*, 90; Hooker, *Food and Drink*, 178-79.

<sup>&</sup>lt;sup>49</sup> Savitt, *Medicine and Slavery*, 91, 93; Hooker, *Food and Drink*, 178-79.

<sup>&</sup>lt;sup>50</sup> Hooker, Food and Drink, 178; Savitt, Medicine and Slavery, 62-63, 86-87.

well as calcium. The most popular vegetables in the South were sweet potatoes and turnips. Even if these were added into the diet a slave would have to eat five sweet potatoes, five cups of turnips, or a combination of three sweet potatoes and two and one-half cups of turnips every day just to satisfy the vitamin C requirement; apart from this vitamin and vitamin A, the other micronutrients were still a problem. The same applied to the typical Virginia slave ration, unless fish became a reliable food item; in that case the vitamin requirement was most likely met.<sup>51</sup>

These conditions became exacerbated if intestinal parasites entered the picture. Hookworm, contracted by those without shoes in areas infested with the feces of others inflicted with the parasite, was a common problem in antebellum South, especially along the Atlantic and Gulf coasts, infecting possibly as many of forty percent of the Southern population. By attaching themselves to the host's intestinal lining, these parasites feed on various nutrients such as iron, protein, and vitamins A, B<sub>12</sub>, and C, creating necessary conditions for possible deficiency diseases. They commonly result in iron-deficiency, anemia, and lethargy, of which the former two can lead to a compromised immune system, leaving the host prone to developing other diseases. Other symptoms include an emaciated appearance and a scarecrow look with a "fish eyes" stare. Incidentally, this condition contributed to the stereotype of the dim-witted, indolent Southerner.<sup>52</sup>

#### Frontier diet

Those who decided to pick up and head out West often found a meager diet and nutritional inadequacy awaiting them. As the number of people heading west increased,

<sup>&</sup>lt;sup>51</sup> American Dietetics Association, "Diet Analysis Plus," http://www.wadsworth.com/daplus.

<sup>&</sup>lt;sup>52</sup> Gerald H. Grob, *The Deadly Truth: A History of Disease in America* (Cambridge, MA: 2002), 140; Savitt, *Medicine and Slavery*, 89; David F. Cross, "Why Did the Yankees Die at Andersonville?," *North & South* 6 (September 2003), 29.

the two most utilized trails became the Oregon-California and Santa Fe Trails. Flour was the number one food source, most of it wheat but also cornmeal. Most travelers looked to pork and bacon, or when cattle were slaughtered, fresh beef for their meat, though game was also abundant. Well-stocked wagons carried salt, sugar, coffee, dried fruit, beans, and rice. In addition to game, many also found on the way wild berries and grapes, onions, and greens, and when near a large water source, fish. As the trails became heavily frequented in the later years, ranches began appearing where those with the funds could procure pork, bacon, beans, hominy, biscuits, and other foodstuffs. Most often, though, meals consisted of easily portable items-- bacon, bread or beans, and coffee.<sup>53</sup>

The diet of those on the move had changed little since the Lewis and Clark Expedition from 1803 to 1806. The staples in the diet of those who made the journey included game, salted pork, beef, flour, and cornmeal. Only when reaching large city garrisons were peas, beans, turnips, onions, and potatoes available. Vegetables only appeared in any great sense in the diet from October 1804 through the winter of 1804/1805. Berries grew abundantly, and the men frequently added them to their diet, but only during the period from July 19 to September 12, 1805 were they eaten by everyone on the expedition. There was little improvement in the logistics of supplying food to a large mass of people on the move by the time many hit the trails for Oregon or California.<sup>54</sup>

The situation was no better once reaching California. When the gold miners first arrived in 1849, the staples of the diet were beans, corn, and beef. Pigs were scarce, and pork as well as flour came from New York and the east coast by ship. Fruits and

<sup>53</sup> Hooker, Food and Drink, 190, 192; Grob, The Deadly Truth, 126.

<sup>&</sup>lt;sup>54</sup> Frank L. Iber, "Nutritional Adequacy of the Diet of the Lewis and Clark Expedition," Paper (Chicago, IL: n.d.), 2-4.

vegetables were luxuries. Texas, another newer addition to the country, also witnessed a simple diet, consisting of corn, beef, venison, sweet potatoes, and pork.<sup>55</sup>

Just as the slaves suffered their fair share of deficiency diseases, the people of the Western frontier did also. Intestinal disorders, such as diarrhea and dysentery affected many on the trails. The wild berries, greens, and perhaps onions found on the trails most likely met sufficient requirements of vitamin C. Those who did not partake of these antiscorbutics, however, were prone to developing scurvy, a severe deficiency of vitamin C marked by bleeding and hemorrhaging of the gums, anemia, and a general weakness. This was particularly a problem in California among the miners and the Gold Rush migrants. In 1849, as many as 10,000 may have succumbed to the affliction. <sup>56</sup>

Though both slaves and migrants out West suffered from restricted diets and nutritional deficiencies, the migrants suffered more. Because of the more stationary nature of servitude, slaves were often able to supplement their diets with vegetables and fruits grown by them, or other eatables supplied by their masters. Logisitics was not an issue. Not so for those on the Oregon-California and Santa Fe Trails. These individuals relied upon portable foodstuffs and what could be found on the way. There was no well-established infrastructure in place that allowed the supplying of food to great numbers of people. Even upon reaching their destination, insufficiency still stared many in the face, because of the recently-developed nature of places such as Oregon, California, and even Texas. For many, such as the miners, basic items such as pork and wheat had to come from the east coast by ship and could be spoiled upon reaching their destination. Back East, however, transportation and storage had become less of a problem.

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<sup>&</sup>lt;sup>55</sup> Hooker, *Food and Drink*, 187, 193, 195.

<sup>&</sup>lt;sup>56</sup> Grob, *The Deadly Truth*, 125-26; National Institute of Health (NIH), *MedlinePlus*, http://www.nlm.nih.gov; Hooker, *Food and Drink*, 193.

### **Transportation and Agricultural Advancements**

The mid-nineteenth century witnessed a number of advancements made in America that allowed for the greater production and shipment of food, which had an enormous impact of the nature of society within the country. The 1830s saw not only the construction of canals, but the coming of the railroad. Only twenty-three miles of railroad track had been laid in 1830. This number jumped to 2,818 by 1840, 9,021 by 1850, and by 1860, the United States had 30,626 miles of track- an increase of over 133,000 percent in thirty years. This not only helped spur the economic growth of the country, but also to expand the variety of food items available to people. Vegetable and fruit consumption increased in cities. Peas, strawberries, peaches, and tomatoes began to frequent the urban markets of the North during the 1840s. Milk consumption in the cities increased during this decade, as fresh milk became more available to urbanites. From 1842 to 1843 the Erie Railroad brought over three million quarts of fresh milk into New York City. Three years later this increased to over six million quarts and increased again by another three million quarts by 1849.<sup>57</sup>

The railroads were not alone in increasing fruit, vegetable, and dairy consumption. Improved storage also accompanied cheaper and quicker bulk shipment. Ice increased in use as a means to keep perishable goods fresh. Though the refrigerated car would not appear in America until the 1870s, depots and storage facilities used ice to

<sup>&</sup>lt;sup>57</sup> Wagner, *Desk Reference*, 73; Cummings, *The American*, 53, 57; Sokolow, *Eros and Modernization*, 119; Hooker, *Food and Drink*, 117.

store foodstuffs and prevent spoilage. Even families began to use ice, allowing them to purchase and store larger quantities of food.<sup>58</sup>

Of course, neither improved shipping nor storage means would have had the same impact without an increasing supply to meet an increasing demand. After 1830, Cyrus McCormick's reaper would allow for greater harvest yields in shorter periods, and after 1836, John Deere's plow would allow the western regions of the country to be used for corn and wheat production. This allowed American agricultural production to increase dramatically. In 1835, the western states produced and shipped 1,000,000 bushels of wheat and flour; this increased to 7,500,000 in 1841 and 8,600,000 in 1848. The United States exported just 6,500,000 bushels of wheat and flour in 1841. From 1846 to 1850, the country was exporting an annual average of 10,800,000 bushels; this jumped to an average 17,600,000 bushels per year from 1851 to 1860.<sup>59</sup>

These advancements had an enormous impact of the society and economics of the country. From a dietary perspective, antebellum America seemed to be on the brink of change. These improvements began to blur the lines in not only seasonal eating but regional eating. However, dietary sectionalism still remained in the 1850s and up to the Civil War.<sup>60</sup>

Regional sectionalism, however, had been strengthened by these advancements.

Improved methods of production, shipment, and storage of foodstuffs meant the household was no longer the basic unit of production; Americans could look to merchants and other commercial means for their daily needs and wants. Even more, these

<sup>&</sup>lt;sup>58</sup> Hooker, *Food and Drink*, 101-02.

<sup>&</sup>lt;sup>59</sup> Ibid, 95; Paul H. Cootner, "The Role of the Railroads in United States Economic Growth," *The Journal of Economic History* 23 (December 1963), 495, 497.

<sup>&</sup>lt;sup>60</sup> Hooker, *Food and Drink*, 101, 168.

advancements meant regions no longer had to be self-reliant and with an assurance of receiving an abundance of various eatables could focus their attentions elsewhere.

While the Northwest became the breadbasket of the country, producing much of the grains, the North turned its attention to industry and manufacturing. By as early as 1840, eighty percent of the nation's manufacturing lay in the North, and by 1860, this increased to eighty-four percent. As a result of the increasing number of jobs this created as well as the agricultural advancements, only forty percent of the North's workforce was agricultural by 1860.<sup>61</sup>

In the South, however, eighty percent of its workforce in 1860 was agricultural. Because of the improved methods of receiving food items from elsewhere in the country and the increasing rise of cotton prices in the 1850s, the South turned most of its efforts to this crop and became the world's largest exporter of cotton. However, as cotton, tobacco, and sugar production increased, production of corn and other foodstuffs decreased. By the outbreak of the Civil War, the South was importing much of its corn, wheat, and oats from the North and England, a problem that would come back to haunt the South after the North established a naval blockade to prevent imports from England.<sup>62</sup>

Food production was not the only thing in which the South had fallen behind. The North also contained most of the nation's iron, coal, copper, and precious metals deposits. Furthermore, it had a far more developed infrastructure. By 1860, the North had eighty-six percent of the country's canal mileage, and sixty-five percent of its track mileage, as well as most of the industry and manufacturing. "[T]he concentration on

<sup>&</sup>lt;sup>61</sup> Wagner, Desk Reference, 74.

<sup>&</sup>lt;sup>62</sup> Ibid, 74; Bruce Catton, *The American Heritage New History of the Civil War* (New York, NY: 2001), 49; Hooker, *Food and Drink*, 200.

commodity production clearly retarded the South's economic growth and prevented it from having an industrial infrastructure sufficient to fight a major war."<sup>63</sup>

The American diet, depending on region, consisted mostly of pork or beef, cornmeal or whole grains, Irish or sweet potatoes, and a limited variety of fruits. The general dietary trend was one of abundance, a trend that concerned the health reformers and physiologists of the 1830s and 1840s. Most of these health advocates had little effect in swaying the opinions of the general populous, apart from encouraging a slightly more mixed diet between meat and vegetables. For the most part, the advice of the strict vegetarians fell on deaf ears.

Abundance, however, was not known to all. Slaves lived upon a rather slim ration, mostly of pork and cornmeal. Though their diet was often supplemented with other foodstuffs, either from their personal gardens or by items added by the master, they still fell victim to nutrient deficiencies. So too did those on the frontier trails and in the developing areas out West. With their regular diet of pork, beef, or bacon, and beans, cornmeal, or wheat, many of these individuals succumbed to scurvy, diarrhea, and other deficiency diseases- the result of inadequate means of supplying food to great numbers of people over great distances.

Beginning in the 1830s, transportation and agricultural advancements allowed America to produce and provide more people with a greater supply and variety of food. It also allowed regional sectionalism to develop in the country, as the South focused more of its attention to the production of cotton, and the North turned more to industry in the

<sup>63</sup> Catton, Civil War, 61; Wagner, Desk Reference, 76.

east and food production in the west. This placed the South in an undesirable situation as it entered into war- importing much of its food and possessing a poor infrastructure for the production and supplying of provisions.

#### **CHAPTER 2**

### BEEF AND BREAD THE USUAL DIET OF A SOLDIER: CIVIL WAR DIET

# The U.S. Army Medical Department

The issue of the soldier's diet falls in a number of areas of the United States War Department, generally commissary and medical. While the commissary department oversees the supply and distribution of rations, it is the medical department that makes observations and recommendations about the soldier's diet and how it affects his health. The department is headed by the surgeon general, who is also the chief physician in the country, and from 1818 to 1836 this was Joseph Lovell. Lovell became particularly concerned with the soldier's diet and felt it to be an issue in maintaining the health of the Army. In fact, he felt that the diet contributed most to the sickness of the soldiers during the War of 1812, and he expressed his sentiments to Secretary of War John C. Calhoun. Lovell believed wheat flour was the largest problem, claiming it was easily damaged and harmful to health; instead, cornmeal should be issued when possible. Items such as peas, beans, and rice, should become a staple of the ration. Apart from his recommendations in his letter to Calhoun, Lovell also pushed for more bread and less meat in the soldier's diet, and the meat issued should be fresh rather than salted.

Lovell's tenure as surgeon general occurred at the brink of the temperance movement, and many of his opinions and recommendations fell in line with the reformist thinking. He was against the issuance of whiskey to soldiers, believing it caused diarrhea, dysentery, and other intestinal disorders. Some physicians believed salt to be a

<sup>&</sup>lt;sup>1</sup> Mary C. Gillett, *The Army Medical Department, 1818-1865* (Washington, DC: 1987), 16; Samuel C. Prescott, *Troop Feeding Programs: A Survey of Rationing and Subsistence in the United States Army, 1775 to 1940* (Washington, DC: 1944), III-14, 16.

harmful stimulant, which could explain Lovell's preference for fresh over salt meat.

Early in his term, he pushed for vegetables simply because they made the rationed diet more like the home diet, and they provided greater variety; later his thinking changed to man being naturally herbivorous, a very Grahamite perception.<sup>2</sup>

Lovell's successor, Thomas Lawson, followed in Lovell's more vegetables and bread and less meat mentality. He also took up the reformist belief that Americans generally ate too much, and he suggested that the army ration be reduced. Lovell and Lawson followed the preachings of the health reformers and for good reason; William Beaumont was a U.S. Army surgeon and friend of both Lovell and Lawson. When Beaumont was at work on *Experiments and Observations*, he brought Lovell and Lawson into the process and had them examine his preliminary writings, receiving much praise from them. Particular influences of Beaumont's work upon Lovell and Lawson's recommendations included a mixed diet of meat and vegetables and a less superabundant diet.<sup>3</sup>

The reformers were most successful in reaching the upper echelon of the health service sector in America, and this included physicians such as Lovell, Lawson, and others who were in a position to have an influence on the U.S. Army ration. However, rations that included greater variety, such as a mixed vegetable and meat ration, also included greater difficulty in distribution by the government, and for this reason and others that will be become apparent, the suggestions of men such as Lovell and Lawson

<sup>2</sup> Gillett, *Medical*, 16; Prescott, *Feeding*, III-14, 16.

<sup>&</sup>lt;sup>3</sup> Gillett, *Medical*, 16; Numbers, "Beaumont's Reception," 592.

often fell on deaf ears. Entering the Civil War and even during, the U.S. Army ration remained relatively unchanged.4

# The U.S. Army Ration

The U.S. Army ration from 1861 through 1864 was as shown in Table 1.

**TABLE 1: U.S. Army rations**<sup>5</sup>

	Quantities/ration <sup>#</sup>					
	July 1861		August 1861		June 1864	
Articles	OZ.	Tbsp.	oz.	Tbsp.	OZ.	Tbsp.
Meat Components						
Beef, fresh	20		20		20	
or salt beef	20		20		20	
or pork	12		12		12	
or bacon	12		12		12	
Flour Components						
Flour	18		22		18	
or soft bread	18		22		18	
or hard bread	12*		16		12	
or corn meal	20		20		20	
Vegetable Components						
Beans	1.2		2.4		2.4	
or peas			2.4			
or rice	1.6		1.6**		1.6	
or hominy			1.6			
or desiccated potatoes	3		1.5		1.5	
or desiccated mixed veg.	2		1		1	
or potatoes			6.6			
Coffee & Sugar Components						
Coffee, green	1.6		1.6		1.6	
or roasted			1.28			
or tea	1.28		1.28		1.28	
Sugar	2.4		2.4		2.4	
Seasoning Components						

Davis, Taste for War, 5; Gillett, Medical, 16.
 Elizabeth Stroud Kory, 1862 Manual for Army Cooking: A Reproduction of "Campfires and Camp" Cooking or Culinary Hints for the Soldier" (Norristown, PA: 1993), i-iii.

Vinegar		2.56		2.56		2.56
Salt	0.6		0.6		0.6	
Pepper					0.04	·

<sup>\*</sup>Robertson uses gills instead of tablespoons.

As seen, the ration was subject to minor changes. The bread ration was increased in August 1861 as were a number of vegetable rations. Also in August, rice was to be issued in addition to beans, rather than 'in lieu of.' Changes could also occur within armies at division or brigade level. James Gillette, head of the commissary department for the second division of the XII Corps in the Army of the Potomac, wrote in December 1862 that he was ordered to increase the hardtack ration to twenty ounces per man. Upon request, Commissary General Joseph Taylor looked into the U.S. Army ration and concluded that it was actually larger than necessary for the subsistence of the men, and in March 1864 he recommended it be reduced back to its July 1861 issuance.

The Confederate government attempted to adopt the July 1861 U.S. Army ration, but because the South had imported much of its coffee and sugar from the North, and the Union blockade cut off its imports from England, the government reduced the coffee ration from 1.6 ounces to 0.92 ounces for every man and the sugar ration from 2.4 ounces to 1.92 ounces. Louisiana was the largest producer of sugar in the South, but in spring of 1862, Union forces invaded the former state and obstructed the production yield. Sugar and coffee were not the only imports from the North before the war; the Northwest was a major exporter of wheat grain, so most of the soft bread issued to Confederate soldiers was made from either cornmeal or rice. Likewise, Confederates were more likely to be issued cornmeal or rice flour rather than wheat flour. The soft bread of the North, on the

<sup>\*</sup> On a campaign, or marches, or on board transports, the ration was 16 oz.

<sup>\*\*</sup> Instead of "or" the August 1861 ration called for "and" rice.

other hand, was often made from refined wheat flour, much like the commercially produced bread that was so popular in New England urban markets.<sup>6</sup>

Before determining the adequacy of the fixed rations for both sides, a rough understanding of the average soldier's daily life is necessary, particularly his daily caloric expenditure. For simplicity it will be assumed that the average soldier either spent his day in camp or on the march. There were certainly exceptions to this, namely battles. There were also days in which soldiers went straight into battle after marching and days when they did not march until late in the afternoon, having spent half the day in camp. However, battles make it extremely difficult to track the movement of one soldier let alone an entire army, and activity level of different units varied at different periods. For example, on July 1 the Iron Brigade marched between four and six miles that morning before arriving on the field and fighting until late afternoon. That night they were positioned on the Union right flank and dug in, remaining there the next two days. From this brief account, it can be assumed that the caloric expenditure of a soldier in the Iron Brigade most likely fell between 'camp life' and 'marching' during those three days. The same will be applied as a general rule to the average soldier.

### Camp life

Civil War historian James I. Robertson, Jr. described the average camp day as follows: Reveille at 5:00 AM, followed by roll call; possibly drill before breakfast, which ended at 8:00 AM; drill or chores; dinner at 12:00 PM with regimental drill for two hours afterwards; preparation for drill parade, followed by drill parade at 6:00 PM; supper,

<sup>6</sup> Walter Prichard, "The Effects of the Civil War on the Louisiana Sugar Industry," *The Journal of Southern History* 15 (August 1939), 318.

followed by free time; Taps at 9:00 PM. Typically, the average soldier spent sixteen hours awake, of which three were spent eating, as meals usually lasted about one hour each. That left eight hours for sleep and thirteen for drilling and various other duties or activities.<sup>7</sup>

Drilling, of course, never consumed thirteen hours out of the day, but it often varied by period during the war and between units. The average soldier spent more time drilling in training camp than at any other period. Jerome Watrous reported that company E of the 6<sup>th</sup> Wisconsin drilled for two hours before every meal at Camp Randall in Madison, Wisconsin- a total of six hours. James Sullivan of company K trained for six and one-half hours every day, and company G spent roughly six hours as well. Meanwhile at Camp Stearns near Darkesville, Virginia, Ted Barclay was also drilling six hours out of the day with the 4<sup>th</sup> Virginia.<sup>8</sup>

The amount of time spent drilling decreased once campaign season began. In October 1861, the 7<sup>th</sup> Wisconsin trained for four hours at Camp Arlington. By mid 1862 drilling was down to about two hours. Because Jackson was an extremely religious man, the Stonewall Brigade would take Sundays off when possible from drilling.<sup>9</sup>

Drilling continued for the men during winter quarters. Cornelius Wheeler spent three hours everyday on the field during the winter of 1862/1863. The monotony began

<sup>7</sup> James I. Robertson, Jr., Soldiers Blue and Gray (Columbia, SC: 1988), 47-48.

Washburn, Jerome A. Watrous, 36; William K. Beaudot, An Irishman in the Iron Brigade: The Civil War Memoirs of James P. Sullivan, Segt., Company K, 6<sup>th</sup> Wisconsin Volunteers (New York, NY: 1993), 24; Henry Matrau, Letters Home (Lincoln, NE: 1993), 43; Charles W. Turner, Ted Barclay, Liberty Hall Volunteers: Letters from the Stonewall Brigade (1861-1864) (Berryville, VA:1992), 17.

<sup>&</sup>lt;sup>9</sup> Michael Shortell, *The Civil War Letters of Corporal Michael Shortell, Company G, 7<sup>th</sup> Wisconsin Volunteer Infantry* (Bowie, MD), 8; George Washington Partridge, Jr., *Letters from the Iron Brigade: George Washington Partridge, Jr., 1839-1863: Civil War Letters to His Sisters* (Indianapolis, IN: 1994), 39; Rufus Dawes, *A Full-Blown Yankee of the Iron Brigade: Service with the Sixth Wisconsin Volunteers* (Lincoln, NE: 1999), 150.

to get to John Pardington. "The same old drill life when a soldier is in camp. For I tell you a soldier life is dull when we are doing nothing." <sup>10</sup>

# Marching

From various accounts left by members of the Iron Brigade and the *Official Records*, it can be shown that the unit as a whole averaged about 15.3 miles per day when it marched. The number for the Stonewall Brigade was slightly higher at 19.0 miles per day. James Robertson states that the average speed a soldier marched was about 2.5 miles per hour. Based on the accounts of the two brigades this seems to be rather high; the Iron Brigade averaged roughly 1.6 miles per hour with the Stonewall Brigade clocking at 1.7 miles per hour. From the accounts and records alone, this meant the westerners spent 9.5 hours marching, and the Virginians 11.3 hours. If we accept Robertson's value as the high end of the range and find the average between the two, it comes to 7.8 for the Iron Brigade and 9.5 hours for the Stonewall Brigade.<sup>11</sup>

This does not include the load each soldier had to carry. Initially, their equipment could weigh as much as fifty pounds. When John Gibbon took command of the Iron Brigade he had the men carry an overcoat, an extra pair of socks, an extra pair of pants, cartridges, half a tent, gum and woolen blankets, a haversack, canteen, and musket. A

Edward B. Brickner, "Cornelius Wheeler: Service with the Miner's Guard, Known as Company I of the Second Wisconsin Volunteer Infantry Regiment. (Bull Run to Antietam)," Thesis (University of Wisconsin, River Falls: 1992), 50; John Henry Pardington, Dear Sarah: Letters Home from a Soldier of the Iron Brigade (Bloomington, IN: 1999), 78.

