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“...drenched in dirt and drowned in abominations...”: Insects and the Civil War

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Human history has recorded innumerable conflicts. The massing of humanity, poor sanitary conditions, and disease are among the many factors that take their toll during wars. However, the role that insects play in these conditions has often been overlooked by historians, despite the pivotal role that insects have played. The American Civil War (1861-1865) was not exempt from the influence of insects.

The Civil War represents a unique part of American and world history. As the last major war before the proof of the germ theory, it was also a time before the proof of arthropods as vectors of disease agents. A terrible price was paid as a consequence of ignorance. Among the estimated 620,000 deaths, nearly twice as many soldiers died from disease as did in battle. Many of these disease-related deaths had an insect element.

Confederate and Union armies were among the most literate combatants in history. More than 90% of white Union soldiers and more than 80% of Confederates could read and write.¹ Soldiers and their families, sensing the historical importance of the war, preserved many of those personal accounts and reminiscences. These accounts were often laced with references to insects. Perhaps no one said it better than Civil War veteran Wilbur F. Hinman when he wrote, “Among the memories of the war few are more vivid than those of the numerous little pests that, of one kind or another, day and night, year in and year

out, foraged upon the body of the soldier.”² In addition, the Civil War was the first extensively photographed war. This photographic legacy provides a wonderful glimpse of the activities of soldiers, their lives, and the conditions that were conducive to the superabundance of insects.

In the Absence of Military Entomologists

No military entomologists existed during the Civil War. Indeed, there were few entomologists anywhere. The first state entomologist (Asa Fitch) and the first federal entomologist (Townend Glover) had been appointed only seven years earlier, in 1854. However, in the absence of military entomologists, other resources served to handle the insect-related issues. These included the Medical Corps (including regimental surgeons), the Quartermaster Corps, the U.S. Sanitary Commission and the U.S. Christian Commission, sutlers, and the individual.

Some of the roots of preventative medicine can be traced to the U.S. Sanitary Commission, an official agency commissioned by the U.S. government early in the war. It grew out of concern for the deplorable conditions being witnessed. A civilian organization, the Commission was divided into three main departments: the Preventive Service or Sanitary Inspection, the Department of General Relief, and the Department of Special Relief. Particularly noteworthy was the task of the inspectors of

Preventive Service to be attentive to the "...chance of danger from change of climate, from exposure, from malarious causes, from hard marching, or from any failure of supplies or transportation."³ Many of these elements had a direct connection to insects. Under such vigilance, some conditions did improve but the task was daunting.

Setting the Stage

Writings of the Civil War contain a wealth of information about the various arthropods encountered. For the soldier in the field, it wouldn't be long until they realized they would be fighting more than a human enemy. The historian for the 7th Rhode Island summarized the full wrath of insects and their brethren in his bivouac: "By evening many tents were up and the camp was in fair condition, but great was the complaint concerning vermin. It seemed as though all the insect life of the entire region had congregated here in anticipation of a glorious picnic. Necessarily our apartments were kept wide open, hence they were free to all comers. Ants built catacombs beneath our couches, land crabs burrowed up through the fungus-grown floor to inspect our resting places, woodticks climbed the tent-walls, whence they could select the most favorable lodging place, flies covered our food as with sackcloth and endeavored to rob us even of its scantiness, mosquitoes of unrivaled force and ferocity plied their lancets with merciless vigor, and, when their appetite were appeased, rested on the ridgepole and mockingly barked at their victim until he went to sleep, great hairy spiders built nests in the peak, strange things whizzed and buzzed and boomed through the darkness, anon dropping on our faces with a sharp thud as if shot or

alighting with sticky feet reluctant of dislodgement. All night long there was a rustling and a crackling of well-nigh every type of winged and creeping abomination that earth produces."⁴ While not up to the standards of modern entomology, the participant's descriptions are vivid enough to give us an understanding of the arthropods with which they were contending. We determined that the main arthropods referenced can be divided into the following groups: flies (filth and biting), lice, fleas, bees and ants, beetles, bedbugs, and chiggers, ticks, and spiders. For the purposes of this presentation, flies and lice are the main focus.

The arthropods encountered at a new bivouac were soon accompanied by others that were associated with camp untidiness. The presence of many insect pests was directly related to camp hygiene or of its absence. A British observer resolved that he would be, "...drenched in dirt and drowned in abominations..."⁵ Steward Marshall Brooks best summarized the situation: "Few recruits bothered to use the slit-trench latrines (and those who did usually forgot to shovel dirt over the feces) and most urinated just outside the tent - and after sundown, in the street. Garbage was everywhere, rats abounded, and dead cats and dogs turned up in the strangest places. The emanations of slaughtered cattle and kitchen offal together with the noxious effluvia from the seething latrines and infested tents produced an olfactory sensation which has yet to be duplicated in the Western Hemisphere."

"As for water - and seldom was there enough - any source would do in the early camps. Frequently, it was so muddy and fetid the men held their

noses when they drank