Robertson, *Soldiers*, 61; These values were determined by taking all the miles marched per day from different sources for each regiment within the two brigades and finding an average miles marched per day value from each source. The average of each source was then averaged for the regiment, and this average was then averaged with the other regiments to determine an average miles marched per day by the entire brigade as a whole. Likewise, any mention of rate of march was noted and averaged for the brigade, and this value was then divided into the average miles marched per day to find the average time spent marching on those days by the brigade.

deserter from Jackson's corps saw the load the westerners carried and commented to Philip Cheek, "[y]ou uns is pack mules, we uns is race horses. All old Jackson gives us is a musket, a hundred rounds and a gum blanket." On the first hard march, the men quickly parted company with their 'extra baggage.' "Sixty pounds is an awful load for a man to carry on a hot summer day," exclaimed Rufus Dawes.<sup>12</sup>

The average soldier at the outset of the war weighed just over 143 pounds and stood five feet and eight inches. He averaged just under twenty-six years of age; the mean age of the Iron Brigade and the Stonewall Brigade was twenty-five. These biostatistics can be used with the camp and marching values to produce rough estimates of recommended intakes that are displayed in Tables 2 and 3<sup>13</sup>

TABLE 2: Comparison of macronutrient recommendations and U.S. Army ration<sup>14</sup>

TRAINING CAMP							
Recommendations July 1861				Aug 1861	w/o pot.	Aug 1861 w/ pot.	
Calories	2925	4017.86	137%	4333.07	148%	4528.24	155%
Protein (g)	95.06	185.4	195%	198.06	208%	200.28	211%
Carbohydrates (g)	416.81	427.25	103%	487.37	117%	533.85	128%
Fat-Total (g)	97.5	174.14	179%	176.82	181%	176.86	181%
			CAMP				
Calories	2325	3991.9	172%	4275.22	184%	4528.24	195%
Protein (g)	75.56	178.67	236%	191.53	253%	200.28	265%
Carbohydrates (g)	331.31	427.41	129%	480.19	145%	533.85	161%
Fat-Total (g)	77.5	170.8	220%	171.7	222%	176.86	228%
			MARCHIN	IG			

Pardington, Dear Sarah, 30; John H. Worsham, One of Jackson's Foot Cavalry (Jackson, TN: 1964), 9;
 Oliver Willcox Norton, Army Letters, 1861-1865 (Chicago, IL: 1903), 34; Dawes, Service, 45-46;
 Philip Cheek, A History of the Sauk County Riflemen, Known as Company "A," Sixth Wisconsin Veteran Volunteer Infantry, 1861-1865, Reprint (1909; repr., Gaithersburg, MD: 1984), 27-28.

Combined Books, The Civil War Book of Lists (Conshohocken, PA: 1993), 32; Eric Ethier, "Who Was the Common Soldier of the Civil War?," Civil War Times 42 (December 2003), 52; Wert, Brotherhood, 58; Robertson, Soldiers, 48; Dennis E. Frye, 2<sup>nd</sup> Virginia Infantry (Lynchburg, VA: 1984), 80-142; James I. Robertson, 4<sup>th</sup> Virginia Infantry (Lynchburg, VA: 1982), 37-83; Lee A. Wallace, Jr. 5<sup>th</sup> Virginia Infantry (Lynchburg, VA: 1988), 89-173; Lowell Reidenbaugh, 27<sup>th</sup> Virginia Infantry (Lynchburg, VA: 1993), 127-85; Lowell Reidenbaugh, 33<sup>rd</sup> Virginia Infantry (Lynchburg, VA: 1987), 111-47; The mean age for the Stonewall Brigade was calculated by taking a sample of 100 men from each regiment.

<sup>&</sup>lt;sup>14</sup> American Dietetic Association (ADA), "Diet Analysis Plus," http://www.wadsworth.com/daplus.

Calories	3110	3991.9	128%	4275.22	137%	4528.24	146%
Protein (g)	97.95	178.67	182%	191.53	196%	200.28	204%
Carbohydrates (g)	443.18	427.41	96%	480.19	108%	533.85	120%
Fat-Total (g)	103.67	170.8	165%	171.7	166%	176.86	171%

When looking at macronutrients, it appears the surgeon generals and health reformers were mostly correct in their analysis of overeating. In almost every case, the rations provided more than enough, especially protein and fat, which could be as high as 265 and 228 percent suggested intake respectively. Only on the march and living on the July 1861 ration did carbohydrate levels fall below 100 percent; however, unless in camp, they left little room for negotiation. Anything short of full rations would drop them below recommended values, unless they received potatoes. Calories were not too far behind; less than three-fourth rations provided too little caloric intake.

TABLE 3: Comparison of micronutrient recommendations and U.S. Army ration<sup>15</sup>

Recommendatio	ns	July 1861#		Aug 1861 w/o pot.		Aug 1861 w/ pot.	
Vitamins		Vitamins		Vitamins		Vitamins	
Vitamin A (RE*)	900	88.86	10%	111.69	12%	88.83	10%
Thiamin- B1 (mg)	1.2	3.43	286%	3.86	322%	3.95	329%
Riboflavin- B2 (mg)	1.3	2.18	168%	2.38	183%	2.42	186%
Niacin- B3 (mg)	16	45.93	287%	50.72	317%	54.76	342%
Vitamin B6 (mg)	1.3	2.74	211%	3.04	234%	3.77	290%
Vitamin B12 (mcg)	2.4	11.25	469%	11.26	469%	11.26	469%
Vitamin C (mcg)	90	0.15	0%	3.68	4%	52.83	59%
Vitamin D (mcg)	5	1.6	32%	1.67	33%	1.67	33%
Vitamin E (mg)	15	6.4	43%	7.34	49%	7.36	49%
Folate (mcg)	400	265.88	66%	346.2	87%	317.11	79%
Minerals		Minera	ıls	Minerals		Minerals	
Calcium (mcg)	1000	260.88	26%	324.05	32%	315.53	32%
Iron (mg)	8	30.78	385%	34.61	433%	35.77	447%
Magnesium (mg)	400	741.32	185%	858.46	215%	898.92	225%
Phosphorus (mg)	700	2666.6	381%	2961.24	423%	3031.44	433%
Potassium (mg)	3500	3276.18	94%	3666.82	105%	5230.22	149%
Sodium (mg)	2400	10447.89	435%	10679.98	445%	10670.19	445%
Zinc (mg)	11	36.5	332%	38.98	354%	39.61	360%

<sup>#</sup> The July and Aug. analyses do not include desiccated vegetables for reasons that will be explained later.

<sup>&</sup>lt;sup>15</sup> ADA, "Diet Analysis Plus."

\* Retinol equivalent (RE) is a standardized unit for vit. A. 1 RE = 1 mg of a vit. A compound called all-trans-retinol.

Micronutrients proved to be the largest problem in the nutritional adequacy of the rations. Vitamins A and C were well below recommended levels, as were vitamins D and E and calcium. With full rations, folate intake was low as well but not to the same extent. Irish potatoes, rich in vitamin C, certainly improved daily intake values, but still did not bring the levels up to 100 percent. The Confederate armies, however, adopted the July 1861 ration, one that included only desiccated and not fresh potatoes, a difference that will be covered in chapter 3.

These analyses, however, assume the average soldier received everything that was supposed to be issued him and ate strictly by the proposed rationed diet- not an accurate assumption. However, the regimens of the soldiers on both sides were to be governed in some manner by the proposed rationed diet, a diet inherently abundant in some areas and seriously lacking in others.

# Our living is not very rich: Camp diet

The men of the Iron Brigade and Stonewall Brigade and their respective sides became very familiar with their rather limited fare. Variety may be the spice of life, but this mattered little to governments that had to field and feed several armies in three different theatres. The average soldier most likely could identify with the staples of his diet, though, as they were the same as back home.

Hardtack was the bread of Billy Yank. Measuring roughly three inches square and half an inch thick, the crackers were made of just wheat flour and water. Though set at sixteen ounces for most of the war for the North, the actual amount issued varied by

regiment and could be nine crackers in one and ten in another. Several popular dishes with hardtack included 'skillygalee,' 'hellfire stew,' and 'lobscouse.' The first dish called for soaking hardtack in water and then frying it in pork grease, while 'hellfire stew' was made by breaking the cracker into small bits and frying it with meat, and 'lobscouse' was a soup of salt pork, hardtack, and whatever else the soldier felt like adding.<sup>16</sup>

Hardtack had several rather unappealing characteristics that the men were forced to deal with, however. The cracker became notorious for its hardness- the result of the drying process that actually made the finished product both drier and lighter than the flour used to make it. Before long, the men were taking cracks at the boxes the hardtack was shipped in, marked B.C. for brigade commissary. "Company I say they had a barrel marked 'B.C.<sub>97</sub>.' I don't know whether the crackers of the barrel was made before Christ," remembered Oliver Norton. It is because of their resilient nature that most of the recipes with hardtack called for soaking or frying them, as mentioned by one Iron Brigade member. "This *hard bread* is a great institution. You might soak a biscuit in a cup of coffee six weeks, and then you would have to have a good set of teeth to eat it. This kind of bread I supposed was made to *keep*." 17

Despite its hardness, there were things that could make their way into hardtack.

Upon breaking the cracker open, many soldiers found it to be infested with worms and maggots. Often soldiers would crumble the hardtack and put it in their coffee, and

Robertson, Soldiers, 68-69; Matrau, Letters Home, 43; John D. Billings, Hardtack and Coffee: or the Unwritten Story of Army Life, Reprint (1887; repr., Glendale, NY: 1970), 113; Davis, Taste for War, 144, 146.

Encyclopædia Britannica Library Research Service, "The Use and Preparation of Hardtack During the Civil War," Fact Sheet (Chicago, IL: n.d.), 1; Norton, Army Letters, 50; Charles C. Dow, "Wartime Letters of Charles C. Dow, Company G, 2d Wisconsin," in George H. Otis, The Second Wisconsin Infantry (Dayton OH: 1984), 136.

subsequently would have to skim off a layer of maggots before taking a swig. The worms were no deterrent, though, for soldiers like John Billings of the 10<sup>th</sup> Massachusetts Battery. "Eaten in the dark, no one could tell the difference between it and hardtack that was untenanted." <sup>18</sup>

The bread of Johnny Reb was typically cornbread. The meal used to make the bread often was of a poor consistency- coarse and unsifted- a quality that became progressively worse throughout the war. During the Virginia Overland Campaign in 1864, one soldier of the Stonewall Brigade wrote, "[t]he corn bread would get so hard and moldy that when we broke it it looked like it had cobwebs in it." When not issued the meal and when corn was on hand, often soldiers would punch holes in their canteens and make their own meal by grating the corn. A favorite dish using cornbread was 'cush' or 'slosh;' a dish similar to 'hellfire stew.' The soldier fried a piece of meat and put bits of broken cornbread in the pan to mix with the grease, making a stew.<sup>19</sup>

"Salt pork was the principal meat ration- the mainstay as it were," observed Billings. This was true for both sides, as noted by one member of the Richmond Howitzers. "The faithful hog was everywhere represented." If not pork, it was beef that was issued the men, either salted or fresh, though usually the latter and usually more in the Northern armies, much to the dismay of the same Richmond gunner. "Beef, glorious beef! how seldom were you seen, and how welcome was your presence." The beef was not always to be given such high praise, as witnessed by David Earhart of the 4<sup>th</sup> Virginia. "We get a little bacon sometimes and beef but it is blue..." If it was not blue, it

<sup>18</sup> Robertson, Soldiers, 68; Davis, Taste for War, 43; Billings, Hardtack, 115.

<sup>&</sup>lt;sup>19</sup> Robertson, Soldiers, 67-68; John O. Casler, Four Years in the Stonewall Brigade (Dayton, OH: 1971), 121.

was usually tough- a "difficult dental proposition," according to one Marylander. Private Norton shared his sentiments.

Joe (my housemaid) is sitting by the fire picking his teeth with a bayonet and swearing at the beef. He says it is a pity it was killed, it was tough enough to stand many a long march yet. Well, it is tough. When Burnside got stuck in the mud, the artillery harness all broke, and the only way they could get the guns out was for the men to cut their rations of beef into strips, and make tugs out of them.<sup>20</sup>

Bacon and ham could also be issued the men, though for the average private and non-commissioned officer, it was more often bacon. "[W]e never get ham the officers gets them," wrote Earhart. Not so on one occasion in March 1863 when some members of the 2<sup>nd</sup> Wisconsin stole the hams intended for the officers. Often, though, the meat issued the men on both sides was rancid and consisted more of fat than actual meat.<sup>21</sup>

Vegetables and fruits occasionally graced the plate of the soldiers, but usually not in any great quantity. Of all the vegetables issued the men, the bean was favored most. "The bean ration was an important factor in the sustenance of the army, and no edible, I think, was so thoroughly appreciated," remembered Billings. After the bean came potatoes and onions, the first issued more often than the second and neither issued frequently. Every now and then the soldier could expect dried fruit, usually apples, but this was rarer than the vegetables and typically not of good quality. Dried peaches could be even poorer, according to Billings. "[They were] of such poor quality that the apples, with the fifty per cent of skins and hulls which they contained, were considered far

<sup>20</sup> Norton, *Army Letters*, 137.

Billings, Hardtack, 111, 135-36; Carlton McCarthy, Detailed Minutiae of Soldier Life in the Army of Northern Virginia, 1861-1865 (Lincoln, NE: 1993), 74; David Earhart to his wife, July 11, 1862, David G. Earhart Letters; Randolph H. McKim, A Soldier's Recollections: Leaves from the Diary of a Young Confederate, with an Oration on the Motives and Aims of the Soldiers of the South (New York, NY: 1911), 42; Otis, Second Wisconsin, 76.

preferable." During the war, issues of vegetables and fruits did little to improve the average soldier's diet.<sup>22</sup>

# Training camp

The training camps at Camp Randall and Camp Morton in Indianapolis, Indiana exposed the men of the future Iron Brigade to the foods they would come to know only too well for the next four years while keeping some luxuries in their diet. On one day of training, Jerome Watrous of the 6<sup>th</sup> Wisconsin had beef stew, hash, bread, and coffee for breakfast, pork and beans, bread, and water for dinner, and cold corned beef, bread, molasses, and coffee for supper. For most of their stay at Camp Randall, the Wisconsians lived upon pork and beans, and many complained, sometimes openly, about their fare. "We were never satisfied with the food served at Camp Randall," wrote Philip Cheek, especially their Fourth of July meal of bread, potatoes, and cold codfish gravy and coffee.

> When the good people of Madison learned the facts they were as indignant as the [5<sup>th</sup> and 6<sup>th</sup> Wisconsin] and on Thursday, July 18, a splendid repast was served in camp to the two regiments, and it was the only square meal we had while in camp there.<sup>23</sup>

Codfish gravy, potatoes, and soft bread would become items the men of the Iron Brigade and the rest of the Army of the Potomac would have to learn to live without for much of the war.<sup>24</sup>

The men of the 19<sup>th</sup> Indiana enjoyed an abundance of rations, the likes of which they would most likely never see again after leaving Camp Morton. Pork, bread, hominy, potatoes, molasses, sugar, salt, pepper, vinegar, and coffee constituted their bill of fare

<sup>&</sup>lt;sup>22</sup> Billings, *Hardtack*, 111, 136, 138; Davis, *Taste for War*, 20. <sup>23</sup> Cheek, *Sauk County*, 15.

<sup>&</sup>lt;sup>24</sup> Washburn, *Jerome A. Watrous*, 36; Brickner, "Cornelius Wheeler," 4; Wert, *Brotherhood*, 52; Cheek, Sauk County, 15.

and in issuances larger than U.S. Army rations. Smaller amounts of beef, rice, hardtack, cornmeal, and dried apples were also issued. During the month of August, the Hoosiers averaged a daily intake of almost 5,500 calories, with over two and one-half times the necessary protein and fat intakes. Because most of these items were based upon the U.S. Army ration, the same deficiencies existed in the camp. Vitamins A, C, D, and E were all below their recommended values at zero, sixty-seven, fifty-three, and sixty percent respectively. Calcium intake was sub par was well at sixty-nine percent. Most of these values are markedly improved over the U.S. Army ration, however, so were the quantities issued.<sup>25</sup>

Meanwhile in the Shenandoah Valley the men who would become the Stonewall Brigade enjoyed some of the best eating they would partake in for the rest of the war. The men were issued plenty of provisions including beef, bacon, and bread. Ted Barclay of the 4<sup>th</sup> Virginia sat down to a meal of coffee and pan-fried bread one June morning. "Our regular eating consists of wheat bread, beef and coffee, all very good except the bread," Barclay wrote; the bread was baked too long. Several weeks later Barclay enjoyed a dinner of stewed chicken, beef, bread, molasses, rice, and water; the bread, again, was baked too long. While Barclay was finishing off his stewed chicken, John Grabill of the 33<sup>rd</sup> Virginia was sitting down to his liver, cornbread, and butter. The ladies of the nearby cities, such as Staunton, would also send the Virginians pies, cakes, and other delicacies.<sup>26</sup>

<sup>&</sup>lt;sup>25</sup> Alan D. Gaff, On Many a Bloody Field: William Ray (Bloomington, IN: 1996), 11, 28-29; ADA, "Diet Analysis Plus."

Wert, Brotherhood, 31; Turner, Ted Barclay, 11, 13, 18; W.G. Bean, The Liberty Hall Volunteers: Stonewall's College Boys (Charlottesville, VA: 1964), 27; John H. Grabill, Diary of a Soldier of the Stonewall Brigade (Woodstock, VA: 1909), 1.

In all these foodstuffs, liver was the only item that could have corrected the vitamin A and C deficiencies. Of beef, chicken, veal, and turkey liver, beef liver contains the most vitamin A at almost 11,000 RE for every 100 grams of liver, or about three and one-half ounces. This more than meets the recommended 900 RE. Veal liver contains the most vitamin C at thirty-one milligrams for every 100 grams; with this serving size, beef liver has twenty-three grams of vitamin C. Since beef and not veal was one of the principle food items for the men during training, Grabill most likely had this type with his cornbread and butter. At twenty-three grams of vitamin C for every 100 grams of liver, he would have had to have eaten about four servings, or just over fourteen ounces. Grabill's meal most likely met adequate vitamin A and C requirements, but this is the only meal with liver he mentioned, and it is unlikely it ever became a staple of the diet for the men in the Valley or in the rest of what would become the Army of Northern Virginia for that matter. Vitamin D and E intakes were still most likely inadequate, and apart from the Grabill's liver, the men did not receive any items that would have met recommended vitamin A and C levels. Unless liver routinely entered the average soldier's diet, which it did not, or unless certain vegetables and fruits were to be had, these micronutrient deficiencies would continue to plague the armies of both sides.<sup>27</sup>

# Campaign season

Generally during campaign season, which usually lasted from April until late

November, the armies would go into camp during any break in action. The duration of
time in camp lasted anywhere from three to four days to several months, as was the case
of the Army of the Potomac after their defeat at First Manassas. The improvement in diet

<sup>27</sup> ADA, "Diet Analysis Plus."

and the possibility of receiving full rations was directly correlated to the length of stay in camp. In theory, the Army of the Potomac was still in campaign season while it remained in Washington, DC from late July until late October 1861, but with the appointment of General George McClellan to replace Irvin McDowell as its commander, the army did very little but train, organize, and build up the city's defenses. For all intents and purposes the army was in a pseudo-winter quarters state until they formally established the winter camps in early November.

Apparently the Union government was still figuring out the logistics of supplying a quickly growing army. In July the army numbered just over 17,700 but by October it had expanded to about 113,200, an increase of nearly 540 percent. As such, issuing full rations to all the men became a problem, even in a fixed state, much to the dismay of the Wisconsians and Hoosiers. On August 4 Cornelius Wheeler of the 2<sup>nd</sup> Wisconsin took little pleasure in his dining. Breakfast consisted of bread and coffee with boiled rice and a little sugar for dinner and more bread and coffee for supper. On some days the men were issued fresh beef or fresh pork but "very little of it." "I can live with such food," wrote Wheeler, "but it is rather tough." When the 7<sup>th</sup> Wisconsin arrived in camp in mid October, each man was greeted by a small piece of bread and "some stinken pork." The following day, the 7<sup>th</sup> was issued bread and only half rations of meat. Issuances began to improve as the month progressed and by the end of October, the men were receiving plenty of bread, beef, pork, beans, rice, sugar, coffee, and molasses, and once per week vegetables joined the list.<sup>28</sup>

<sup>&</sup>lt;sup>28</sup> Brickner, "Wheeler," 33; Partridge, *Letters from the Iron Brigade*, 8; Herdegen, *William Ray*, 10, 15; Shortell, 8.

Until the men established camp at Harrison's Landing in late July 1862, following the Peninsula Campaign, the all-western brigade received rations of little more than meat, hardtack, coffee, and sugar. "Our living is not very rich. Plenty of B.C. crackers and coffee," mentioned Wheeler. On June 15, the 7<sup>th</sup> Wisconsin drew rations of beans, which at that point was a rarity according to William Ray.<sup>29</sup>

Harrison's Landing provided little change in variety, though presumably the quantity and quality of issuances improved, as a number of the men commented on the better rations. Plenty of beef, hardtack, and coffee were issued the westerners. The same applied to the rest of the army. Oliver Norton of the 83<sup>rd</sup> Pennsylvania complimented the rations as "good wholesome food." "I can get along first-rate on Uncles Sam's rations."

The months between the battles of Antietam and Fredericksburg brought the men their usual meat, hardtack, and coffee. "[W]e have crackers fresh beef and coffee for breakfast. and fresh beef crackers and coffee for dinner and for supper we have coffee crackers and fresh beef...about once a week we get a small ration of pork and beens," George Partridge wrote home to his wife. Rice, molasses, and vinegar were also issued but sporadically. The men of the Iron Brigade, as they were now called, would learn to live with such monotony.<sup>31</sup>

Following the battle of Gettysburg in early July 1863, the remnants of the Iron Brigade saw little more action, save an engagement at Mine Run on November 27. Shortly after Gettysburg, Private Dow wrote, "[o]ur rations are not of the most palatable kind, but rather of the substantial and consists of the following articles; pork, fresh beef,

<sup>&</sup>lt;sup>29</sup> Herdegen, William Ray, 77, 84, 98; Brickner, "Wheeler," 61.

<sup>&</sup>lt;sup>30</sup> Herdegen, William Ray, 127, 130; Norton, Army Letters, 102, 109.

<sup>&</sup>lt;sup>31</sup> Ludolph Longhenry, A Yankee Piper in Dixie: Civil War Diary of Ludolph Longhenry, Platteville, Grant Co. Wis. (Great Falls, VA: 1967), II-12, 14, 15; Pardington, Dear Sarah, 34; Partridge, Letters, 59.

rice, coffee, beans, *hard* and soft bread, and vinegar." Later the commissaries began to issue different vegetables. Some of the men received potatoes, and even tomatoes and cucumbers, a spoonful each, were issued on one occasion. Dried apples were also issued and not just in the Iron Brigade. "We are living 'just old gay' now," Norton responded to being issued potatoes, turnips, onions, beets, and dried apples.<sup>32</sup>

Vegetables and dried fruit became more prominent in the rations of the men for the rest of the war when in camp. By mid June 1864 the Iron Brigade was drawing rations of pork, bread, coffee, sugar, salt, dried apples, potatoes, onions, and even sauerkraut and cabbages. "We live very well," wrote Rufus Dawes. "We have plenty of vegetables."

The staples of the camp rationed diet for the men of the Iron Brigade and the Army of the Potomac were pork, beef, hardtack, coffee, sugar, and salt. Beans, soft bread, molasses, and rice were issued periodically, and as the war progressed, dried apples and vegetables such as potatoes, onions, and turnips were issued. The men did not always receive full rations, but calories and macronutrients were not a chief concern while in camp. Only when issued less than three-fourths of all rations for a consistently lengthy period did carbohydrates become an issue. Protein and fat intakes were so high that the men would have to receive roughly forty percent of full rations before they fell below 100 percent.

Vitamins and minerals were the problem, specifically vitamins A, C, D, E, and folate and calcium. Several vegetables provided some relief while others did little to help the situation. Table 4 shows the amount of each item needed to have met full

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<sup>&</sup>lt;sup>32</sup> Dow in Otis, "Wartime Letters," 136; Herdegen, William Ray, 204, 217, 231; Norton, Army Letters, 175, 177, 179.

<sup>&</sup>lt;sup>33</sup> Cheek, Sauk County, 112-13, 118-19; Herdegen, William Ray, 287, 288, 289; Dawes, Service, 303.

recommended values by complementing, or being issued in addition to, the August 1861 U.S. Army ration with Irish potatoes.

TABLE 4: Required vegetable quantities and micronutrients<sup>34</sup>

Food Item	Vitamin A	Vitamin C	Vitamin D	Vitamin E	Folate	Calcium
Potato, Irish	N/A*	4.61 oz	N/A	15.7 lbs	14.4 oz	12.0 lbs
Onion, white	1870 lbs	20.3 oz	N/A	97.0 lbs	15.6 oz	6.81 lbs
Onion, yellow	N/A	20.3 oz	N/A	13.9 lbs	15.6 oz	7.50 lbs
Onion, green	73.3 oz	6.92 oz	N/A	14.1 lbs	4.63 oz	2.08 lbs
Onion, pearl	N/A	25.0 oz	N/A	13.0 lbs	19.8 oz	6.81 lbs
Turnip	N/A	11.2 oz	N/A	65.8 lbs	32.9 oz	6.81 lbs
Sauerkraut	89.3 lbs	8.85 oz	N/A	17.3 lbs	12.3 oz	5.00 lbs
Tomato	46.1 oz	6.81 oz	N/A	4.46 lbs	19.8 oz	30.0 lbs
Cucumber	8.84 lbs	21.5 oz	N/A	N/A	N/A	7.42 lbs
Dried apples	110 lbs	80.1 oz	N/A	N/A	N/A	6.65 lbs
Dried peaches	27.1 lbs	13.4 oz	N/A	N/A	N/A	5.93 lbs

<sup>\*</sup>N/A means that food item does not contain any of that specific micronutrient.

Of the various fruits and vegetables issued the men at some point, potatoes were the best source of vitamin C, followed by the tomato and the green onion. However, only after receiving 4.61 additional ounces of Irish potatoes did vitamin C intake reach its full recommended value. This constitutes an issuance of about 170 percent of potato rations, generally not a feasible expectation for the average soldier. With 6.81 ounces of tomatoes added to August 1861 ration with potatoes, vitamin C levels would reach 100 percent, but they were issued to the 7<sup>th</sup> Wisconsin as a spoonful. Assuming this was the same as a common tablespoon, that amount provided the average soldier with only 0.8 percent of vitamin A, 2.4 percent of vitamin C, 0.3 percent of vitamin E, less than 0.5 percent of folate, and only 0.06 percent of calcium intakes. It is uncertain exactly what kind of onion the commissary issued the men, but the green onion was the only one that

<sup>&</sup>lt;sup>34</sup> ADA, "Diet Analysis Plus;" These values are based on the August 1861 ration with Irish potatoes; therefore, these are the amounts necessary to fulfill the rest of the micronutrient requirements. For example, vitamin A levels were at 10 percent in the August 1861 ration, therefore 1870 pounds of white onions were needed for the other 90 percent.

could reasonably improve vitamin C and folate. Vitamins A and E and calcium were insufficient, no matter what vegetable was issued.

While the westerners and the Army of the Potomac built up the defenses of the nation's capital, the Stonewall Brigade retired temporarily to camp in Centreville, where rations consisted of little more than hardtack according to one Virginian. During fall of that year, the brigade left with General Jackson for the Valley again, where they enjoyed improved rations.

While in the Valley, Major Wells J. Hawks, commissary for Jackson's army, edited the U.S. Army ration, creating one with slightly different quantities and less variety.

**TABLE 5: Major Hawks' ration**<sup>35</sup>

	Quantity/ ration				
Articles	OZ.	Tbsp.			
Beef, fresh	20				
or bacon	9				
Flour	19				
Rice	1.6				
Coffee	1				
Sugar	4				
Vinegar		1.28			
Salt	0.5				

At this time, the Valley was a large producer of wheat, which could explain Hawks' preference for this grain over cornmeal. Just as in the Iron Brigade and the other Northern units, this ration was not always obeyed strictly. John Casler wrote that in mid May 1862 the men received eighteen ounces of flour, either twelve ounces of bacon or twenty of beef, coffee, rice, beans, molasses, and sugar- a ration closer to the U.S. Army

<sup>&</sup>lt;sup>35</sup> Ludwell Lee Montague, "Subsistence of the Army of the Valley," *Military Affairs* 12 (Winter 1948), 227.

July 1861 ration. While in camp in the Valley, meat and bread was plentiful, but shortages began to appear in sugar and coffee.<sup>36</sup>

Later that year, the Stonewall Brigade, now part of the Army of Northern Virginia and camped in Centreville, received mostly beef, flour, and salt from the commissary.

David Earhart wrote home to his wife, "[o]ur rations have been flour or crackers & raw beef with less than half rations of salt." This was an uninvited decline in rations from those received during May in the Valley. "Our soldiers are not clothed or fed now as they used to be," observed Frank Paxton, commander of the brigade. "We are short on everything."<sup>37</sup>

This trend of decreasing rations continued for the soldiers of the Confederacy. By late May 1863 the meat rations were down to eight ounces. In August, despite whatever else was issued, the men usually received two ears of corn per day. "Roasting ears afforded the chief portion of living," commented Edward Moore of the Rockbridge Artillery. In October of 1864, Ted Barclay noted that food was becoming scarce, and fellow 4<sup>th</sup> Virginian Joseph Key stated in a letter to his father, "our rashens is very short now."

Because the Confederate government tried to model their rations from the U.S. Army rations, the same deficiencies existed and to greater extent. The macronutrients, like those in the Iron Brigade's rations, were still high, with over 175 percent necessary

<sup>&</sup>lt;sup>36</sup> Montague, "Subsistence," 226-28; Casler, Four Years in the Stonewall Brigade, 78.

<sup>&</sup>lt;sup>37</sup> Earhart to sister Mag, October 9, 1862, Earhart Letters; Robertson, *Stonewall Brigade*, 177; Margaretta Barton Colt, *Defend the Valley: A Shenandoah Family in the Civil War* (New York, NY: 1994), 203; John Gallatin Paxton, *The Civil War Letters of General Frank "Bull" Paxton, CSA: A Lieutenant of Lee & Jackson* (Hillsboro, TX: 1978), 65.

McKim, Soldier's Recollections, 135; Edward A. Moore, The Story of a Cannoneer Under Stonewall Jackson (Freeport, NY: 1971), 210; Glenn L. McMullen, A Surgeon with Stonewall Jackson: The Civil War Letters of Dr. Harvey Black (Baltimore, MD: 1995), 69; Turner, Ted Barclay, 143; Joseph Key to father, October 26, 1864, Key Family Papers.

calories and protein intake as high as 250 percent. This was not the case, though, by August 1863. Had the brigade, and the rest of the army for that matter, been issued half rations of meat and two ears of corn, the inadequacies would have far outnumbered the sufficiencies, as observed in Table 6.39

TABLE 6: Comparison of recommendations and Army of Northern Virginia rations<sup>40</sup>

Recommend	ations	Augu	st 1863	
Basic Compo	nents	Basic Components		
Calories	2325	1543.84	66%	
Protein (g)	75.56	77.03	102%	
Carbohydrates (g)	331.31	57.85	17%	
Fat-Total (g)	77.5	113.51	146%	
Vitamins	3	Vita	amins	
Vitamin A (RE)	900	51.4	6%	
Thiamin- B1 (mg)	1.2	1.83	153%	
Riboflavin- B2 (mg)	1.3	0.82	63%	
Niacin- B3 (mg)	16	20.77	130%	
Vitamin B6 (mg)	1.3	1.04	80%	
Vitamin B12 (mcg)	2.4	3.94	164%	
Vitamin C (mcg)	90	15.44	17%	
Vitamin D (mcg)	5	0.6	12%	
Vitamin E (mg)	15	1.19	8%	
Folate (mcg)	400	108	27%	
Minerals	3	Mir	nerals	
Calcium (mcg)	1000	36.42	4%	
Iron (mg)	8	5.24	66%	
Magnesium (mg)	400	133.15	33%	
Phosphorus (mg)	700	985.89	141%	
Potassium (mg)	3500	1845.62	53%	
Sodium (mg)	2400	3626.85	151%	
Zinc (mg)	11	9.74	89%	

During campaign season, the men of the Iron Brigade and Stonewall Brigade failed to receive full rations at all times. Even when certain items were issued in full, others were not or were not even issued. Typically, meat, flour or cornbread, sugar, coffee, and salt were the items that most often were rationed as allocated by the

<sup>&</sup>lt;sup>39</sup> ADA, "Diet Analysis Plus." <sup>40</sup> Ibid.

governments, though in the Confederacy, coffee, sugar, and salt became rarities as the war progressed. Both sides experienced shortages in issuances, especially the South as the war progressed. The men could only look to the less transitory winter quarters for hope of improvement in rations.

# Winter quarters

The armies typically established winter quarters in late November or early December, but for the Army of the Potomac in 1861, it was early November. During the first several months of this seasonal hiatus, the Wisconsians and Hoosiers dined upon beef, salt pork, beans, and soft bread. Hominy, rice, potatoes, and molasses were issued the men for periods but not throughout the entire winter of 1861/1862. "We are living very well," wrote one Wisconsin soldier to his wife. "Have not had hard crackers much of the time...Fried bread is an excellent dish for us. We fry a piece of pork until it is nearly done, then put in a piece of bread and fry it until brown."

Days of abundance and scarcity alternated for William Ray of the 7<sup>th</sup> Wisconsin.

On October 14 he wrote that the men were receiving only half rations of meat. Three weeks later they were getting plenty to eat; on November 2 they only had meat, bread, and coffee for breakfast. By December hardtack had made its return to the soldiers' diet. This prompted Joshua Jones to write two months later, "it has been So long that I have had to live on hard dry bread and it light bread too or hard Crackers and a little fat rotten

<sup>&</sup>lt;sup>41</sup> Bell Irvin Wiley, The Life of Johnny Reb (New York, NY: 1958), 59; Lance Herdegen, Four Years in the Iron Brigade: The Civil War Journal of William Ray, Co. F, Seventh Wisconsin Volunteers (Cambridge, MA: 11, 15, 20, 22, 24; Shortell, 8; Wert, Brotherhood, 80; Washburn, Watrous, 53.

cold pork." For most of the winter, though, the Wisconsians and Hoosiers were issued beef, salt pork, bread, and coffee, with some hardtack, hominy, and molasses.<sup>42</sup>

The Army of the Potomac established winter quarters in Stafford County late in 1862, after the disaster at Fredericksburg in mid December. In early January, General Ambrose Burnside, commanding the army, made an attempt at moving towards Richmond but got bogged down in the mud and was forced to return several days later to winter quarters. The dismalness of Burnside's Mud March was followed by a bland and monotonous diet for the men of the Iron Brigade. According to Rufus Dawes of the 6<sup>th</sup> Wisconsin it was "a dreary routine of hard tack and ham." Late that month rations became scarcer, and on one day, George Legate only had two or three pieces of hardtack, a piece of salt pork, and some coffee. 43

In late January General Joseph Hooker replaced Burnside as commander the army, and immediately Hooker became concerned about the diet of the soldiers. Shortly after his appointment rations began to improve for the men of the Army of the Potomac, including the Iron Brigade. "Gen. Hooker gave his soldiers a season of rest and better food, both of which they greatly needed," remembered Robert Beecham of the 2<sup>nd</sup> Wisconsin. "The men are better provided this winter with good and healthful rations, than at any time before in the history of our army," wrote Dawes. "Fresh bread, onions, potatoes, and fresh beef are regularly furnished in addition to the old stipend of hard tack and side meat." The 7<sup>th</sup> Wisconsin first drew potatoes and onions on February 7, issued

<sup>&</sup>lt;sup>42</sup> Herdegen, William Ray, 10, 11, 17; Eugene H. Berwanger, "absent So long from those I love': The Civil War Letters of Joshua Jones," *Indiana Magazine of History* 88 (September 1992), 221, 223.

<sup>&</sup>lt;sup>43</sup> Rufus Dawes, *A Full-Blown Yankee of the Iron Brigade: Service with the Sixth Wisconsin Volunteers* (Lincoln, NE: 1999), 115; Herdegen, *William Ray*, 166; Paul Kallina, "Never Defeated Yet," *Lincoln Herald* 89 (Fall 1987), 120.

at a rate of once per week. After Hooker had ovens built, soft bread followed the vegetables, and by February 24, it was being issued almost every day. Some men, such as Private Ray, decided to sell their soft bread since they had plenty of hardtack.<sup>44</sup>

While rations in winter quarters for the Iron Brigade and the rest of the Army of the Potomac tended to improve, as it did for the next two winters, they still failed to meet recommended values for certain micronutrients. The addition of onions and potatoes by Hooker in early 1863 improved vitamin C intake, and if green onions were issued, folate as well. The other micronutrients, however, remained a concern. As shown in Table 4 (p. 50) the amounts required to satisfy these recommended values were impossible to meet. Occasionally beets and turnips made an appearance, but these too lacked significant amounts of vitamins A, C, D, E, and folate and calcium. Only when issued less than three-fourths of all rations for a consistently lengthy period did carbohydrates become an issue; for calories, it was less than one-half. Fat and protein fell below 100 percent only when living on less than half rations. This generally was of little concern in winter quarters due to the stationary nature of the camps and the decreased logistical burden of transporting and supplying provisions. The concern was one of micronutrients.

The situation for the Stonewall Brigade was no better. By the second winter of the war, the issuances for the Virginians in winter quarters consisted of little more than meat, flour, and whatever small amounts of vegetables were available. In January 1863 Edward Moore was eating two meals per day, usually of meat and biscuits. Cornmeal was scarce for the men that winter. David Earhart mentioned issuances of bacon, beef,

<sup>&</sup>lt;sup>44</sup> Gillett, Medical, 208; William Thomas Venner, Hoosier's Honor: The Iron Brigade's 19<sup>th</sup> Indiana Regiment (Shippensburg, PA: 1998), 143; Alan T. Nolan, The Iron Brigade: A Military History, Third Edition (Berrien Springs, MI: 1983), 195; Wert, Brotherhood, 214; Robert K. Beecham, As If it Were Glory: Robert Beecham's Civil War from the Iron Brigade to the Black Regiments (Madison, WI: 1998), 40; Dawes, Service, 115; Herdegen, William Ray, 169, 170, 172.

and flour. "We never get meal and all off us wants it," he declared. Some were able to procure the desired meal, such as William Poague who had bacon and cornbread for breakfast in February.<sup>45</sup>

Rations quantities were becoming a major concern in not only the brigade but also the rest of the army by this point, prompting John Worsham of the 21<sup>st</sup> Virginia to comment on the situation. "For months we had not a full ration. The rations became more scanty as the war continued; and after this time, we never received as much as we wanted to eat." On March 27 Lee wrote to Confederate Secretary of War James Seddon about this growing concern. "The troops of this portion of the army have for some time been confined to reduced rations, consisting of 18 ounces of flour, 4 ounces of bacon of indifferent quality, with occasionally supplies of rice, sugar, or molasses." Added to this ration were sporadic issuances of vegetables and dried fruits in small amounts and 1.6 ounces of rice every third day.<sup>46</sup>

The meat rations during the winter of 1863/1864 were little more than pieces of fat with hints of meat. In addition cornmeal, coffee, and sugar were issued. In early March, Ted Barclay was living on these items twice per day as well as "a moderate allowance of an animal familiarity known as hog." The men saw even poorer rations the last winter of the war. Edward Moore recalled an incident of one soldier who after finishing his breakfast bought five loaves of bread. After he ate three, he negotiated the trade of one for enough molasses to put on his last loaf, which he then ate. "[This]

45 Moore, *Cannoneer*, 170; Earhart to Archy and Jef, January 9, 1863, Earhart Letters; William T. Poague, *Gunner with Stonewall: Reminiscences of William Thomas Poague* (Jackson, TN: 1953), 83.

Worsham, Foot Cavalry, 122; United States War Department, War of the Rebellion: Official Records of the Union and Confederate Armies (Washington, DC: 1880-1901), Series I, Vol. 25, part 2, 687, 730 (hereafter cited as Official Records, I, 25, etc.).

give[s] an idea of the insufficiency of the rations we received at the time," stated Moore.<sup>47</sup>

Rations changed little for the Stonewall Brigade and the Army of Northern Virginia in winter quarters. The staples of the rationed diet remained relatively consistent during winter quarters as they did during campaign season. Likewise, the quantity and quality of issuances continued to decrease as the war progressed. Occasionally the men received some vegetables and dried fruit but this was more an irregularity than it was for the opposing army. Just as the rationed diet during campaign season, vitamins A, C, D, E, and folate and calcium were not provided for in full. While Lee corresponded with Secretary of War Seddon in March 1863, vitamin B<sub>12</sub>, potassium, sodium, and even fat, joined the list of deficiencies in the rationed diet.<sup>48</sup>

## Thanksgiving and Christmas

If there was to be any relief from the typical camp diet for the average soldier it usually happened on Thanksgiving and Christmas. Rufus Dawes' company received twenty mince pies on their first Thanksgiving away from home, and the next year William Ray gave thanks for his dinner of roasted turkeys, chickens, hams, pies, and cakes. The Stonewall Brigade had a similar meal the previous Christmas, including turkey, sausage, cakes, pies, and fruit.<sup>49</sup>

The lucky were reminded of the large dinner parties from before the war. Oliver Norton tried to make up for his previous shortcomings at Christmas dinner in 1864.

<sup>&</sup>lt;sup>47</sup> Wert, Brotherhood, 284; Turner, Ted Barclay, 130-31; Moore, Cannoneer, 285.

<sup>&</sup>lt;sup>48</sup> ADA, "Diet Analysis Plus."

<sup>&</sup>lt;sup>49</sup> Dawes, Service, 31; Herdegen, William Ray, 156; Wert, Brotherhood, 72.

I will not undertake to describe our dinner in detail, but we had oyster soup, fish boiled, roast fowl (chicken) and mutton, potatoes, peas, and tomatoes, oysters, fried and raw, and for dessert mince pie, fruit cake, apples, peaches, grapes, figs, raisins, nuts, etc., and coffee, and for wassail a rousing bowl of punch.<sup>50</sup>

Randolph McKim, as well, took advantage of the rare opportunity of abundance when it presented itself on Christmas Day in 1862. "We had *everything* that you could think of, except ice-cream and iced fruit, etc." His bill of fare included oyster soup, roast turkey, ham, round of beef, fresh beef, fried oysters, lobster salad, potatoes, Charlotte rouse, pound cake, plum pudding, and a number of other delicacies.<sup>51</sup>

For others, Christmas only served to remind them of what others were enjoying. In 1863 Ted Barclay had bacon and bread for breakfast, bacon and bread for dinner, and for a little variety, he had nothing for supper. Dinner was not any more festive for the sarcastic John Pardington the year before. "Now about our Christmas dinner. We had a little Boiled Rice with a spoonful of molasses. That was quite a dinner was it not." <sup>52</sup>

Several trends appear in the camp rationed diets of the Stonewall and Iron Brigades. They were inherently deficient in certain micronutrients, notably vitamins A, C, D, E, and folate and calcium. While this list tended not to grow for the Northerners, the length for the Southerners was directly proportional to the duration of the war. Eventually even caloric, carbohydrate, and fat intakes became a problem. Furthermore, issuances of only certain vegetables, specifically the Irish potato, improved only certain deficiencies. However, only Union rations included the potato. The produce most commonly selected lacked adequate supplies of most micronutrients in the amounts they were issued. It should also be noted that vegetables became a supplement or luxury to

<sup>51</sup> McKim, Soldier's Recollections, 123.

<sup>&</sup>lt;sup>50</sup> Norton, Army Letters, 247.

<sup>&</sup>lt;sup>52</sup> Pardington, *Dear Sarah*, 53; Turner, *Ted Barclay*, 119-20.

the rations for the armies, much less the two brigades, when they were in fact supposed to be an integral part. When the 6<sup>th</sup> Wisconsin received issuances of vegetables in late June 1864, Philip Cheek wrote "[p]otatoes, sauerkraut and cabbages were new rations to us; we never had them before." While the latter two items were never part of the ration, potatoes were supposed to be issued the men, and in fact, until mid June, vegetables were not rationed at all in the army for thirty-two days. Virginian John Worsham commented that "we did not get the regular allowance [of rations] even at the beginning of the war," and Carlton McCarthy stated that, "[r]ations in the Army of Northern Virginia were alternately superabundant and altogether wanting." For a number of reasons, be it not receiving their due share or not being able to eat certain items, the average soldier of the Civil War often failed to live strictly by the prescribed rations.<sup>53</sup>

# This kind of food will kill me in a week: Culinary and food quality problems

When in established camps, company cooks, who were generally more experienced than the average Billy Yank or Johnny Reb, often prepared the meals for the men. On the march or during an engagement, this system simply was not practical nor was there time for it; soldiers had to cook for themselves. Many soldiers also rejected the quality of food that came from the company cooks, choosing to either prepare their own meals or rotate turns within their mess, a group of five to ten men who ate together. The average soldier, however, typically was no better or more experienced with the culinary arts than the company cook. Many a meal and hungry stomach suffered for this reason.<sup>54</sup>

<sup>&</sup>lt;sup>53</sup> Cheek, Sauk County, 119; Prescott, Feeding, IV-20; Worsham, Foot Cavalry, 122; McCarthy, Minutiae, 56

<sup>&</sup>lt;sup>54</sup> Davis, *Taste for War*, 2; Billings, *Hardtack*, 87.

Most soldiers entering service had little or no knowledge of cooking. Eventually, the North realized this problem and issued cookbooks and instructions to hone this craft, but in the Southern armies and during the first year of the war especially, a great number of soldiers were left staring or cursing at their culinary attempts. Robert Barton of the Rockbridge Artillery recalled his first meal in camp at Winchester. "I [shall never] forget the desperate gaze which I cast upon the self-cooked breakfast of flour, water, and fat bacon which formed my breakfast." John Worsham, too sadly remembered his first attempts.

I will never forget the first meal. We made a fire under the shade of a tree, made up our bread of meal..., sliced our fat meat, and commenced to cook. In about two minutes both meat and bread were burned black on one side! We took them off the fire, cooled them, tried again, and succeeded very well in burning the other side.<sup>55</sup>

Frying and overcooking remained two problems that would plague the men on both sides throughout the war, much to the dismay of Private Austin Stearns and his mutton. "Tough sole-leather was tender as chicken beside it."

If anything, frying ensured a high fat content in the soldier's meal. Most dishes were some variation of fried meat with whatever was at hand being fried in the grease, be it hardtack, cornbread, beans, or potatoes. Robert Patrick of the 4<sup>th</sup> Louisiana, finally fed up with his diet, wrote in his diary in June 1864, "I am sick and tired of grease, grease, grease." For Randolph McKim, it did not take quite so long to realize the unwholesomeness of frying.

Alas! my dinner, so eagerly expected, was soon ended, for one or two spoonfuls of the greasy stuff that came out of the camp kettle

<sup>&</sup>lt;sup>55</sup> John H. Worsham, *Foot Cavalry*, 5.

<sup>&</sup>lt;sup>56</sup> Davis, *Taste for War*, 1, 11-12; Colt, *Defend the Valley*, 75; Arthur A. Kent, *Three Years with Company K* (Rutherford, NJ: 1976), 62.

completely turned my stomach...Well, I *may* get used to standing up and being shot at, but this kind of food will kill me in a week!<sup>57</sup>

Needless to say McKim did not die one week later, but he and others would face "greasy stuff" for most meals.<sup>58</sup>

Commissioned officers, on the other hand, fared better, particularly those above the company level such as the majors, lieutenant colonels, and higher. Most of these had the luxury of either a slave or servant experienced at cooking prepare their meals. Later in the war, however, this luxury began to disappear for many Confederate officers. "[W]hen rations got short and were getting shorter, it became necessary to dismiss the darkey servants," recalled Carlton McCarthy of the Richmond Howitzers. <sup>59</sup>

Poor cooking habits and inexperience was only one reason the men would not or could not eat their rations. Many soldiers simply disliked some items or, to no fault of their own, were issued spoiled rations. Two items held the common rejection by most soldiers, one more notorious than the other. Peas were generally not popular among the men, and many could find no palatable means of preparing them.<sup>60</sup>

Most unpopular of all, however, and equally unpalatable were desiccated vegetables. These were dry, compressed cakes about two to three inches square and about one inch thick supposedly containing string beans, turnips, carrots, beets, and other vegetables. The men found a number of others items within these cakes including roots, leaves, and stalks, among other nameless items. "[They contained] a large residuum of

<sup>&</sup>lt;sup>57</sup> McKim, Soldier's Recollections, 27.

Davis, Taste for War, 26-27; Robert Patrick, Reluctant Rebel: The Secret Diary of Robert Patrick, 1861 1865 (Baton Rouge, LA: 1987), 177.

<sup>&</sup>lt;sup>59</sup> Davis, *Taste for War*, 27; McCarthy, *Minutiae*, 25.

<sup>&</sup>lt;sup>60</sup> Davis, *Taste for War*, 21; Billings, *Hardtack*, 138.

insoluble and *insolvable* material...which defied the powers of the analyst to give it a name." A Union inspector claimed to have found powdered glass in one shipment.<sup>61</sup>

Not only did the soldiers not know exactly what was in the desiccated vegetables, but they were on the whole unable to find a way to make them edible.

We are all hungry for vegetables, but I cannot cook it nor have I seen any one who could so that it will be good. We have put in fresh beef and made soup of it, and we have boiled it down dry and tried it every way we can think of, and don't succeed yet. The fault seems to be that each vegetable loses its individual flavor in the cooking and all blend together in a nondescript sort of a dish that isn't good a bit. 62

Throughout camp, the men found little use for the inedible cakes and widely referred to them instead as 'desecrated' vegetables.<sup>63</sup>

Charles Tripler, Medical Director of the Army of the Potomac, and his successor, Jonathan Letterman, realized the unpopularity of the cakes with the soldiers and found stores of them rotting, not having been issued. Both Tripler and Letterman believed the vegetables had beneficial qualities but only if prepared as a soup. "The secret in using the desiccated vegetables is in having them thoroughly cooked," wrote Letterman, who suggested they be soaked in water for two hours and boiled with a soup for three hours. It is unlikely this increased their popularity among the men; spending five hours preparing an item that many likened to cardboard was impractical and unappealing.<sup>64</sup>

Then there was the meat, which on a number of occasions was either too salty or too putrefied for the men to eat. Billings wrote that salt beef, or "salt horse" was rarely issued to the men, but when it was it was so salty that the men widely rejected it.

<sup>63</sup> Davis, Taste for War, 21.

<sup>&</sup>lt;sup>61</sup> Billings, *Hardtack*, 138; Norton, *Army Letters*, 175; Robertson, *Soldiers*, 70.

<sup>&</sup>lt;sup>62</sup> Norton, Army Life, 175.

<sup>&</sup>lt;sup>64</sup> Official Records, I, 11, part 1, 208-209; Official Records, I, 14, 351; Bollet, Civil War Medicine, 347; Davis, Taste for War, 22.

"Without a doubt, it was the vilest ration distributed to the soldiers." Even when issued 'fresh,' the meat could still turn the stomach of the soldier with this strongest digestive fortitude. The 4<sup>th</sup> Louisiana found itself without beef in mid January 1863 after the meat rotted because the commissary issued it all at once. The Stonewall Brigade shared a similar fate in August 1861 at Centreville when the commissary issued meat that had been left out in the rain. So many of the soldiers complained that Jackson appointed a committee to investigate, which found the meat to be infested with maggots and fit only to be burned.<sup>65</sup>

# Forgive us our shortcomings: Supply and distribution problems

Disparities between the theoretical and actual diet of the soldier during the Civil War occurred most often as a result of not being issued various items for a number of reasons. Because little was known about nutrition at the time, and what was known was limited mostly to the circle of physicians, chemists, and reformers, the officers in the armies often failed to realize the importance of issuing the men certain items. As such, they also often ignored requests to rectify the situation. A number of officers, for their own benefit, would appropriate rations meant for the men. In theory, each company had a company fund. Money from extra rations or items not issued the men would go into this fund that the soldiers could use to purchase foodstuffs, such as milk, cheese, and other items. In practice, company officers would pocket this money for their own welfare, and many companies never saw their company fund put to use. "I have yet to learn of the first company whose members ever received any revenue from such a source,

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<sup>&</sup>lt;sup>65</sup> Robertson, Soldiers, 67; Worsham, Foot Cavalry, 5; Billings, Hardtack, 134; Patrick, Reluctant Rebel, 79; Bean, Liberty Hall Volunteers, 53.

although the name of *Company Fund* is a familiar one to every veteran," remembered Billings. Private Norton discovered this practice before his regiment even stepped foot onto a battlefield. "[Our officers are] cheating us in a rascally manner," he wrote. "[O]ur three officers, instead of drawing their own rations, have boarded themselves and servant...out of ours, thus keeping us half the time without enough to eat." In such a way, the commissary could potentially issue full rations and believe each soldier received their share, when in fact he was being deprived. 66

Commissary neglect and ineptness also parted the soldier from his due rations.

Because of this, every company in the 7<sup>th</sup> Wisconsin received their rations except company F on an October morning in 1862. Robert Patrick wrote on February 16, 1863, "[t]he Commissary pretends to issue rations of rice, but we eat up \$10.00 worth of rations in two meals." While the commissary department oversaw the procurement and distribution of rations, the quartermaster department held the responsibility of transporting the foodstuffs, and as such, was not exempt from scorn and ridicule. The men of the Iron Brigade found it more fitting to recite the 'Soldier's Prayer' in place of the 'Lord's Prayer.' "Give us this day our daily pork and crackers; And forgive us our shortcomings, as we forgive our Quartermaster..." The Stonewall Brigade had its fun with their quartermaster as well. The regimental chaplain for the 4<sup>th</sup> Virginia was explaining the relationship between Judas Iscariot and the apostles when he remarked, "Comrades, you will better grasp the relation Judas bore to the other apostles when I tell you he was the quartermaster of the company."<sup>67</sup>

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<sup>&</sup>lt;sup>66</sup> Gillett, *Medical*, 159, 206; Bollet, *Civil War Medicine*, 337; Billings, *Hardtack*, 112; Norton, *Army Letters*, 16, 21.

<sup>&</sup>lt;sup>67</sup> Herdegen, Four Years with the Iron Brigade, 8; Patrick, Reluctant Rebel, 93; Dow in Otis, "Wartime Letters," 149; Bean, Liberty Hall Volunteers, 86.

At Stafford County in January 1863, Jonathan Letterman, now active Medical Director for the army, found officer and commissary neglect to be a concern. Letterman found that the commissary had been receiving abundant rations, but "more minute inquiry proved that, while large supplies of potatoes had been issued [to the commissary]...the troops received in some cases a very small quantity, and in others none at all." Letterman brought this matter to the attention of not only corps medical directors, but also the newly appointed commander of the army, General Hooker. Stressing that the officers be responsible for ensuring the proper issuance of rations to the men and having been influenced by Letterman, Hooker had improved the diet of the army by mid February.<sup>68</sup>

The largest problem in supplying the armies, however, was one of logistics.

Though large armies were difficult to adequately supply, the North held the upper hand in terms of the shipment of provisions via railroad. Not only did the South possess far less track mileage, but the states did not standardize their tracks. Different states used different railroad gauges, meaning railroad cars could not pass between states. Instead, upon reaching a state border, all the goods had to be transferred from one train to the next, a highly inefficient process. To make matters worse for the Southern armies, as the war progressed more Confederate track mileage and railheads either came under the control of or were destroyed by Union forces, further limiting the shipment of provisions. <sup>69</sup>

Railroads were only one factor in the supplying of provisions, and to the average soldier, they were an indirect one. The supply wagons, which carried the soldiers'

<sup>69</sup> Gillett, Medicine, 159; Bollet, Civil War Medicine, 341.

<sup>&</sup>lt;sup>68</sup> Jonathan Letterman, Medical Recollections of the Army of the Potomac (New York, NY: 1866), 106-07.

provisions, were the largest problem any time an army was not settled in camp. On the move, they were placed at the rear of the army, behind the artillery and caissons, which tended to made poor roads poorer, and the wagons simply could not keep pace with the men and often fell behind or got stuck. As a result, until the wagons could come up, many a hungry soldier went without food for some time. Billings commented on the wagons trains' ability to arrive in a timely fashion. "Sometimes they would accomplish the task assigned without difficulty, but it was the exception."<sup>70</sup>

When the Stonewall Brigade and the rest of Jackson's army in the Valley left Winchester for Bath on New Year's Day 1862, snow and muddy roads limited their progress. The weather and road conditions also wreaked havoc on the supply wagons, which frequently got stuck in the mud. Frank Jones and most of the brigade went without food from January 1 until late into the next day. This became a problem again three days later when after eating breakfast on January 5, Jones was deprived of provisions until early afternoon of January 6. Several months later, the wagon trains broke down between McDowell and Harrisonburg, and the provisions fell into the mud.<sup>71</sup>

When the wagon trains fell behind, the Iron Brigade was forced to go without food for over two days in early November of that same year. Several weeks later the same situation occurred, and Johnny Brendel resorted to borrowing hardtack from a fellow soldier, while many of the officers lived solely upon forage. "When separated from our wagon train," wrote Major Dawes, "we have hard times."<sup>72</sup>

Billings, Hardtack, 365.
 Apperson, March of Mars, 177, 233; Colt, Defend the Valley, 111.

Nolan, Iron Brigade, 168-69; Venner, Hoosier's Honor, 123; Dawes, Service, 101, 105, 106; Venner, Swamp Hogs, 135.

#### We are suffering many privations now: Marching and campaign diet

The reason Dawes and the rest of the Iron Brigade experienced "hard times" in early November 1863 was because they had just completed a march, and the supply wagons simply could not keep pace. Because of this issue, and the extremely difficult nature in attempting to resupply either a moving or fighting force, the average soldier was required to live several days or more on simplified rations. Certain items simply were not portable and could not be eaten on the move, namely vegetables. Throughout most of the war, most rations on the march or in battle consisted of either some kind of meat and hardtack. John Billings listed the marching ration as sixteen ounces of hardtack, twelve ounces of salt pork or twenty ounces of fresh meat, sugar, coffee, and salt. This was the August 1861 ration minus vegetables and vinegar. Private McCarthy remembered that in the Army of Northern Virginia, the men were fortunate to have flour, meat, sugar, and coffee all at the same time and in proper quantities; usually their ration consisted of hardtack and pork.<sup>73</sup>

Just as in camp, the quantities of what the soldiers received were often short.

Private Ray wrote that in March 1862 the marching ration for the 7<sup>th</sup> Wisconsin consisted of thirty crackers and a chunk of raw ham for three days. This averages out to the daily required amount of hardtack but some unknown quantity of meat. Later that year in, the Iron Brigade experienced difficult times, marching on short rations and fighting at Manassas, South Mountain, and Sharpsburg before settling into camp. On August 22, Ray had only three crackers all day. James Sullivan of the 6<sup>th</sup> Wisconsin wrote "[o]ur men were on the shortest possible rations," and Dawes noted that some of the men in the regiment were marching without food. Although General Gibbon had some cattle

<sup>&</sup>lt;sup>73</sup> Robertson, *Soldiers*, 65; Davis, *Taste for War*, 17; Billings, *Hardtack*, 112; McCarthy, *Minutiae*, 57, 65.

slaughtered and fresh beef issued, it did little to quell the appetites of the men. While passing a wagon train full of soft bread, some of the members snagged the loaves with their bayonets. "[I]t did taste good," remembered Philip Cheek, "but real fresh bread don't go far with a half starved soldier."<sup>74</sup>

The situation remained relatively the same the next year for the Iron Brigade.

Jerome Watrous commented on "the monotony of hard tack and fat pork," in describing the march to Gettysburg in June 1863. On the same subject Hoosier Johnny Brendel wrote "we are living high on the hog." While marching back to Virginia the men were on half rations according to Augustus Buell.<sup>75</sup>

By mid to late 1864, however, rations had improved at least in quantity. Brendel mentioned that they received plenty of provisions. After reaching Petersburg, the men continued to obtain better rations. Sullivan lived on hardtack and condensed milk, a new item to the men during August. The quantity if not quality of rations in Petersburg could most likely be attributed to the nature of the campaign. Petersburg was a siege with better established and more permanent lines of communication for the Army of the Potomac, allowing the men to be better supplied than they would be in previous engagements.<sup>76</sup>

The rations of the Stonewall Brigade followed this same trend until later in the war, when rather than keeping status quo if not improving, they declined rather sharply in both quality and quantity. Randolph Fairfax listed their marching and campaign rations

<sup>&</sup>lt;sup>74</sup> Herdegen, William Ray, 63, 133; Beaudot, 44; Dawes, Service, 59; Wert, Brotherhood, 143; Cheek, Sauk County, 45.

<sup>&</sup>lt;sup>75</sup> J.A. Watrous, "Mosby and His Men," in Military Order of the Loyal Legion of the United States, War Papers: Being Read Before the Commandery of the State of Wisconsin Military Order of the Loyal Legion of the United States, Volume II (Wilmington, NC: 1993), 303; Venner, Swamp Hogs, 203; Augustus Buell, The Cannoneer: Recollections of Service with the Army of the Potomac by "A Detached Volunteer" in the Regular Artillery (Washington, DC: 1890), 124.

<sup>&</sup>lt;sup>76</sup> Venner, Swamp Hogs, 290; Gaff, Bloody Field, 370.

as six crackers and four ounces of pork per day in mid May 1862. Earlier that year many in the brigade had nothing more than hardtack for three days as they marched to Romney. James Nisbet recalled an exchange that portrayed the situation of the men in the Valley in 1862.

At one of these gatherings for prayer was a private who had a pegleg. Unable to kneel, he sat with bowed head while another brother led in prayer. The brother was earnestly praying for more strength and more courage. The brave old one-legged Confederate, down on his only knee called out: "Hold on, thar, Brother Jones! Hold up with that-thar prayer! Why don't you pray for *more provisions?* We've got more courage now than we's got any use for!"

Those extra provisions would never come for Jackson's men as they crossed back over the Blue Ridge Mountains and joined the rest of Lee's army outside Richmond. "We are suffering many privations now," lamented Randolph McKim, who had marched with Jackson just several weeks earlier. "[Y]ou would be astonished at the universal scarcity of what were once considered the necessities of life."

The privations would continue, not just for the Stonewall Brigade, but for the rest of the army as well. The 33<sup>rd</sup> Virginia was short on rations as it entered into battle at Gettysburg, and the march back across the Potomac offered little relief. McKim wrote, "[d]uring the whole march...the men had not one day's rations in the three...I have seldom suffered as much on any march."<sup>79</sup>

During the Virginia Overland Campaign the following year the Richmond Howitzers were on "mean and meager little rations." John Casler remembered the destitute situation of the Stonewall Brigade.

<sup>&</sup>lt;sup>77</sup> Bell Irvin Wiley, Four Years on the Firing Line (Jackson, TN: 1963), 43.

<sup>&</sup>lt;sup>78</sup> Reverend Philip Slaughter, *A Sketch of the Life of Randolph Fairfax, Third Edition* (Falls Church, VA: 1984), 26; Wert, *Brotherhood*, 77; McKim, *Soldier's Recollections*, 118.

<sup>&</sup>lt;sup>79</sup> Casler, Four Years in the Stonewall Brigade, 176; McKim, Soldier's Recollections, 182.

We were allowed one pint of corn meal (not sifted) and one-fourth of a pound of bacon for one day's ration, and as there was nothing in that country to steal, we were pretty badly off. The corn bread would get so hard and moldy that when we broke it it looked like it had cobwebs in it.<sup>80</sup>

After returning to the Valley later that year, the brigade was to draw rations at Staunton, but a portion of General Jubal Early's army had already made its way through the city and took all the rations. After a twenty-five mile march, Casler sat down to a piece of pork and bread.<sup>81</sup>

Eating became more of a luxury for Lee's army the following year, especially in the days leading to the surrender at Appomattox. For Carlton McCarthy breakfast, dinner, and supper were combined into "something to eat." Edward Moore recalled, "we had passed a week with food and sleep scarcely sufficient for one day." Some of the men lived on flour they found on the road, while others munched on parched corn and strips of raw bacon. "In commenting upon Grant's theory and plan of *attrition*, I should have added that one feature of it was to turn loose upon our armies and our homes the twin giant of *starvation*," wrote Robert Stiles.<sup>82</sup>

Because of logistical difficulties, the soldiers in both brigades found themselves on certain occasions without any food. On March 12, 1862 William Ray found himself without any food and had only coffee for breakfast. One week later he wrote that many of the men were without rations. Just days before the Battle of Antietam the Iron Brigade went twenty-four hours without food until its breakfast on September 15. One month later, John Pardington wrote home to his wife, "[s]omtimes I wish you would send me a

<sup>&</sup>lt;sup>80</sup> Casler, Four Years in the Stonewall Brigade, 220-21.

<sup>&</sup>lt;sup>81</sup> Robert Stiles, Four Years Under Marse Robert (Dayton, OH: 1977), 254; Casler, Four Years in the Stonewall Brigade, 226.

<sup>82</sup> McCarthy, Minutiae, 125, 147-48; Moore, Cannoneer, 302; Stiles, Marse Robert, 347.

dollar or two now and then. For I need [it] sometimes. For when we get on a march we often get out of something to eat."83

Lee's army, too, often found itself "out of something to eat." "[W]e had to march and fight so often on an empty stomach," remembered McKim. Just days after his baptism under fire at Manassas, John Grabill of the Stonewall Brigade was resigned to beg for food from the 49<sup>th</sup> Virginia. A number of Jackson's men went without food at one point or another during the Valley Campaign. John Apperson had nothing to eat on January 2, and Randolph Fairfax went thirty-six hours on an empty stomach before having supper on January 4. McKim was forced to fast for two days in mid April, and Apperson wrote on the first of May some of the regiments had no food that morning. As the brigade passed through Winchester at the end of that month, the women passed out slices of bread and other eatables, and for the men of the 2<sup>nd</sup> Virginia it was their first meal in two days. Many others would experience this problem during the rest of the war, and especially in its final days. Edward Moore went forty-eight hours with nothing to eat on the march to Appomattox, and on April 5, the last of the rations in the Army of Northern Virginia were passed out to the officers. The men would have to take corn meant for the horses if they wanted to eat.<sup>84</sup>

Another common occurrence on both sides that left soldiers with empty haversacks was a preference of some men to eat all of their rations at once prior to a march or engagement. Rather than carrying their rations around, many opted to save themselves the trouble and extra weight. The issue of beef or bacon rotting also

<sup>83</sup> Herdegen, William Ray, 65, 68; Nolan, Iron Brigade, 131; Pardington, Dear Sarah,

<sup>84</sup> McKim, Soldier's Recollections, 43, 82; Grabill, Diary of a Soldier, 3; Apperson, March of Mars, 177, 223; Slaughter, Randolph Fairfax, 21; Wert, Brotherhood, 112; Robertson, Stonewall Brigade, 102; Moore, Cannoneer, 298; McCarthy, Minutiae, 128.

convinced a number of soldiers to eat all their meat before leaving. "I sometimes ate all my bacon at one meal always the first day," mentioned a 4<sup>th</sup> Virginian. 85

Just as the camp rationed diet, the marching and campaign rationed diet consisted of a number of nutritional shortcomings. Not only was the ration based upon an inherently-inadequate design, it featured additional problems. Because mobility called for portable items, certain eatables were often neglected the men, notably vegetables. Due to this shortcoming, logistical difficulties in resupplying soldiers on the move, and, in the case of the South, declining food supplies and means of transportation, it could only be expected that the average soldier suffered just as many if not more nutritional deficiencies as the result of his marching and campaign rations.

The marching ration as laid out by Billings provided probably the most generous quantities the Iron Brigade and the rest of the Army of the Potomac would see for most of the war.

 TABLE 7: Comparison of recommendations and Army of the Potomac marching ration  $^{86}$ 

Recommendations		Marching Ration		
Basic Components		Basic Components		
Calories	3110	4456.77	143%	
Protein (g)	97.95	213.68	218%	
Carbohydrates (g)	443.18	521.55	118%	
Fat-Total (g)	103.67	168.43	162%	
Vitamins		Vitamins		
Vitamin A (RE)	900	0	0%	
Thiamin- B1 (mg)	1.2	4.12	343%	
Riboflavin- B2 (mg)	1.3	2.44	187%	
Niacin- B3 (mg)	16	61.47	384%	
Vitamin B6 (mg)	1.3	3.32	255%	
Vitamin B12 (mcg)	2.4	11.24	468%	
Vitamin C (mcg)	90	0	0%	
Vitamin D (mcg)	5	1.3	26%	
Vitamin E (mg)	15	9.19	61%	

<sup>&</sup>lt;sup>85</sup> Billings, *Hardtack*, 141; McCarthy, *Minutiae*, 27; Earhart to his wife, July 11, 1862, Earhart Letters.

<sup>86</sup> ADA, "Diet Analysis Plus."

Folate (mcg)	400	308.44	77%	
Minerals		Minerals		
Calcium (mcg)	1000	265.58	27%	
Iron (mg)	8	35.59	445%	
Magnesium (mg)	400	955.54	239%	
Phosphorus (mg)	700	3343.31	478%	
Potassium (mg)	3500	4044.21	116%	
Sodium (mg)	2400	9506.46	396%	
Zinc (mg)	11	42.73	388%	

In full quantities Billings' marching ration offered all the deficiencies of the camp ration. However, it has been shown that the men on many occasions failed to receive full rations, such as the when the Iron Brigade marched back to Virginia after the Battle of Gettysburg. During this trip, the brigade was on half rations, which resulted in inadequate levels of vitamin B<sub>12</sub>, potassium, and even carbohydrates, fat, and calories. The situation was no better for the men the year before when they marched to Manassas Junction in late August, many of them living just on several pieces of hardtack and coffee per day. Even the condensed milk, for those who enjoyed the novelty dairy product at Petersburg, improved the situation only slightly. While a fourteen-ounce can contained 152 percent of recommended calcium and added 58.8 micrograms of folate, vitamins A, C, D, and E were still below suggested levels.<sup>87</sup>

For the Stonewall Brigade and the Army of Northern Virginia, full rations were mostly theoretical when on the march or in battle. From the Valley Campaign to the Overland Campaign, insufficiency followed right alongside the men, as seen in Table 8.

87 Ibid.

TABLE 8: Comparison of recommendations and Stonewall Brigade marching rations<sup>88</sup>

Recommendations		Valley Campaign		Overland Campaign	
Basic Components		Basic Components		Basic Components	
Calories	3110	1996.99	64%	2331.25	75%
Protein (g)	97.95	85.76	88%	71.3	73%
Carbohydrates (g)	443.18	272.21	61%	349.4	79%
Fat-Total (g)	103.67	62.79	61%	72.05	69%
Vitamins		Vitamins		Vitamins	
Vitamin A (RE)	900	0	0%	213.19	24%
Thiamin- B1 (mg)	1.2	2.43	203%	2.49	208%
Riboflavin- B2 (mg)	1.3	1.08	83%	1.19	92%
Niacin- B3 (mg)	16	32.09	201%	24.77	155%
Vitamin B6 (mg)	1.3	1.55	119%	1.67	128%
Vitamin B12 (mcg)	2.4	1.97	82%	1.97	82%
Vitamin C (mcg)	90	0	0%	0	0%
Vitamin D (mcg)	5	0.3	6%	0.3	6%
Vitamin E (mg)	15	5.18	35%	3.61	24%
Folate (mcg)	400	170.32	43%	119.07	30%
Minerals		Minera <u>l</u> s		<u>Minera</u> ls	
Calcium (mcg)	1000	140.84	14%	40.82	4%
Iron (mg)	8	16.29	204%	17.41	218%
Magnesium (mg)	400	543.63	136%	603.27	151%
Phosphorus (mg)	700	1675.79	239%	1474.17	211%
Potassium (mg)	3500	2066.67	59%	1852.92	53%
Sodium (mg)	2400	1828.53	76%	1968.58	82%
Zinc (mg)	11	14.59	133%	11.89	108%

Clearly the men of the Stonewall Brigade had poorer rations than their Union counterparts. Interestingly enough, from the comparison in Table 8 it appears there was very little change from 1862 to 1864 in the nutritional adequacy of the rations. This seems to go against the claim of increasingly poorer rations, as the problem of food supply for the Confederate forces grew as the war progressed. In actuality, the Stonewall Brigade most likely enjoyed better eating in 1862 than it did in 1864 for reasons that will be explained in the next sections.

88 Ibid.

Neither the camp nor the marching and campaign rationed diets supplied the men with enough of certain micronutrients. The most prevalent deficiencies included vitamins A, C, D, E, and folate and calcium. At times other vitamins and minerals could become problems, such as vitamin B<sub>12</sub> and potassium. This scenario occurred more so on the march or during campaign and for the South where added logistical difficulties made issuing full rations more problematic. At times, the average soldier simply could not expect to live on his rations alone and would frequently turn to other sources of nutriment. "The inability of the government to furnish supplies," wrote McCarthy, "forced the men to depend largely upon their own energy and ingenuity to obtain them."

# Send me a box as rations are scarce and inferior: Boxes to soldiers

James Robertson, Jr. listed three methods the average soldier often utilized to supplement his rations- 'care' packages from home, sutlers, and foraging. While camped at Belle Plain in February 1863, the Iron Brigade not only saw improved rations under General Hooker but also received a variety of goods from folks back home. The families of the Hoosiers sent a plethora of eatables including corn starch, dried beef, apples, peaches, prunes, raspberries, plums, huckleberries, currants, and cherries, all of which were dried, canned tomatoes, canned fruit, currant jelly, and pickled cucumbers. John Pardington of the 24<sup>th</sup> received a package from his wife, Sarah, containing strawberry preserves, peach preserves, fruit cake, and other delicacies.<sup>90</sup>

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<sup>&</sup>lt;sup>89</sup> McCarthy, *Minutiae*, 62.

<sup>&</sup>lt;sup>90</sup> Robertson, Soldiers, 72-73; Nolan, Iron Brigade, 195; Venner, Hoosier's Honor, 143, 404; Pardington, Dear Sarah, 83.

Boxes from home were quite frequent while the men of Jackson's brigade trained in the Valley during the first several months of the war. Captain James White of the 4<sup>th</sup> Virginia was the proud recipient of a box of ham, beef, and pickles. Upon receiving his care package, Ted Barclay wrote that he "[w]as very glad to get something that decent people eat." The boxes came pouring in later that year while the Stonewall Brigade enjoyed a temporary break at Camp Stephenson near Winchester. John Grabill's family sent him pies, chickens, pickles, and butter, among other foodstuffs. The next day he enjoyed a fine feast of cake. While Lee's army lived upon partial rations in early 1863, David Earhart took pleasure in sitting down to a meal of ham and sweet potatoes with bread. Less than a month later and following the army's victory at Chancellorsville, the quality of the men's diet prompted Barclay to write home, "[s]end me a box as rations as scarce and inferior."

While friends and family sent most of the boxes the men received, Billy Yank and Johnny Reb also placed orders to receive longed-for eatables. During January 1865 while in Petersburg, William Ray requested a number of items. Within a span of nine days, he received two pounds of canned butter, a package of dried beef, and a can of cake dough. While the Stonewall Brigade was resting at Camp Winder in March 1863, General Paxton's order arrived. "I have gotten a half-bushel of dried peaches from Richmond, and [I have been] living upon these for the most part," he wrote to his wife on March 22.92

Looking to care packages to supplement the diet could be an unreliable and often unfeasible option for the average soldier. The men had to be in camp long enough for

<sup>&</sup>lt;sup>91</sup> Bean, *Liberty Hall Volunteers*, 28; Turner, *Ted Barclay*, 21, 83; Grabill, *Diary of a Soldier*, 12; Earhart to wife, April 26, 1863, Earhart Letters.

<sup>92</sup> Herdegen, William Ray, 353-54; Paxton, Frank "Bull" Paxton, 78.

boxes to be received; therefore, during a march or campaign, the soldiers had to look elsewhere for extra food items. "How often the wise calculations of the soldier were rudely dashed to earth by the army being ordered to move before the time when the box should arrive," John Billings recalled. 93

The most common problem was one of shipping and handling. Boxes were often not delivered in a timely fashion or handled in a respectful manner, making the contents subject to spoilage. Upon receiving a package of dried apples, jelly, and catsup from his friends, Rufus Dawes discovered that the jelly and catsup bottles had broken. One member of the 4<sup>th</sup> Virginia found much to his disappointment that his chicken had spoiled, as did the cake, biscuits, and strawberries.<sup>94</sup>

Even if a box arrived at its destination, it was subject to being broken into before the intended recipient claimed it. Before reaching John Hagan, the syrup, honey, cakes, and some butter had been taken by some hungry thief. His biscuits and bread had spoiled during their journey. Others simply never received their packages; such was the case for a member of the 6<sup>th</sup> Wisconsin, awaiting a box of fruit from his mother.<sup>95</sup>

While many received edibles they could only dream of being rationed, such as chicken, turkey, and fresh fruit, boxes from home or any other supplier had a limited impact on the diet of the average soldier. The men only received boxes while in camp, and what they did receive was often subject to either spoiling or being taken and sometimes both. A more expedient option was necessary for soldiers to supplement their

93 Billings, *Hardtack*, 218.
94 Davis, *Taste for War*, 112; Robertson, *Soldiers*, 72-73; Dawes, *Service*, 115; Tuner, *Ted Barclay*, 15.

<sup>95</sup> Davis, Taste for War, 112; Bell Irvin Wiley, The Confederate Letters of John W. Hagan (Athens, GA: 1954), 52; Dawes, Service, 101.

rations without the waiting and hoping for a box to arrive uncontaminated if at all. An alternative to the care package was the sutler.

### The whole class was regarded with contempt: Sutlers

Sutlers were civilian vendors that followed the armies and set up stands in camp for the purpose of selling extra eatables and dry goods to the men, such as fruit, cheese, milk, crackers, pickles, pies, canned and processed meat, and fish. In theory each regiment had an assigned sutler, though as the war progressed and units became smaller and condensed, whole brigades were assigned a single sutler. The 19<sup>th</sup> Indiana utilized this option as soon as they arrived in Washington, DC in 1861, as the Hoosiers bought melons, tomatoes, peaches, berries, pickles, and other foodstuffs. William Ray and Ludolph Longhenry purchased various items from their sutler, including potatoes, onions and butter. Butter sold for anywhere from \$0.25 to \$1.00 per pound, and often was rancid. Company A of the 6<sup>th</sup> Wisconsin must have been one of the few units John Billings had not learned of, for in September 1862, the members used their company fund to purchase condensed milk, canned turkey, peas, beans, and other edibles. According to Philip Cheek, "that was the first time for most of us that we knew what canned goods were." Later in the war, Ray and others bought self-rising flour that was used for fritters or pancakes. Sutler pies, while popular, were a bit of a mystery to the men. "I have yet to see the soldier who can furnish a correct analysis of what they were made from," wrote Billings.<sup>96</sup>

<sup>&</sup>lt;sup>96</sup> Robertson, Soldiers, 72; Donald P. Spear, "The Sutler in the Union Army," Civil War History, 16 (June 1970), 125, 127; Billings, Hardtack, 224-26; Gaff, Bloody Field, 43; Herdegen, William Ray, 29, 43, 124, 213, 326; Longhenry, Yankee Piper, II-4; Shortell, Letters, 10; Cheek, Sauk County, 45.

Just as care packages, the sutler was a thing of the camp. When the army was on the march or engaged they were ordered to the rear of the supply train. One 6<sup>th</sup> Wisconsin soldier recalled the brigade sutler coming up in late June 1864 after continuous marching and fighting during the Overland Campaign. "[W]e had not seen him for so long we had almost forgotten that we had one."97

The sutler was also mostly a thing of the Northern armies; very few existed in the South, at least for the Army of Northern Virginia. "The sutler's wagon, loaded with luxuries, which was so common in the Federal army, was unknown in the Army of Northern Virginia," McCarthy remembered. John Robson of the 52<sup>nd</sup> Virginia also recalled the absence of sutlers in Lee's army, "the nearest approach to it being the occasional old darkey with his cider cart or basket of pies and cakes." During January and February 1863 this type of peddler frequented the camp of the Rockbridge Artillery. "Once a week quite regularly an old negro man came into our camp with a wagon-load of fine oysters from Tappahannock...Our custom was to buy anything to eat that came along.",98

The option of purchasing items from town stores and farmers existed for both sides as well. John Apperson purchased several apples, cakes, and some sausage from a store while the Stonewall Brigade was in Guinea Station just following the Battle of Fredericksburg. As the 7<sup>th</sup> Wisconsin rested in winter quarters earlier that year, William Ray took the opportunity to go into town to buy some flour.<sup>99</sup>

<sup>99</sup> Apperson, March of Mars, 329; Herdegen, William Ray, 82.

<sup>97</sup> Spear, "Sutler," 124; Cheek, Sauk County, 120.

<sup>&</sup>lt;sup>98</sup> Davis, Taste for War, 46, 54; McCarthy, Minutiae, 63; John S. Robson, How a One-Legged Rebel Lives: Reminiscences of the Civil War. The Story of the Campaigns of Stonewall Jackson, as Told by a High Private in the "Foot Cavalry" (Charlottesville, VA: 1888), 9; Moore, Cannoneer, 172.

The problem for Johnny Reb, though, was as the war effort and the Yankee blockade took its toll on the Confederate economy, the prices began to escalate. Some members of the Stonewall Brigade noticed this by the second year of the war. David Earhart wrote home declaring that "all the little eatibles in the country sells at exorbitant prices." In August 1861 the men in the 4<sup>th</sup> Virginia could by corn at \$0.18 per dozen; by August 1863 corn sold for \$1.00 per dozen. In 1864 \$5.00 in Confederate currency equaled \$1.00 in U.S. currency, and towards the end of the war, this ratio had inflated to 20:1. Billings stated that in Richmond at this point potatoes went for \$80 per bushel, chickens sold for \$50 each, cornmeal was \$140 per bushel, and flour was \$1,500 per barrel, all in Confederate currency.

Confederate prices were not the only the inflated costs. Sutlers became notorious for overcharging their clientele. In theory the Congress regulated the prices charged by the sutlers, but in practice this meant little, and most if not all sutlers set their own fees. "Sutlers are asking outrageous prices. Molasses- 50 cents a bottle," exclaimed Longhenry. Peter Welsh of the 28<sup>th</sup> Massachusetts shared the Wisconsian's sentiments. "Sutlers charge and exorbitant price for everything they have." Condensed milk typically sold for \$0.25 per four cans, but sutlers charged \$0.75 for just one can. John Billings was more sympathetic to sutlers than most soldiers. Because of the cost of transporting goods and the risk of losing them, he saw the sutler's need to increase prices. "I do not believe that sutlers as a class can be justly accused of overcharging." This, however, was not the

Earhart to sister Mag, October 9, 1862, Earhart Letters; Bean, Liberty Hall Volunteers, 54; Turner, Ted Barclay, 101; Apperson, March of Mars, 543; Billings, Hardtack, 230.

consensus. As historian Donald Spear wrote, "the whole class was regarded with contempt." <sup>101</sup>

While many used the sutler's tent for congregating, most soldiers could not afford the high costs. Privates on both sides were originally paid \$11 per month. In 1864 this increased to \$16 in the North and \$18 in the South, though the latter was in Confederate currency. The original pay at the company level for the 19<sup>th</sup> Indiana was the following:

Captain: \$60/ month, 4 rations/ day

First lieutenant: \$50/ month, 4 rations/ day Second lieutenant: \$40/ month, 4 rations/ day

First sergeant: \$20/ month Sergeant: \$17/ month Corporal: \$13/ month Private: \$13/ month

With their higher pay and rations included in their monthly pay, commanding officers typically ate better than the average soldier. They had the financial means to frequent the sutler's tent. Not only did the average soldier live on a substantially smaller pay, many had families to whom they sent part if not most of their pay. Frequently though, many did not receive payment for months at a time. On May 26, 1862 William Ray received pay of \$26, two month's worth. Later that year about a month after the 24<sup>th</sup> Michigan joined the Iron Brigade, John Pardington wrote, "[w]e have not received any Pay and it make it very unpleasant for us I tell you we get short sometimes and dont get enough to eat." By late October 1864 Charles Wills had gone without pay for ten months. <sup>103</sup>

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Robertson, Soldiers, 72; Spear, "Sutler," 124-25,137; Longhenry, Yankee Piper, II-7, Lawrence Frederick Kohl, Irish Green and Union Blue: The Civil War Letters of Peter Welsh, Color Sergeant, 28<sup>th</sup> Regiment Massachusetts Volunteers (New York, NY: 1986), 37; Alfred J. Tapson, "The Sutler and the Soldier," Military Affairs, 21 (Winter 1957), 177; Billings, Hardtack, 228.
 Gaff. Bloody Field, 46.

Davis, Taste for War, 27, 46; Robertson, Soldiers, 79; Billings, Hardtack, 112; Herdegen, William Ray,
 88; Pardington, Dear Sarah, 41; Mary E. Kellogg, Army Life of an Illinois Soldier, Including a

Sutlers were not an optimal source of supplementation for the average soldier's diet. Inflated costs and late payments put many luxuries out of the price range for most men. Medical doctor and Civil War historian Alfred Bollet wrote, "overall, sutlers did not contribute much of value to the nutritional needs of the army." This certainly applied to the troops who failed to purchase or infrequently purchased certain foods that would improve their nutritional deficiencies. In July 1862 William Ray bought and ate eight oranges, which gave him intakes of about 620 percent for vitamin C, seventy-nine percent for folate, and twenty-five percent for vitamin A. Just half a month later, Ray and a friend purchased a peck of potatoes. This gave each man almost seven pounds, supplying about 980 percent recommended vitamin C intake and 160 percent for folate. The next December, Ray and his same friend split \$0.25 worth of beef liver, possibly satisfying vitamin A and even vitamin C levels, depending on the amount of liver. Six months later, he purchased from the sutler three lemons, giving Ray just over 100 percent vitamin C. At least temporarily, William Ray experienced improved nutrition as the result of the sutler, but others did not mention such purchases, making it uncertain exactly how beneficial the sutler truly was to the average soldier during the course of the war. 104

## Pig sticking, chicken taking: Foraging

Foraging referred to the act of appropriating necessary goods and materials for the subsistence and operation of the army- in other words, feeding off the land and stealing from the citizens. However, given the unreliable nature of care packages and the inflated

Day-by-Day Record of Sherman's March to the Sea (Carbondale, IL: 1996), 313.

<sup>&</sup>lt;sup>104</sup> Bollet, *Civil War Medicine*, 340; Herdegen, *William Ray*, 98, 124, 239, 287; ADA, "Diet Analysis Plus."

prices of goods sold by the sutlers, the average soldier saw little other option in enhancing his rather repetitious and quantitatively limited diet. For a number of months after the war began, Union soldiers were prohibited from foraging because some military officers and government officials felt that if the Northern armies showed respect and restraint to Southern citizens and property, they could coax the secessionists into rejoining the Union. This constraint lived a very short life, and soon soldiers on both sides were pilfering from the citizens. <sup>105</sup>

Foraging was undertaken in one of two ways- by individuals or by organized foraging parties, the former being the most prevalent. Successful foraging by parties typically obtained sweet potatoes, hams, bacon, flour, cornmeal, and corn. In early 1863 the 2<sup>nd</sup> and 6<sup>th</sup> Wisconsin went on an expedition into Westmoreland County and returned with hams, grain, and bacon. Between beef and pork, John Billings claimed the latter was the most prevalent because "the Southerners do not pen up their swine as the Northerners, but let them go wandering about."

The Wisconsians and Hoosiers found foraging attempts to be quite successful during the first year of the war. Fruit was a common choice, particularly berries, persimmons, and peaches. Chickens and hams also found their way into the men's possession. "I will eat fresh food, anytime, over army rations," Johnny Brendel wrote. 107

The Stonewall Brigade also enjoyed its fair share of fruit and chickens that year.

Ted Barclay wrote home boasting of his blackberry pie-making skills. The 33<sup>rd</sup> Virginia

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<sup>&</sup>lt;sup>105</sup> Billings, *Hardtack*, 231.

<sup>&</sup>lt;sup>106</sup> Ibid, 109, 237; Echoes from the Marches of the Famous Iron Brigade: Unwritten Stories of that Famous Organization, Reprint (1900; repr., Gaithersburg, MD: 1988), 33; Otis, Second Wisconsin, 75.

<sup>&</sup>lt;sup>107</sup> Dow in Otis, "Wartime Letters," 135; Venner, *Swamp Hogs*, 10, 19, 29, 33; Herdegen, *William Ray*, 15; Dawes, *Service*, 23.

camped near a garden full of sweet potatoes and vegetables and found chestnuts and chinquapins in the woods. 108

By late 1862, however, foraging began to yield little for the two brigades. After the supply wagons bogged down in the mud in late November, the Iron Brigade turned to foraging for provisions. According to Brendel, this proved unsuccessful for many because Stafford County, where they were camped, had been already been depleted by the armies. In regards to sending Private Adams out foraging, Major Dawes wrote that "[Adams] could find but little in that barren." Dawes tried again next June only to find his man return with wet flour. <sup>109</sup>

The lack of forage in north-central Virginia had become such a problem, that Lee wrote to Seddon, expressing his concerns in March 1863.

At this time but few supplies can be procured from the country we now occupy...[T]o supply the place of vegetables each regiment is directed to send a daily detail to gather sassafras buds, wild onions, garlic, lamb's quarter, and poke sprouts, but for so large an army the supply obtained is very small.<sup>110</sup>

This destitution of Virginia's resources in part prompted Lee to launch his second invasion into the North in mid 1863, hoping not only to find more provisions for his men but mostly to relieve his native state of the great burden of hosting the eastern theatre.

The Stonewall Brigade and the rest of Lee's men did indeed find better eating in Maryland and Pennsylvania. John Casler obtained a number of eatables including flour, bacon, milk, butter, apple butter, and ripe cherries. Edward Moore stopped at a house in Greencastle, Pennsylvania and sat down to a supper of preserves, pickles, radishes,

McKim, Soldier's Recollections, 43; Turner, Ted Barclay, 28; Casler, Four Years in the Stonewall Brigade, 54.

<sup>&</sup>lt;sup>109</sup> Venner, *Swamp Hogs*, 135; Dawes, *Service*, 106, 155.

<sup>&</sup>lt;sup>110</sup> Official Records, I, 25, part 2, 687.

onions, cheeses, and other victuals. Some years later he recalled his improved diet with relish.

> To give you an idea of the change in our diet since leaving Dixie, I give the bill-of-fare of a breakfast my mess enjoyed while on the road; Real coffee and sugar, light bread, biscuits with lard in them, butter, apple-butter, a fine dish of fried chicken, and quarter of roast lamb! 111

The men of Lee's army continued their pilfering ways on the trip home, more so now out of necessity for some. By June 11, Randolph McKim's regiment had marched three days on less than one day's rations. "Consequently depredations were committed [such as pig sticking, chicken taking, etc.]." Making their way north at a rapid pace and following in the path of the Confederates, foraging was probably limited for the Iron Brigade, except on the few days it stopped to rest. What was foraged during the campaign began to run short for the Army of the Potomac as it made its way back to the Potomac following the victory at Gettysburg. 112

The second invasion of the North failed to accomplish Lee's objectives. While his men did partake in better eating overall, they failed to secure a victory on Northern soil, and the campaign only lasted roughly one month- not nearly enough time for Virginia's citizens and farms to replenish themselves. As Lee would never again invade the North, Virginia's resources became further depleted, even in the once-abundant Shenandoah Valley.

<sup>&</sup>lt;sup>111</sup> Moore, Cannoneer, 191.

<sup>&</sup>lt;sup>112</sup> Bollet, Civil War Medicine, 353; Casler, Four Years in the Stonewall Brigade, 168, 170, 176; Moore, Cannoneer, 189; McKim, Soldier's Recollections, 182; Edward Hagerman, "The Reorganization of Field Transportation and Field Supply in the Army of the Potomac, 1863: The Flying Column and Strategic Mobility," Military Affairs, 44 (December 1980), 185.

# Shenandoah Valley

John Worsham, who marched with Jackson and his army in the Valley described the region in December 1861. "At that time everything in the Valley had a thrifty look. The horses and cattle were fat and sleek; the large barns were overflowing with gathered crops...It was truly a land of milk and honey." Jackson's men made full use of this abundance. "Several of [a farmer's] fat hogs fell under the sequestration law this morning," John Grabill reported in his diary on December 18. Chickens, apples, corn, and other provisions also made their way into the service of the regiments. The men of the Stonewall Brigade also looked to citizens' kitchens to oblige their appetites. Randolph Barton found himself dining at a cabin on fresh sausage and buckwheat pancakes. When the opportunity presented itself, John Apperson would procure sour milk and other desirables from whatever kitchen happened to find itself in his path. The hard marching and fighting that Jackson's men experienced during the Valley Campaign made it difficult for the supply wagons to keep up, forcing the soldiers to forage most of their food. While many occasionally suffered lack of food, foraging on the whole was successful in augmenting the rather limited rations issued to the men. This partially explains the superior diet of the Stonewall Brigade during the Valley Campaign over that of the Overland Campaign, despite the rather comparable rations. 113

Two years separated the leaving and returning of the Stonewall Brigade to the Valley, and in late June 1864 Apperson commented on its appearance. "[T]he wheat crop in the Valley and all along out route is the finest I think I have ever seen. It is just ripening." However, the area had become effectively depleted by the fall of 1862, and

Worsham, Foot Cavalry, 24; Grabill, Diary of a Soldier, 10; Casler, Four Years in the Stonewall Brigade, 78, 83; Colt, Defend the Valley, 110; Apperson, March of Mars, 217, 220, 239; Montague, "Subsistence," 229.

what food was grown in the Valley went mostly to feeding the defense forces stationed in the region. By fall of 1864, the land had become destitute of provisions with the marching and campaigning against General Philip Sheridan's Yankee cavalry force.

Apperson portrayed the impoverished nature of the region. "The farmers have lost everything. The enemy has inaugurated a system of burning provisions. All the farms containing wheat are in ashes- hay and oates share the same fate. Cornfields are destroyed." By October, the Valley was able to supply little if anything to the men of the Stonewall Brigade, and Randolph McKim sadly reflected upon this.

[T]he unhappy valley of Virginia had been swept almost bare of subsistence by the marching and countermarching of the two armies, and that of late the Federal cavalry had been robbing the people mercilessly, so that if we took the corn and fodder that were left, we were in fact taking the bread out of the mouths of the women and children.<sup>114</sup>

Just as the other side of the Blue Ridge, the Shenandoah Valley by late 1864 afforded very little for the men of either side to supplement their diet.<sup>115</sup>

### Enemy supplies

A practice often used by Confederates more so than Union soldiers was capturing or obtaining enemy supplies. "The rebel soldier depended much upon the supplies he could get from the enemy in battle, for the Yankees were always abundantly supplied," remembered one Virginian. David Earhart wrote to his wife, "thanks to providence we have been victorious and sometimes fared very sumtuously on the enemies well supplied

<sup>114</sup> McKim, Soldier's Recollections, 241.

Apperson, March of Mars, 562, 590; Michael Mahon, The Shenandoah Valley, 1861-1865: The Destruction of the Granary of the Confederacy (Mechanicsburg, PA: 1999), xi-xii; Wert, Brotherhood, 310; Casler, Four Years in the Stonewall Brigade, 226.

commissary stores." Some soldiers found themselves not above taking food from the dead. "I have been so hungry that I have cut the blood off from crackers and eaten them," said John Casler. With little forage or provisions, many Confederates had Billy Yank to thank for being able to eat in the last few months. "Toward the close of the war, nearly all the equipment in the Army of Northern Virginia were articles captured from the Yankees," Worsham recalled. "We captured immense quantities of provisions; nearly all the 'hard tack' and pork issued to us was captured." "116"

During the Valley Campaign of 1862, the Stonewall Brigade had General Nathaniel Banks, specifically, to thank. In fact, Banks abandoned his commissary stores to the hands of Jackson's men so frequently that he became known as 'Jackson's Commissary.' During the month of May, Banks most likely was the chief source of provisions for the Valley Army, as he surrendered his supplies at Front Royal, Strasburg, Winchester, Martinsburg, and Charlestown. At Winchester the men captured stores of coffee, molasses, oranges lemons, figs, and other delectable goods. "We are all lying idle enjoying the fruits of victory, eating everything good," wrote Ted Barclay. "Our soldiers have gotten above eating beef and bread as they can get everything good." 117

Three months later Jackson's half-starved men would find relief at Manassas Junction, this time capturing General John Pope's commissary stores. Robson recalled the event. "It was more than funny to see the ragged, rough, dirty fellows, who had been half living on roasted corn and green apples for days; now drinking Rhine wine, eating lobsters lad, potted tongue, cream biscuits, pound cake, canned fruits, and the like." The

<sup>&</sup>lt;sup>116</sup> Robson, *One-Legged Rebel*, 9; Earhart to sister Mag, October 9, 1862, Earhart Letters; McCarthy, *Minutiae*, 67; Casler, *Four Years in the Stonewall Brigade*, 208; Worsham, *Foot Cavalry*, 61.

<sup>&</sup>lt;sup>117</sup> Worsham, *Foot Cavalry*, 30; Montague, "Subsistence," 229; Bean, *Liberty Hall Volunteers*, 116; Turner, *Ted Barclay*, 72-73.

captured supplies consisted of over 50,000 pounds of bacon, 1,000 barrels of corned beef, 2,000 barrels of salt pork, 2,000 barrels of flour, and countless other foodstuffs. The men stuffed their haversacks with whatever they could carry and burned the rest. "Every Confederate got more than he could eat and carry away," wrote a gunner in the Rockbridge Artillery.<sup>118</sup>

#### West

As a general rule, the armies in the west fared better with eating than those in the east, mostly because the wide-ranging nature of the western theatre provided for better forage. Whereas Dawes was chewing on his soggy biscuits in late November 1862 in Stafford County, Charles Wills' company foraged 150 pounds of flour, a hog, a heifer, two and one-half bushels of sweet potatoes, chickens, ducks, milk, honey, and apples from Holly Springs, Mississippi in early December. Another company in his regiment obtained \$300 worth of food, which included one barrel of molasses, 300 pounds of sugar, one barrel of flour, four hogs, and other provisions. Ten months later, Wills was camped at Griffin's Landing where the country was abundant with goods. A foraging party returned with fifty cattle, twenty-one hogs, and thirty sheep.<sup>119</sup>

Confederate attempts at foraging were usually just as successful. John Hagan of the 29<sup>th</sup> Georgia mentioned soldiers procuring fruit, hogs, mutton, and corn in late July 1863. He claimed that as many as 200 acres of corn were wiped clean in one night.

<sup>&</sup>lt;sup>118</sup> Wert, *Brotherhood*, 141; Wiley, *Firing Line*, 92; Robson, *One-Legged Rebel*, 82; *Official Records*, I, 12, part 2, 644, 656; Moore, *Cannoneer*, 110; Poague, *Gunner*, 35.

<sup>&</sup>lt;sup>119</sup> Bollet, Civil War Medicine, 341; Kellogg, Army Life, 132, 195.

However, after General William T. Sherman captured Atlanta in September 1864, little was left for the Rebels to forage, as his army lived off the land. 120

Sherman's interval in Atlanta and the surrounding areas and his March to the Sea in the following months proved to be one of the most successful examples of an army subsisting upon its foraging efforts. Alfred Bollet wrote that "[Sherman's men] ate better than any other troop had during the war." Commonly foraged items included turkeys, ducks, sheep, hogs, corn, sweet potatoes, turnips, rice, cornmeal, and other eatables. The month of October proved to be very lucrative for the 103<sup>rd</sup> Illinois. Pork and sweet potatoes was the bill of fare most nights. The men were living so well from the land that it compelled Charles Wills to comment on their success.

Don't you people ever think of us as being without rations. We sometimes wish the Rebels would cut our communications entirely, so that we could live wholly off the country. The Rebels only take corn and meat, and we fatten on what they are not allowed to touch. <sup>121</sup>

The menu of pork and potatoes continued as the men made their way toward Savannah, some farms providing anywhere between seventy-five to 500 bushels of sweet potatoes. By December 6, Wills guesstimated that since October 4, they had cost the Confederacy 100,000 hogs, 20,000 cattle, 500,000 bushels of corn, and 100,000 bushels of sweet potatoes. 122

Sherman's army after leaving Atlanta was one of the rare exceptions during the Civil War that a force could successfully subsist upon foraging. Certainly nowhere in the eastern theatre was this possible. Armies of less than 10,000 to 15,000 could sustain

<sup>&</sup>lt;sup>120</sup> Bollet, Civil War Medicine, 343; Wiley, John W. Hagan, 28.

<sup>&</sup>lt;sup>121</sup> Kellogg, *Army Life*, 313.

<sup>&</sup>lt;sup>122</sup> Bollet, *Civil War Medicine*, 353, 374; Billings, *Hardtack*, 240; Kellogg, *Army Life*, 315, 317-18, 321, 331-32.

themselves almost indefinitely through foraging in most Southern regions, while those of about 20,000 could only exist in richer areas. However, armies of 50,000 or more required a railroad for the transport of outside provisions for any lengthy period. By mid 1863 the Army of the Potomac numbered over 90,000 with the Army of Northern Virginia at about 70,000. While these numbers fluctuated before and after mid 1863, both armies were substantially larger than 50,000 until toward the end of the war when Lee's army fell to about 30,000. With the exception of the Antietam and Gettysburg Campaigns, the duration of the war in the eastern theatre occurred in a relatively limited area. The area surrounding Fredericksburg saw action in December 1862, May 1863, and May 1864. Most fighting, marching, and camping occurred between the two capitals. As such, much of Virginia became destitute of provisions. Even out west, forage was becoming scarce. By early 1865 Texas cavalryman William Heartsill could find only pigeons, which he ate for roughly half a month. Those who partook in the luxuries captured by Jackson's men in the Valley and at Manassas Junction in all likelihood enjoyed much-needed period of improved nutrition, especially the lucky recipients of oranges, lemons, and other antiscorbutics. In general, though, foraging proved inadequate to supplement the diet of the average soldier. 123

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"From 1861 to 1865 [the soldiers'] menu was a three-course meal of monotony, insufficiency, and improvisation," wrote William C. Davis. The logistics involved in supplying large armies dictated a diet rather limited in variety and very prevalent in

<sup>&</sup>lt;sup>123</sup> John G. Moore, "Mobility and Strategy in the Civil War," *Military Affairs*, 24 (Summer 1960), 73-74, 77; Combined Books, *Lists*, 68, 78; Bollet, *Civil War Medicine*, 353; Billings, *Hardtack*, 234-35; Bell Irvin Wiley, *Fourteen Hundred and 91 Days in the Confederate Army* (Wilmington, NC: 1987), 232-33, 235.

inadequacy. Officer neglect and supply difficulties often denied the men of their vegetable rations as it did full issuances of other articles. Carbohydrate levels were at times flirting with insufficiency, and the increased rigors of marching could exploit this situation. Vitamins A, C, D, E, and folate and calcium could be expected to be sub par almost at any given time. The neglect and ignorance of officers on the issuance of vegetables only exacerbated this problem.<sup>124</sup>

Outside sources of food often did little to improve the deficiencies. Boxes from home or some other provider were unreliable and prone to spoilage or pilfering. Sutlers overcharged on their items, placing many goods outside the pay range of the average soldier, and the frequency of nutritionally enhancing purchases is uncertain. Condensed milk and canned goods were not as prevalent as food historian Richard Hooker made them out to be in *Food and Drink*. Most soldiers could not afford these luxuries, and they were purchased and enjoyed more by the officers. Even when the men did obtain the canned goods, their nutritional impact was limited. A number of vitamins are heat labile, or unstable in the presence of heat, namely vitamins A, C, thiamin (B<sub>1</sub>), and riboflavin (B<sub>2</sub>). The heating process involved in canning killed anywhere from one-third to one-half of these micronutrients. This is why desiccated vegetables were so ineffective. Even if the medical directors found a way to get the men to eat them, their vitamin content was next to nil. Whatever was not destroyed in the drying process was eradicated in the three-hour cooking method suggested by Dr. Letterman.<sup>125</sup>

Foraging in the eastern theatre was most likely a futile effort in improving nutrition by mid to late 1862. Most campaigning and quartering took place in limited

<sup>&</sup>lt;sup>124</sup> Davis, *Taste for War*, xiv.

<sup>125</sup> Hooker, Food and Drink, 207; United States Food and Drug Administration (FDA), http://www.fda.gov.

region of a single state. Foraging in the Shenandoah Valley for the Stonewall Brigade yielded some reward during the 1862 campaign, though the area was fairly picked over by the time Jackson's army left in mid June. The presence of stationed defense forces and the campaigning of Early's men against Sheridan's cavalry depleted the region just as much as the other side of the Blue Ridge. With little relief from the constant occupation of at least two large forces, Virginia had very little to offer the men that would enrich their diets.

The sweet potato would have been the most beneficial item foraged. One seventy-seven gram potato provided nineteen percent of vitamin C and over 140 percent of vitamin A, two micronutrients sorely lacking in the average soldier's diet. While the tubers were one of the more common finds on foraging trips, their prevalence in terms of supplying an entire army, let alone two, after the first year is questionable. The 1862 Report of the Commissioner of Agriculture lists Virginia's 1860 yield of potatoes, both sweet and Irish, as 4,252,920 bushels. Each acre of potato-producing land could give an average of ninety-four bushels, for a total of 45,365 acres or seventy-one square miles of Virginia land dedicated to potatoes. Civil War writer John G. Moore stated that an army of 100,000 needed 3,200 square miles of foraging for fifteen days. With this ratio the Army of the Potomac alone, averaging about 102,000, needed almost 80,000 square miles of foraging in just the first year of the war to sustain itself. Not only does this show that potatoes most likely were not available in ample quantities throughout the war for both armies, but that foraging in itself was not a realistic option for enhancing the average soldier's diet in the eastern theatre. Sherman's smaller force of about 64,000, however, was moving through a state in late 1864 that was a larger potato producer- 6,825,093

bushels in 1860- as well as one that had not seen continuous fighting for the past three years. However, the average soldier was not as successful with his attempts at foraging as Sherman's 'bummers' were. 126

Throughout the war the typical diet of the average soldier consisted of some meat item, usually either pork or beef, a flour or grain product, be it hardtack or cornmeal, coffee in some form, small quantities of salt and sugar, and occasionally rice and beans. The men would try to make their fare similar to that of home by requesting items from loved ones and visiting the sutler, but these measures were not without their setbacks. Yet the diet should not have seemed all too foreign to most of the men; the staples of both included pork and beef, cornbread or some other bread product, and intermittent appearances of beans or rice. Thanksgiving and Christmas for some was a friendly reminder of the large dinner parties. Any soldier from the frontier should have felt right at home. The same items constituted the two diets for very much the same reason- they were easy to transport. As such, ailments that afflicted the frontiersman should be expected in the average soldier. Joshua Jones of the 19<sup>th</sup> Indiana found this to be all too true when he wrote home in April 1862. "I am not well half the time any more."

<sup>&</sup>lt;sup>126</sup> ADA, "Diet Analysis Plus;" United States Department of Agriculture (USDA), Report of the Commissioner of Agriculture for the Year of 1862 (Washington, DC: 1863), 570; USDA, Report of the Commissioner of Agriculture for the Year of 1865 (Washington, DC: 1866), 277; Moore, "Mobility," 72, 77; Medical and Surgical History of the Civil War (Wilmington, NC: 1990), 31 (hereafter MSHCW).

<sup>127</sup> Berwanger, "absent," 226.

#### **CHAPTER 3**

#### IT HAS BEEN SICKLEY TIMES: OUTCOMES

In 1922 Casimir Funk, a New York physician, published *The Vitamins*. Prior to this release, no general knowledge of micronutrients existed. In fact, prior to 1910, calories were also an unknown. Most physicians just prior to and during the Civil War were fully aware of the benefits of fresh fruits and vegetables, especially the antiscorbutic qualities of some. However, the logic behind the use of produce was in some cases faulty and in others lacking the important connection of micronutrients to wellness. As such, certain illnesses would receive ineffective treatments while other afflictions would go unnoticed. At the brigade and regiment levels, many officers were ignorant to nutrition's role on health and the signs of dietary deficiency, which only furthered the spreading of illness throughout the armies.<sup>1</sup>

# My bowels are not co-operating: Diarrhea and dysentery

Diarrhea involves the passing of loose, watery stools three or more times per day. Bloody stools are the hallmark of dysentery, and the two were often confused by the surgeons during the war. Each can be subdivided into either acute or chronic, with acute diarrhea or dysentery lasting several days to two to four weeks and chronic lasting longer.<sup>2</sup>

Diarrhea and dysentery were the two most prevalent diseases during the war, accounting for twenty-seven percent of all cases reported in Northern armies and twenty-

<sup>&</sup>lt;sup>1</sup> Haber, *Homefries*, 60.

<sup>&</sup>lt;sup>2</sup> National Digestive Diseases Information Clearinghouse (NDDC), "Diarrhea," http://www.digestive.niddk.nih.gov.

nine percent in the Army of the Potomac; the same was most likely true in the South where the combined for a total of twenty-seven percent of all cases reported during the first year. Physicians tried numerous remedies such as lead acetate, silver niacetate, calomel, ipecac, mustard plasters, opiates, and even suturing the anus closed.<sup>3</sup>

Other physicians attributed the illnesses to miasmas, or harmful gases. The miasma theory would fall to Louis Pasteur's germ theory some fifteen years after the war, but in a sense the assumption of the physicians was correct. Areas of poor sanitation could result in bacterial infection of food or water sources, probably the largest cause of acute diarrhea and dysentery during the war. During the first several months of the war, proper sanitation methods typically were not exercised in camp, and not until December 1861 did cases of acute diarrhea drop substantially. The illness took its toll on the 19<sup>th</sup> Indiana at Camp Kalarama in Washington, DC. "There are several boys in our company who came down with the trots and vomiting," wrote Johnny Brendel in mid August. Just two days later he claimed over 200 in the regiment were sick and attributed it to unsanitary water. Food spoilage and the preference of some to eat their meat raw also most likely increased bacterial infection that could cause diarrhea<sup>4</sup>

The following October saw the highest number of reported acute diarrhea cases for the army during the war. This could have been caused in part by the constant campaigning and marching from late August until mid September. Left with little options, thirsty men would often get water wherever they could find it, as did Private Norton. "I would not, if I could, tell you how we have suffered on this march. Eating raw

<sup>3</sup> Bollet, *Civil War Medicine*, 283-84, 372; *MSHCW*, 31, 35, 147, 151, 175, 179, 297, 301, 325, 329, 453, 457,491, 495, 605, 609; James B. McCaw, *Confederate States Medical and Surgical Journal*, Reprint (1865; repr., San Francisco, CA: 1992), 139-40 (hereafter *CSMSJ*); Robertson, *Soldiers*,

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<sup>&</sup>lt;sup>4</sup> MSHCW, 30-31; Venner, Swamp Hogs, 10-11.

beef without salt, and drinking water from mud holes, were done more than once. I have marched forty-six miles on nothing but raw beef and ditch water." The following month, Brendel came down dysentery. Towards the end of the month, he began to recover but was left with an unpleasant reminder. "I feel better but my dysentery has fouled all my clothing."

Because the rations for the Iron Brigade were scanty from late August until mid
September, many turned to foraging to make up for their shortcomings. William Ray
helped himself to some green corn several days before arriving at Manassas Junction, and
in early September the men took advantage of the apple orchards in Maryland. Unripe
fruit was another common cause of diarrhea during the war, and the green corn and
possibly not-yet-ripe apples may have contributed their fair share.<sup>6</sup>

A number of physicians recognized the therapeutic effects fresh vegetables and fruit had on the condition, and many soldiers during the war self-treated with blackberries. In fact, the leading cause of chronic, rather than acute, diarrhea and dysentery was most likely nutritional deficiency. While cases of the chronic form appeared less than acute diarrhea and dysentery, they were by far more fatal. In all of the Union armies, acute diarrhea and dysentery contributed to twenty-four percent of all reported cases of sickness in white troops but only four percent of all deaths. However, whereas acute diarrhea and dysentery combined for a fatality rate of two percent for all Northern white troops, the chronic form had a combined twenty-eight percent fatality rate

<sup>5</sup> MSHCW, 174; Norton, Army Letters, 118; Venner, Swamp Hogs, 29.

<sup>&</sup>lt;sup>6</sup> Herdegen, William Ray, 134; Longhenry, Yankee Piper, II-8; Nolan, Iron Brigade, 134; Bollet, Civil War Medicine, 284.

and accounted for eighteen percent of all deaths in white troops- more than died in battle.<sup>7</sup>

When caused by nutritional deficiency, chronic diarrhea and dysentery result specifically from inadequate niacin, folate, or vitamin C. Niacin was never a concern during the war, being one of the few micronutrients the average soldier most likely got enough of at all times from their meat and grain rations. Folate and vitamin C, however, were problem areas, especially the latter. One of vitamin C's roles in the human body is to protect the enzyme folic acid reductase, which converts folate, or folic acid, to its useable form, folinic acid. Therefore, a vitamin C deficiency can result in a deficiency of free-form folate, and the two insufficiencies usually occur together. This explains the general improvement of diarrhea and dysentery from the recommending of fresh vegetables, such as potatoes, and the use of blackberries, which contain both folic acid and vitamin C. After picking a can-full of the berries and making them into a spread for his hardtack, Elisha Stockwell, Jr. soon recovered from his bout of diarrhea.<sup>8</sup>

Since vitamin C and folate deficiencies can cause chronic diarrhea and dysentery, the medical records should reflect this. Vitamin C intake was always low, unless potatoes were to be had, but especially when marching or engaged; folate followed this same trend. From August to September 1862, when the Army of the Potomac spent half of the month marching and fighting, chronic diarrhea and dysentery increased from 1,410 to 1,992 and from seventy-four to 180 cases respectively. After Second Manassas and a minor reprieve, the army then moved north, where the Iron Brigade was involved at

<sup>7</sup> Bollet, Civil War Medicine, 367, 369, 371; MSCW, 31, 35, 147, 151, 175, 179, 297, 301, 325, 329, 453, 457, 491, 495, 605, 609; Robertson, Soldiers, 71, 151.

Merck & Co., Inc., The Merck Manual of Diagnosis and Therapy, http://www.merck.com; Bollet, Civil War Medicine, 370-71; Byron R. Abnernathy, Private Elisha Stockwell, Jr. Sees the Civil War (Norman, OK: 1958), 81-82.

South Mountain before fighting at Sharpsburg about one week later. September to October showed a twenty-six percent increase in chronic diarrhea and a sixty-two percent increase in chronic dysentery. Following the Battle of Anietam, the army went into camp for several weeks, resting and refitting. Subsequently, a thirty-one percent drop occurred in chronic diarrhea cases with an eleven percent decrease for chronic dysentery. The following year after about a month of rest, the army began to move north again in mid June, fighting at Gettysburg for three days in July and spending about a month total marching. The Iron Brigade saw limited rations, mostly pork and hardtack, a diet highly conducive to vitamin C and most likely folate deficiency. From June to July the number of cases for chronic diarrhea increased from 461 to 553 and chronic dysentery saw a shocking 240 percent jump. Brendel may have been one of the unfortunate who fell victim to this increase. "My bowels are not co-operating."

Despite their causes, be it bad beef or bad diet, both diarrhea and dysentery of any kind resulted in further nutritional deficiencies. Dehydration is a major concern with the afflictions; a person can pass more than a quart of stool per day- almost two gallons per week. This constant fluid loss can create an electrolyte imbalance in the body in which sodium and chloride levels drop. Additionally, the frequent passing of stools can impair the process of nutrient absorption from food- that is what food the person eats. Many soldiers found that their appetite disappeared with the visit of the 'backdoor trot.' Private Norton wrote that diarrhea had destroyed his appetite. As such the men were not replenishing lost nutrients.<sup>10</sup>

<sup>&</sup>lt;sup>9</sup> MSHCW, 174-75, 324; Venner, Swamp Hogs, 215.

<sup>&</sup>lt;sup>10</sup> NDDIC, "Diarrhea;" Eleanor Noss Whitney, *Understanding Nutrition, Ninth edition* (Belmont, CA: 2002), 394; Norton, *Army Letters*, 168.

Apart from noticing an improvement in diarrhea and dysentery cases after issuing fresh vegetables, some physicians during the war also found that these deficiency disorders often occurred in the presence of scurvy, a condition that too was treated with fresh vegetables.<sup>11</sup>

# Black-mouthed, loose-toothed fellows: Scurvy

A vitamin C deficiency, scurvy is characterized by general weakness, anemia, bleeding and deterioration of the gums, and skin hemorrhages. British physician James Lind demonstrated in the mid 1700s that citrus fruits could cure scurvy, but even as late as 1859, some medical practitioners still believed it was caused by poor ventilation, lack of exercise, exposure, a hot, dry climate, or boredom. By the Civil War, however, many physicians attributed it to a lack of fresh vegetables, including Medical Director of the Army of the Potomac Charles Tripler. "It is certain that vegetables are absolutely necessary to prevent scurvy."<sup>12</sup>

Some of the soldiers also noticed the connection between scurvy and diarrhea, and came to their own conclusion that the deficiency disorder was contagious. Warren Goss wrote that "swallowing the saliva thus tainted with the poison of scurvy, would produce scurvy in the bowels, which often took the form of chronic diarrhea." Though acknowledging that scurvy often improved with fresh vegetables, the men also believed eating meat raw to be a preventative measure. This may have only served to further their connection of scurvy with diarrhea, as eating uncooked meat increases the risk of food poisoning. Others preferred hydrotherapy as a curative means, possibly because of the

<sup>&</sup>lt;sup>11</sup> Bollet, Civil War Medicine, 369.

<sup>&</sup>lt;sup>12</sup> NIH, *MedlinePlus*; Whitney, *Nutrition*, 335; Gillett, *Medical*, 135; Bollet, *Civil War Medicine*, 369; *Official Records*, I, XI, part 1, 207.

connection of scurvy to a digestive complaint and the popularity of the therapy for such afflictions during the period.<sup>13</sup>

Though mostly correct in their diagnosis, what the physicians lacked was knowledge of micronutrients. Had they known that scurvy was a deficiency of vitamin C rather than fresh vegetables, they would not have requested certain items such as dried apples and pickles be issued to combat the affliction. Potatoes were the only item in the diet that provided substantial amounts of vitamin C, and these were not always issued as shown in the previous chapter. Had they been, medical directors such as Tripler and Letterman would not have had to make specific requests. Desiccated vegetables, like potatoes were not a commonly-received item. Regardless, the men hated them and the drying and cooking processes most likely destroyed most if not all traces of the vitamin. As it was, physicians could only identify the most advanced stages of scorbutus, and the officers were even worse at recognizing symptoms of vitamin C deficiency. This meant not only was the problem more widespread than reported, but that measures taken to improve the situation often fell on the deaf ears of the ignorant officers.<sup>14</sup>

While scurvy occurs as a result of vitamin C deficiency, the vitamin's stores in the body must fall to a certain level, about one fifth of its optimal supply. This can occur after several months to six months of poor vitamin C intake, depending on the original health of the individual. While several cases are reported in the Army of the Potomac from July 1861 to the following March, scurvy does not begin to appear prominently until April 1862, when it increases from twenty to seventy-one cases in one month. Many regiments began to join the army in the capital during August, September, and

<sup>13</sup> Warren Lee Goss, The Soldier's Story of His Captivity at Andersonville, Belle Isle, and Other Rebel Prisons (Boston: 1873), 82, 88, 142.

<sup>&</sup>lt;sup>14</sup> Bollet, Civil War Medicine, 338; Gillett, Medical, 206, 278.

October 1861. That any cases were reported during the first several months of the war is testament to the poor diet of those men at home. While their diets in training camp lacked full recommended intakes of vitamin C, antiscorbutics were more readily at hand. The 19<sup>th</sup> Indiana, for example, maintained an average daily percent intake of sixty-seven for vitamin C, a level most likely higher than during the rest of the war. Roughly six months after the arrival of these units in Washington, DC, the number of scurvy cases began to grow.<sup>15</sup>

By June of 1862 they had jumped from seventy-three to 336 and the following month saw nearly a 240 percent increase. This coincides with the third month of campaigning season, when the diet was poorer. That the cases increased in a shorter period of time most likely demonstrates the inadequate fare of the men in camp and its effect on declining vitamin C stores. At this point, Letterman, having just been appointed medical director of the army, made his way down to Harrison's Landing, where the army was camped following the Peninsula Campaign. Finding the army in a poor state of health- combined diarrhea and dysentery cases had increased from 7,564 to 19,776- he recommended that antiscorbutics be issued the men. By August, he began to notice a marked increase in the health of the army. Scurvy cases fell from 1,139 to 291.

The improving of rations by Hooker in February 1863 had the same effect on the health of the army. From October 1862 to January 1863, scurvy doubled in reported cases. After potatoes and other antiscorbutics were issued the men, this affliction began to fall from 166 cases in January to less than sixty in April. Combined cases of diarrhea

<sup>&</sup>lt;sup>15</sup> Whitney, Nutrition, 338; Merck, Manual; MSHCW, 30-31; ADA, "Diet Analysis Plus."

<sup>&</sup>lt;sup>16</sup> MSHCW, 31, 174; Official Records, I, XI, part 1, 210-14.

and dysentery, likewise dropped by sixty-six percent. The Iron Brigade appreciated the efforts of Hooker. During December and January, John Pardington wrote to his wife about his poor health. "Dear Sarah about my health. It is not very good...I was took down again Tuesday with the Bloody dysentery." After Hooker took command though, things began to look up for the Michigan native. "Well my Pet I am in the Best of health and Spirits, *thank* God. I never felt better in my life." Rufus Dawes wrote, "[o]ur regiment turns out four hundred men in ranks for duty, and they look fat, healthy, and contented."

As Sherman's army made its way towards Atlanta in the summer of 1864, scurvy followed in the ranks. By July it was rampant, with 914 cases reported. "There is so much confounded fighting to be attended to that we can't forage any, and though fresh beef is furnished to the men regularly there is some scurvy," commented Charles Wills. "I have seen several black-mouthed, loose-toothed fellows, hankering after pickles." Private Stockwell noticed the problem as well. "A good many of the boys were getting what to doctor called 'jiggers,' the forerunner of scurvy, from not having vegetables." After the fall of Atlanta in September and the instituting of foraging as a major source of subsistence, the situation began to improve. By December, when Sherman had reached Savannah, the cases of scurvy had fallen by ninety-six percent from July, an astonishing drop. 18

While Hooker issued better rations to his men, Lee's army suffered from dietary shortcomings, such to the point that Lee wrote to Richmond alerting them to the state of affairs. "The time has come when it is necessary the men should have full rations. Their

<sup>17</sup> MSHCW, 174-75; Pardington, Dear Sarah, 66, 76; Dawes, Service, 130.

<sup>&</sup>lt;sup>18</sup> MSHCW, 542-43; Kellogg, Army Life, 274; Abernathy, Elisha Stockwell, 101.

health is failing, scurvy and typhus fever are making their appearance, and it is necessary for them to have a more generous diet." There were few if any opportunities for a more generous diet for most of Lee's men during the rest of the war, and Carlton McCarthy remembered that by the last month, many soldier's gums and teeth as well as fare were inferior. "[T]hose whose gums and teeth were not already too sore, crunch[ed] parched corn and raw bacon as they trudged along." <sup>19</sup>

Not only did physicians associate scurvy with chronic diarrhea, but some also recognized its association with general lassitude. After observing the condition at Harrison's Landing in July 1862, Letterman wrote "They do not feel sick, and yet their energy, their powers of endurance, and their willingness to undergo hardship are in a great degree done, and they know not why." Perhaps this served as another enforcing agent for fresh vegetables as curative. Confederate surgeon W.S. Oliver was anxious to share his opinion. "[S]o confident am I that the true cause of scurvy entirely depends on a deficiency of protein compounds, both animal and vegetable, in the food used by sufferers from that diseases, that I cannot refrain from giving publicity to my views." While acknowledging his ideas were not original, Oliver states that lack of protein, or nitrogen-based compounds, led to scurvy. Protein, according to Justus von Liebig in Animal Chemistry, was the body's source of energy; therefore, a lack of the nutrient could be assumed to produce the sluggishness and exhaustion seen in scurvy. Furthermore, Liebig, while on one hand stating that animals were the largest source of protein, demonstrated how vegetables were actually the original source, since the protein in the meat came from the vegetables eaten by the animal.<sup>20</sup>

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<sup>&</sup>lt;sup>19</sup> Official Records, I, XXV, part 2, 730; McCarthy, Minutiae, 148.

<sup>&</sup>lt;sup>20</sup> Official Records, I, XI, part 1, 211; McCaw, CSMSJ, 143.

Because scurvy was often a sign of general nutritional deficiency, it comes as little surprise that surgeons not only associated the condition with chronic diarrhea but night blindness as well. One of Lee's men recalled this association.

Perhaps the most peculiar and striking fact or feature of the physical condition of General Lee's army during the latter half of the war was night blindness...it is safe to say thousands were [affected]...The doctors tell us that these symptoms were to be accounted for as among the expressions of an anæmic and scorbutic condition, which itself resulted from a lack of proper and sufficient nutrition.<sup>21</sup>

Though not a fatal disorder itself, night blindness afflicted the men on both sides and pointed to a broader problem in the diets.<sup>22</sup>

# My eyes would not last long: Night blindness

Night blindness results from a deficiency in vitamin A. Whereas the body stores vitamin C for a relatively short period, vitamin A stores become depleted only after one to two years in healthy adults. As such, the number of reported cases during the first year of the war was rather limited; ten by June 1862 in the Army of the Potomac and 136 in all Northern white troops. Like scurvy, those cases that did occur early in the war pointed to an insufficient home diet. Night blindness, too probably occurred more often than reported. Johnny Brendel had night blindness by mid September 1861; it is likely he was not the sole reported case for that month in the army.<sup>23</sup>

Although a number of physicians attributed the disorder to a poor diet, it was treated by some as a symptom of scurvy, such as the doctors in Lee's army who told

<sup>&</sup>lt;sup>21</sup> Stiles, Marse Robert, 348.

<sup>&</sup>lt;sup>22</sup> Bollet, Civil War Medicine, 356.

<sup>&</sup>lt;sup>23</sup> NIH, *MedlinePlus*; Whitney, *Nutrition*, 358; *MSHCW*, 32-33, 149; Bollet, *Civil War Medicine*, 357; Venner, *Swamp Hogs*, 19.

Robert Stiles it was a scorbutic condition. Possibly because of its connection to scurvy and lethargy as well as an improved diet at home for most soldiers, other surgeons believed it could be cured with furloughs.<sup>24</sup>

The most realistic option for improving vitamin A stores in the average soldier was the sweet potato. Though the vitamin also comes from eggs, milk, cheese, liver, kidney, and some fish oils, these were rarely available to most soldiers. Canned milk from the sutlers was often too expensive for the average soldier, and getting milk from cows was too infrequent; when rations declined, cows were put to better use than milking. Cheese was often putrid when purchased, and liver, kidney, and fish oil were not items the men could be expected to receive.<sup>25</sup>

Once cases of night blindness became more prevalent, a trend developed in the armies, in which the cases decreased in late fall and winter and increased again around March. From September 1863 to February 1864 the number of reported cases in the Army of the Potomac decreased by eighty-one percent. However, by July they shot up by 986 percent. This seasonal variation occurred with sweet potato harvesting season, which lasted usually from late October until May. That the number of cases reported began to increase prior to May could have been due to the army depleting the surrounding land of available sweet potatoes, a likely possibility by early 1864.<sup>26</sup>

The drop in number of cases of night blindness in Sherman's army from July to December 1864 shows the effectiveness of foraging for the men. From July to August the number of cases rose from 216 to 293. However, after seizing Atlanta and during the

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<sup>&</sup>lt;sup>24</sup> Bollet, Civil War Medicine, 356.

<sup>&</sup>lt;sup>25</sup> NIH, MedlinePlus.

<sup>&</sup>lt;sup>26</sup> MSHCW, 324-25, 492.

March to the Sea, pork and sweet potatoes was the bill of fare for many of Sheman's men. By December only two cases were reported, a ninety-nine percent drop.<sup>27</sup>

Foraging for the Army of Northern Virginia was limited by early 1863. In his correspondence with Seddon in March, Lee mentioned that any attempts yielded little success. By this time, Frank Paxton's eyesight had been compromised for the past five months. The previous October, he explained to his wife why his letter had been cut short. "If I undertook to do the writing, my eyes would not last long." Several months later he wrote, "I sometimes think if my health were good my eyes would give me not trouble." 28

# Sickness, starvation, and death: Immune suppression

A more serious result of vitamin A deficiency is increased susceptibility to infectious diseases. The precursor to vitamin A, beta-carotene, acts as an antioxidant to combat free radicals, which cause cell damage in organs and tissues and increase risk of disease. Beta-carotene is actually the nutrient found in sweet potatoes. Other antioxidants include vitamins C and E, both of which were deficient in the average soldier's diet. Because vitamin C is required to form collagen, which is part of scar tissue, it plays an important role in wound healing. In addition to helping prevent common diseases, vitamin E can possibly protect against heart disease, cancer, Alzheimer's disease, and diabetes. The largest concerns for the average soldier were the prevention of infectious disease and wound healing.<sup>29</sup>

<sup>27</sup> Ibid, 544-45.

<sup>&</sup>lt;sup>28</sup> Paxton, Frank "Bull" Paxton, 58, 74.

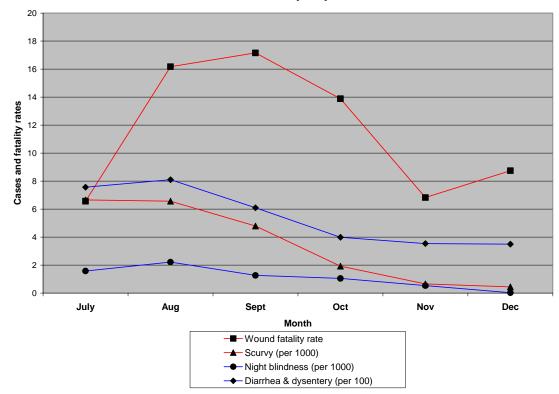
<sup>&</sup>lt;sup>29</sup> NIH, *MedlinePlus*; Whitney, *Nutrition*, 358, 368; ADA, "Vitamin E: Disease Prevention for Your Good Health," http://www.eatright.org.

Periods when these vitamins were lowest corresponded with increased infectious diseases, such as acute diarrhea. The Army of the Potomac's stay in Harrison's Landing in mid 1862 saw an eighty percent increase in night blindness, a 239 percent increase in scurvy, and a 193 percent increase in acute diarrhea. When the Iron Brigade's diet was compromised later than year in November by logistical problems and poor forage, one 19<sup>th</sup> Indiana soldier claimed that half of his company was sick. The 2<sup>nd</sup> Wisconsin also fell victim to increasing illness. "[T]here are a good many sent back from the Regt. daily to the hospitals," wrote George Legate. The dismal state of affairs for Lee's army during the last year prompted Carlton McCarthy to write, "The Confederate soldier...knows...by whom he was defeated- sickness, starvation, and death." 30

Probably the best example of the antioxidants' effect on disease prevention and wound healing was Sherman's army during mid to late 1864. As the number of scurvy and night blindness cases dropped- ninety-six and ninety-nine percent respectively- from July to December, so too did wound fatality rates and diarrhea and dysentery as seen in Graph 1. No other army experienced such drastic changes in health as a result of improved diet, itself due mostly to successful foraging of an area not depleted by previous campaigning.<sup>31</sup>

<sup>&</sup>lt;sup>30</sup> MSHCW, 31, 33, 174, 176; Venner, Swamp Hogs, 135; Kallina, "Never Defeated Yet," 117; McCarthy, Minutiae, 72.

<sup>&</sup>lt;sup>31</sup> Bollet, Civil War Medicine, 374.



GRAPH 1: Nutrition and disease in Sherman's Army July - December 1864<sup>32</sup>

# The silent killer: Calcium deficiency

Unlike vitamin A and C deficiencies, inadequate calcium intake would have been difficult to measure by physical symptoms. Though physicians were unaware of these vitamins and their resulting deficiency disorders, overt signs of night blindness and scurvy when severe enough could be recognized. Calcium, on the other hand exhibits no physical manifestations as a dietary deficiency. Should dietary deficiency persist long enough, the body takes the mineral from bones to maintain blood calcium levels. This condition eventually leads to the loss of bone density and the compromising of bone strength, or osteoporosis. In children, calcium deficiency can stunt growth and development- not a concern for the average twenty-five year old soldier during the war.

<sup>&</sup>lt;sup>32</sup> MSHCW, 542-47.

Calcium also serves to help regulate muscle contraction and relaxation, blood clotting, hormonal secretion, and the transmission of nerve impulses. However, because calcium can be continually derived from bones when necessary for a number of years, dietary deficiency has no effect on these.<sup>33</sup>

The role of vitamin D is linked with calcium, by enhancing its absorption from food in the intestine. It also serves to regulate blood calcium levels. A deficiency of the vitamin can result in a calcium deficiency, since absorption of the latter by the intestine slows as it passes through the digestive system. However, deficiency of vitamin D would have been hard to achieve during the Civil War, despite its low content in the average soldier's diet. In the presence of sunlight, the body can manufacture vitamin D, and ten to fifteen minutes of exposure three times a week produces an adequate supply. The average soldier had no problem accomplishing this goal.<sup>34</sup>

# It don't give me strength enough for our severe exercise: Carbohydrates

At full rations, carbohydrate levels were sufficient for the needs of the men on both sides; however, full rations were not always to be had. When this occurred during periods of extra exertion, such as during training camp or on the march, they could fall below recommended values. The largest physical manifestation of this occurrence was a loss of weight.

Carbohydrates are the body's primary source of energy by providing glucose for metabolic reactions. The body stores some of this glucose in the form of glycogen, which can be converted back to glucose in its absence. The body cannot store glycogen

<sup>&</sup>lt;sup>33</sup> Whitney, *Nutrition*, 404, 408-09; NIH, *MedlinePlus*.

<sup>&</sup>lt;sup>34</sup> Whitney, *Nutrition*, 364; NIH, *MedlinePlus*.

for long periods of time and without enough carbohydrate consumption can become depleted. When this occurs the body turns to its secondary and tertiary sources of energy, fat and protein respectively. The body breaks down fat, yielding glycerol and fatty acids, which the body's cells can use to function. However, the brain, nervous system, and red blood cells require glucose to perform; they cannot use the fatty acids released from fat. Since the glycerol released with the fatty acids is inadequate to provide enough glucose for these parts of the body, protein begins to break down, yielding glucose. The result is weight loss.<sup>35</sup>

Although Lee's men enjoyed more successful foraging and better eating in the North in mid 1863, the improvements could not immediately counter the results of a winter camp diet insufficient in not just micronutrients but most likely carbohydrates as well. Some already exhibited signs of weight loss, probably from a combination of bouts of diarrhea as well as low carbohydrates. One member of Battery B of the 4<sup>th</sup> U.S. Light Artillery at Gettysburg commented that "…many of [the Confederate wounded] were gant and emaciated as if from want of proper food." In describing the Army of Northern Virginia at the end of the war, Randolph McKim of the 1<sup>st</sup> Maryland wrote "[it was] almost starved, having been long on greatly reduced rations."

In all likelihood, some soldiers on both sides failed to receive enough carbohydrates during training camp to satisfy their energy requirements. Randolph Barton quickly tired of the constant drilling and marching he did every day in June 1861. "I do not remember how many days this [marching] lasted, but each day of hard

<sup>&</sup>lt;sup>35</sup> Whitney, *Nutrition*, 105, 147; The actual process of fat and protein metabolism in the absence of glucose is far more complex than described above, but for the purposes of describing weight loss in soldiers has been simplified.

<sup>&</sup>lt;sup>36</sup> Buell, Recollections of Service, 119; McKim, Soldier's Recollections, 269.

marching and camp fare with the night exposure, guard duty, & c., told upon me until I was worn out and reduced to skin and bone." Likewise, the Army of the Potomac did little but reorganize and train during the fall and winter of 1861; for one Pennsylvania soldier, his fare often failed to get him through the day. "I can eat salt horse and wormy crackers and drink swamp water with impunity, the only fault being it don't give me strength enough for our severe exercise." 37

Nutritional deficiencies clearly had a large impact on the health of the average soldier. While the effects vitamin D and calcium deficiencies were uncertain and possibly non-existent, the other micronutrient inadequacies caused their fair share of suffering on both sides. Cases of scurvy and night blindness continued to increase throughout the war, indicating general nutritional deficiency. Chronic diarrhea and dysentery, accounted for nearly one-fifth of all deaths among Northern white troops, a statistic most likely equal in the Southern armies. Apart from night blindness and scurvy, low vitamin A and C levels as well as insufficient vitamin E in all likelihood compromised the immune system of the men, leading to increased cases of infectious diseases and higher wound fatality rates and complications. However, some military personnel were willing to extend the list of nutrition's contributions, giving it credit in areas where it had little or no influence.<sup>38</sup>

#### The success of a campaign: Nutrition's impact on battles

The prevalence of sickness in the armies was no secret to the soldier. "[M]ore men have died from sickness than have been killed since the regiment came out and this

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<sup>&</sup>lt;sup>37</sup> Colt, *Defend the Valley*, 76; Norton, *Army Letters*, 30.

<sup>&</sup>lt;sup>38</sup> MSHCW, 147, 149, 297, 299, 453, 455, 605, 607.

is considered one of the healthiest regiments in the field," wrote a soldier of the 28th Massachusetts. Sickness robbed some regiments of fifty percent of their strength before ever setting foot on a battlefield. Jonathan Letterman went so far as to contribute the decision of battles on illness. "More soldiers die by disease than by violence, and if a Medical Staff can secure their health, its officers contribute largely to the success of a campaign." Letterman's reasoning that sickness robbed an army of its full potential and thus victory seemed logical when viewed in isolation of a single army; perhaps coming just after McClellan's humiliating defeat in the Peninsula Campaign had some role to play in his claim. However, disease affected each side equally; for most of the war, each side probably lost a similar percentage of its fighting strength to sickness before going into battle.<sup>39</sup>

The Battle of Chancellorsville in early May 1863 demonstrated the flawed nature of Letterman's theory. As May approached, the Army of the Potomac was in better health than it had been in seven months. Rates of scurvy and diarrhea and dysentery were down, as were wound fatalities due to Hooker's improving of the men's rations. Lee's army, however, was in a poor state of health when he wrote in mid to late April that scurvy was a problem and the health of the men was failing. In terms of fighting strength and the ability to bring a healthier force to the field, Hooker clearly had the upper hand. The Army of the Potomac numbered roughly 164,000 while the Army of Northern Virginia only fielded about 61,000. Given these odds and by Letterman's theory, Hooker should have emerged victorious, but instead he froze after early gains, lacking the confidence to continue the offensive and allowing Lee to divide his smaller force in half and strike the Union right flank, which was not rooted on any strong defensive position.

<sup>&</sup>lt;sup>39</sup> Kohl, Irish Green, 82; Robertson, Soldiers, 148; Letterman, Medical Recollections, 112.

In fact, it is somewhat ironic that General Howard's Eleventh Corps was preparing their supper when Jackson's men came pouring out of the woods onto their position.<sup>40</sup>

The Army of the Potomac failed at Chancellorsville, as it had so many times before, for a number of reasons including poor leadership by the commander of the army. Be they too inflexible, too overcautious, or simply too incompetent, the men who were appointed the head of the Army of the Potomac during the first two years lacked the ability to utilize the army to its full potential; placing the blame on poor diet was probably more a convenience, since it was accountable for so many other things.

Likewise, its effect on the moral and spirit of the men should not be overemphasized in comparison to a string of defeats at the hand of Bobby Lee and the transitory nature of the command, which resembled more the changing of the guards than a position of true leadership.

That Lee's army was in a state of near starvation and extreme nutritional deficiency when he surrendered, also does not lend any more weight to Letterman's assumption. It may have spurred Lee's decision to surrender when he did, but the Civil War was one of attrition, and this was a game that the South was going to lose. Grant lost more men than Lee during the Overland Campaign, but by keeping the pressure on him and forcing him into engagements, Grant prevented Lee from refitting his army. Grant's strategy worked in part because the North had the manpower and infrastructure to replace their losses; the South did not. Likewise, Grant's use of total warfare only brought the war to an end sooner rather than later. The diet of Lee's men was already in a deprived state before Sherman marched through Georgia and Sheridan raided the Valley. In this

<sup>&</sup>lt;sup>40</sup> Ernest B. Fergurson, *Chancellorsville 1863: The Souls of the Brave* (New York, NY: 1992), 364-65.

sense, inferior nutrition may have played a role in ending the war when it did but in all probability did not influence its outcome.

# **Hideous sights: Nutrition's impact on corpse appearance**

The dead body of a Confederate soldier, when left exposed for three or four days, seems to wither away – the skin becomes shrunken and assumes a yellow, saffron color – while, strange to say, emits little or no odor; on the contrary, the body of a dead Yankee swells up to an enormous size – turns to a dark purple color and becomes, in a very short time, exceedingly offensive to smell. This is ascribed by many to the superior *keeping* of the Federal soldier, owing to the comparatively rich food upon which he lived. 41

The Rebs dead were most of them black in the face and bloated so the buttons had burst from their clothes. Here and there would be one that was white as our dead was. It was said to have been caused by drinking whiskey with gunpowder mixed with it, and the white ones hadn't drunk the stuff.<sup>42</sup>

A person's diet affects his or her body in a physiological manner during life; can the same be said after death? The two quotes above left by soldiers would give the impression that it is possible. The first statement comes from the memoir of William J. Seymour, a Confederate captain in the 6<sup>th</sup> Louisiana; the second from Elisha Stockwell, a Union private in the Fourteenth Wisconsin. Both described the nature of corpses and attributed it to some dietary cause, one involving rich food and the other involving a mixture of gunpowder and whiskey. The latter appeared in another source, Edward O. Lord's 1895 unit history of the Ninth Hew Hampshire. In describing the Confederate dead, Lord drew attention to Union descriptions of the corpses as "rapidly turning black."

<sup>&</sup>lt;sup>41</sup> Terry L Jones, *The Civil War Memoirs of Captain William J. Seymour: Reminiscences of a Louisiana Tiger* (Baton Rouge, LA: 1991), 118.

<sup>&</sup>lt;sup>42</sup> Abernathy, Elisha Stockwell, 47.

The cause, according to a number of Union surgeons, was conjectured to be either a lack of salt in the Confederate diet or the mixing of gunpowder and whiskey.<sup>43</sup>

The Civil War was not the first war to be captured by the camera. More than thirty daguerreotypes exist from the Mexican War and another 350 from the Crimean War. These pale, however, when compared to the thousands of photographs that exist from the Civil War, depicting individual soldiers, camp life, and other subjects. This includes photographs of the grisly aftermath of the battles, corpses strewn across the fields. If the claims of Seymour, Stockwell and others were common observations, surely the photographs of Mathew Brady, Alexander Gardner, Timothy O'Sullivan and others could corroborate them.<sup>44</sup>

Seymour claims that Confederate corpses were yellowish in color, odorless, and did not bloat like the purplish, offensive-smelling Union corpses. Stockwell, on the other hand, calls the Confederate corpses bloated and black, while the Union corpses remained relatively unaffected in appearance. The black-and-white photographs of the nineteenth century do little to reveal skin discoloration; even in determining whether a corpse had turned black in color, the pictures are unreliable. Bloating, however, is more visible in photographs, such as the ones taken by James Gibson and O'Sullivan on July 5, 1863 of the fallen Union soldiers on presumably the Rose Farm or near Devil's Den at Gettysburg. These images demonstrate prime examples of the sort of bloating and physical distortion witnessed by Seymour and others.<sup>45</sup>

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<sup>&</sup>lt;sup>43</sup> Edward O. Lord, *History of the Ninth Regiment, New Hampshire Volunteers in the War of the Rebellion* (Concord, NH: 1985), 91.

<sup>&</sup>lt;sup>44</sup> William C. Davis, *Civil War Times Illustrated Photographic History of the Civil War: Fort Sumter to Gettysburg* (New York, NY: 1994), 410; Professor Davis has informed me that rather than 4 daguerreotypes, more than 30 exist from the Mexican War and are kept at Yale University.

<sup>45</sup> For over 100 years, most of the pictures taken at Gettysburg on July 5 and 6 were misinterpreted by



Men of the III Corps of the Army of the Potomac who died defending the Union left flank near the Emmitsburg Road at Gettysburg. The bloating and physical distortion of the corpses is easily noticeable. Taken by James Gibson on July 5, 1863.

(Library of Congress)



This photograph is actually of the same Union corpses as in the previous image; only the viewpoint has changed. Taken by O'Sullivan on July 5, 1863.

(LC)

On the other hand, a photograph taken by O'Sullivan on May 20, 1864 shows a row of Confederate dead from Richard S. Ewell's II Corps, awaiting burial at the Alsop Farm at Spotsylvania. Not only has bloating not set in, but the foreground body appears emaciated and shrunken. These photographs seem to confirm Seymour's statement, but what about Stockwell's?

location and even subject. William Frassanito, through painstaking analysis and research of the photographs, discovered that numerous images were in fact the same subject taken at different angles for greater variety. Furthermore, a number of images were placed by the description in the wrong location on the battlefield. All the images of corpses believed to be on McPherson's Ridge were, in fact, taken 3 miles south at or near the Rose Farm. The two images of the III Corps' casualties had long been believed to be of the I Corps from the first day's fighting. My thanks to Professor Dan Thorp for bringing this to my attention.



Late members of Ewell's corps. These men fell the previous day in a reconnaissance in force by Ewell against the Union right flank. Note the shrunken appearance of the foreground corpse. Taken by O'Sullivan on May 20, 1864.

(LC)

Numerous photographs were taken on July 5 and 6, 1863 of the aftermath of Gettysburg. One of these images depicts a single Confederate corpse, most likely from the Forty-fourth Alabama at the Slaughter Pen. The photograph was taken by Gibson, and the scene was most likely staged. Despite this, the body exhibits noticeable bloating and swelling.<sup>46</sup>



A Confederate soldier who died during Longstreet's assault against the Union right flank at Gettysburg on the second day of the battle. The swollen abdomen is noticeable in this image. Taken by Gibson on July 6, 1863.

(LC)

William A. Franssanito, *Gettysburg: A Journey in Time* (New York, NY: 1975), 173, 191; Photographers during the Civil War would often stage casualty scenes to make them appear more dramatic or photogenic. Many would carry a rifle, canteen, or even ordnance around and place it by the corpse, and sometimes the corpse itself was shifted into a different body position. In a rare instance, a body at Devil's Den at Gettysburg was moved about forty yards by Gardner and his assistants.

A more famous image shows the fallen men of William E. Starke's Louisiana Brigade along the Hagerstown Turnpike just outside the small town of Sharpsburg. The two bodies in the foreground of this photograph, taken by Gardner on September 19, 1862, are swollen and bloated. Most of the images of the Union fallen during the war were taken by O'Sullivan and others at Gettysburg, two days after the end of the bloody engagement. In all of these shots, the Union deceased are bloated and swollen, seeming to add credence to at least half of Seymour's statement.



These fallen soldiers died defending Lee's left flank at Sharpsburg against Meade's division, which included the Iron Brigade. George Otis of the 2<sup>nd</sup> WI remembered, "[f]or several days large details are made to bury the enemy's dead. This work was decidedly unpleasant, as the weather was warm, and decomposition had set in." Taken by Alexander Gardner on September 19, 1862.

(LC)

Based upon photographs alone, it appears that Confederate corpses were both bloated and unbloated as Stockwell and Seymour claim, respectively. Union corpses overwhelmingly appear to be bloated, going against Stockwell's account and supporting Seymour's. However, discrepancies begin to appear when each man's recollections are further scrutinized.

Seymour sets the appearance of the corpses at three to four days after the time of death. At this period he states Confederate corpses are seemingly shrunken away while Union corpses are bloated. The photograph taken by O'Sullivan of the Confederate dead at the Alsop Farm was taken one day, not two to three, after the attack against George

Meade's right flank. The photograph of the men from Starke's brigade at Sharpsburg, however, was taken two days after the time of death. As shown by the two foreground bodies, the corpses were already beginning to bloat. Likewise, the photograph of the Confederate soldier at the Slaughter Pen shows a bloated corpse four days after the time of death. After being left exposed for two to four days, let alone three to four, the corpses of Confederate fallen were already bloating, not shrunken away, as Seymour suggests.

Seymour also makes the suggestion that the reason for the bloated nature of the Union corpses was due to the "comparatively rich food" they had eaten. After the battle ended, Union soldiers at Gettysburg went about the grueling task of burying their dead on July 4 and 5. Augustus Buell, a gunner in Battery B of the 4<sup>th</sup> U.S. Light Artillery, remembered this event from July 4.

[A] great many of our dead were left where they fell, and three days of hot July weather had made hideous sights of their corpses. Without exception, they were swollen to twice their natural size; those who had not been stripped by the Rebels had burst their clothes open; their skins were all turned black or dark blue, or spotted with livid spots; their swollen tongues protruded from their mouths, and the stench from them was almost overpowering.<sup>47</sup>

The corpses described by Buell were three days old by July 4, meaning they fell on the first day of battle. Almost all the fighting on this day occurred north and northwest of both the town and the rest of the battlefield. Present were only the I and XI Corps as well as a division of cavalry. It is the dead of these units that Buell most likely saw on July 4. In fact, by "our dead" Buell may have meant specifically those of the I Corps rather than simply those of the Army of the Potomac, as the 4<sup>th</sup> U.S. Light Artillery was attached to this corps.

<sup>&</sup>lt;sup>47</sup> Buell, *Recollections of Service*, 120.

Part of the I Corps and one of the first infantry units to arrive on the field at Gettysburg was the famous Iron Brigade, which suffered over sixty percent losses, most from the first day. By July 1, the Iron Brigade had been marching for seven consecutive days and had marched fourteen of the past twenty days. That morning most of the soldiers dined on hardtack, pork, and coffee for breakfast, which was also their fare for most of the march. Dawes recalled that during most of the march, supper was hardtack and salt pork, and Ray wrote on June 26 that the men lived mostly on meat, hardtack, sugar, and coffee.<sup>48</sup>

These conditions did not apply to the Iron Brigade alone. The III Corps, whose dead appear in the photographs by Gibson and O'Sullivan, had also been marching for seven consecutive days by July 1 and had marched fourteen of the past twenty-one days. As such, they were subject to the same restrictions in diet that the Iron Brigade was, most likely living off of meat, hardtack, and coffee. This can hardly be termed "comparatively rich food," when a number of soldiers from Lee's army described their diet as considerably improved since crossing the Mason-Dixon line.<sup>49</sup>

The richness of one's diet does not determine the appearance or stench of corpses, as Seymour suggests, nor does a lack of salt or drinking a mixture of gunpowder and whiskey, as Stockwell suggests. Gunpowder and whiskey was a popular treatment for snakebites but, like rich food and lack of salt, failed to have any effect on the body after life. The appearance of corpses, both Confederate and Union alike, results instead from the normal course of bacterial activity within the body following death. During life, the

<sup>48</sup> Noah A. Trudeau, *Gettysburg: A Testing of Courage* (New York, NY: 2002), 566; *Echoes*, 36-37; Nolan, *Iron Brigade*, 233; Dawes, *Service*, 156; Herdegen, *William Ray*, 187

<sup>&</sup>lt;sup>49</sup> Janel B. Hewitt, *Supplement to the Official Records of the Union and Confederate Armies*, Volume 61 (Wilmington, NC: 1994), 392, 398-99, 420, 426.

gastrointestinal tract is home to commensal bacteria that keep each other in check by competing for nutrients and space. Following death, the bacteria begin to increase in number and overpopulate the large intestine, breaking through the wall and spreading throughout the body via the circulation system. As the bacteria feed upon the body's protein, they produce hydrogen sulfide gas. This causes the corpse to swell, most notably the abdomen and torso, and creates the stench that Seymour referred to in describing the Union dead. It also mixes with the hemoglobin in the blood, producing a greenish and later black discoloration of the skin that appears in the face and spreads to the torso and limbs.<sup>50</sup>

This natural process of decomposition explains most of the observations made by Seymour, Stockwell, and others during the war. The stage at which the corpse becomes discolored and bloated and releases a fowl stench occurs approximately ninety-six hours, or four days, after the time of death. This coincides exactly with Seymour's placement of three to four days. Some forensic entomologists, such as Dr. Richard W. Merritt of Michigan State University, have placed this stage as early as two days after the time of death, depending on a number of determinants such as humidity, temperature, and the presence of certain insects. In the days surrounding the Battle of Sharpsburg the weather was warm, and it had rained the night before the battle, possibly presenting the necessary conditions for a faster rate of decomposition. This could explain the bloating of the Confederate dead in Gardner's photograph at Sharpsburg two days after they fell.<sup>51</sup>

<sup>&</sup>lt;sup>50</sup> Robertson, Soldiers, 157; Dianna B. Dock, "Probiotics Enhance Recovery From Malnutrition and Lessen Colonic Mucosal Atrophy After Short-Term Fasting in Rats," Nutrition 20 (August 2004), 473; Jessica Snyder Sachs, Corpse: Nature, Forensics, and the Struggle to Pinpoint Time of Death (Cambridge, MA: 2001), 21; Jens Amendt, "Forensic entomology," Naturwissenschaften 91 (February 2002), 52-53.

<sup>&</sup>lt;sup>51</sup> Sachs, *Corpse*, 21; Amendt, "Forensic entomology," 52-53; Richard W. Merritt, "Forensic Entomology," http://www.cj.msu.edu/~people/forent.html; Otis, *Second Wisconsin*, 63; Dawes, *Service*, 87.

The reason the corpse in O'Sullivan's shot at the Alsop Farm appears shrunken is simply because one day after death, little physical distortion has taken place. The soldier in this picture most likely looks much as he did in life, in which a number of factors would influence his appearance, such as inadequate nutrition and diarrhea that resulted in weight loss among other maladies. After death, however, decomposition proceeds impartial to side and unrelated to nutrition.

The idea of bacterial activity resulting in decomposition was not put forward until the late 1860s, when Louis Pasteur claimed that the bacteria combusted the human body. Regardless of his error in assuming the enteric bacteria required oxygen, such knowledge did not exist at the time of the Civil War; Seymour, Stockwell, and others could not be expected to know of this process.<sup>52</sup>

Steven Stotelmyer gives reason to the soldiers' comments on corpse appearance in *The Bivouacs of the Dead*. "If the Union men noticed that the Confederates turned black more quickly, it may have been because all they observed after the Union burials were dead Confederates [and vice versa]." Typically, the victor of a battle commanded the field after the cessation of battle; as such he was left with the burial duties for both sides. Confederate burial details buried their own first before moving on to the Union deceased; the same goes for Union burial details. The burial details would come in contact with their own dead at an earlier stage of decomposition, before the bloating, discoloration, and permeating odor. After burying their own dead, they would move on to those of the enemy. By this time the bloating and other postmortem changes may have begun.

<sup>&</sup>lt;sup>52</sup> Plus Britannica, 15<sup>th</sup> Edition, s.v. "Pasteur;" Sachs, Corpse, 21.

Seymour noticed bloated and discolored Union corpses at three to four days after they died, a period when this would be expected due to the natural process of decomposition.<sup>53</sup>

A simpler explanation for these comments could be insult or derision. The soldiers were, in effect, describing the enemy dead as stinking, bloated, and black while their own remained either unchanged or were not nearly as offensive to the senses.

Regardless of the reason, the appearance of corpses is not the result of diet or any nutritional determinant.

Scanty rations and meager diets did more than cause grumblings throughout camp. They contributed largely to the high disease rates in armies and could even prove deadly. While scurvy and night blindness were not in themselves mortal- scurvy had a fatality rate of less than two percent in all white Northern troops and no cases of death from night blindness were reported- they displayed signs of nutritional deficiency that could have a larger impact. The lack of antioxidants opened the average soldier to a greater risk of infection and complications in wound recovery. In addition to poor sanitation and food and water contamination, a compromised immune system possibly accounted for a number of the acute diarrhea and dysentery cases, which contributed to almost thirty percent of all reported cases in the Union armies. Chronic diarrhea and dysentery, with their lower prevalence rate but much higher fatality rate, were probably in large part caused by micronutrient deficiencies. These afflictions were to be expected, however, since the diet of the average soldier so closely resembled the prewar restricted

<sup>&</sup>lt;sup>53</sup> Steven R. Stotelmyer, *The Bivouacs of the Dead* (Baltimore, MD: 1992), 5.

diets of the slaves and frontiersmen, who were themselves often the victims of scurvy and diarrhea.<sup>54</sup>

<sup>54</sup> MSHCW, 147, 149, 297, 299, 453, 455, 605, 607.

#### **CONCLUSION**

The diet of the average soldier during the Civil War often changed and was dictated by a number of factors, such as marching, season, and year. Be that as it may, it often retained certain staples- pork or beef, cornbread or hardtack, coffee in the Northern armies, and sugar and salt, both of smaller quantities usually amongst the Southern troops. Just as its composition, the amounts issued the men often changed as well, at times supplying more than enough macronutrients and at others flirting with insufficiency. The diets often reflected on one hand the abundance of the American diet that concerned the temperance reformers and on the other the deficiency of the prewar restricted diets. In fact, the staples of these different diets were often the same, but the average soldier, just like the slave and frontiersman, lacked certain items that resulted in deficiency disorders and disease. In the average soldier these specific inadequacies included vitamins A, C, D, E, and folate and calcium.

Many soldiers, lacking some of the luxuries of home, made attempts to supplement their meager diet, be it through boxes from home, sutlers, or foraging. However, for most these efforts were fruitless. The contents of boxes often spoiled or were pilfered; sutlers overcharged on many items, and few reported purchasing nutritionally enhancing items. Foraging, while often rewarding in the first year or two of the war, quickly became insufficient in substantially improving the diet of the average soldier, especially in the eastern theatre. Virginia played host to the war for roughly forty-five of the forty-eight months from April 1861 to April 1865 and soon became destitute of provisions.

As the health of the armies declined, medical directors recommended fresh vegetables and some fruit be issued the men. These suggestions came not from an understanding of micronutrient deficiency but from both observations of the beneficial properties of such produce as well as the prevailing notion that healthy diets were ones that included vegetables- a theory preached by most health reformers. However, the suggestions and push for vegetables by the Civil War surgeons and physicians were directed at curing and preventing the symptoms of deficiency disorders rather than the actual afflictions themselves. Because only severe signs could be recognized, the underlying problem of general nutrition insufficiency often went unchecked.

Even when fresh vegetables were supplied the armies at the behest of the medical directors, they did not always reach the men in recommended quantities. Commissary neglect and ignorance and greed of officers often robbed the average soldier of the few items that could bring some improvement to his meager diet. The very fact that the physicians had to make special requests for food items that were part of the ration, such as potatoes, demonstrated the scarcity of such eatables in the average soldier's diet.

The results of nutritional deficiencies were severe and resembled the sufferings of the slaves and frontiersmen writ large. Acute diarrhea and dysentery were everywhere, accounting for almost thirty percent of all illnesses on both sides, and while their direct cause was most likely from contaminated food or water or bacterial infection, the men were made more susceptible by the lack sufficient antioxidants. Those recovering from wounds were also at an increased risk for infection and even death. Chronic diarrhea and dysentery, unlike their acute forms, in all likeliness were caused chiefly by poor nutrition, specifically inadequate levels of vitamin C and folate. Though not as prevalent as acute

diarrhea and dysentery, they were far more fatal, killing almost three out of every ten soldiers inflicted with the illnesses. Scurvy and night blindness increased throughout the war, signs that nutritional inadequacy failed to improve in the armies.

While wreaking havoc on the men's heath, a poor diet could not be blamed for defeat in battle. Though nutrition strongly influenced a soldier's performance and an army's ability to field its full effective strength, it did so for both sides. That Hooker's better fed and probably healthier army failed to defeat Lee and his army at Chancellorsville, especially when outnumbering Lee two to one, is testament to the role of other factors and not nutrition in the outcome of battles. Similarly, a soldier's diet was not at fault if he was particularly more offensive looking and smelling as a corpse; other determinants were involved in that matter.

While not a decisive factor in the outcome of the war, let alone single battles, a poor diet and inadequate nutrition certainly influenced the fighting strength of individual armies, both physiologically and psychologically. The disorders and diseases that resulted from malnutrition kept hundreds if not thousands from active duty and increased casualties due to chronic diarrhea and dysentery and increased risk of infectious diseases. While factors such as recent success or defeat in battle and the competency and respect of commanders most certainly influenced the men's moral, a meager diet, especially one with little hope of improvement, probably played an equal role. It is unlikely that Robert Patrick was in the best of spirits when he wrote in February 1863 that the men were living "almost like a dog." In fact, after receiving better rations, his state of mind improved. "I didn't know before that a man's diet could create such a change in his feelings. I feel like a new man since I had got something fit to eat." Likewise, many a

soldier's spirits declined when finding boxes from home spoiled or tampered with or upon returning empty-handed from a foraging attempt. Many soldiers were quite aware of the impact of their diet on their health; it is likely that a number of the men became increasingly disheartened as they saw their comrades succumbing to disease and anticipated the same for themselves. Furthermore, some probably lost respect for the officers who were denying the men of their due rations. The effect of the soldier's diet on his moral is one of equal importance as the effect on physical health and is deserving of its own study where it can be given its due attention.

The scanty diets and nutritional deficiencies suffered by the average soldier resulted from a number of determinants. Logistical difficulties, commissary neglect, and officerial ignorance denied many of their due rations. What food the men did receive was often of such poor quality as to make it inedible. A number of soldiers, lacking the basic culinary skills, ruined many a meal. However, even the full rations contained certain inherent nutritional deficiencies, and without knowledge of micronutrients by physicians and surgeons, the average soldier continued to suffer from its maladies.

<sup>&</sup>lt;sup>1</sup> Patrick, Reluctant Rebel, 89, 228.

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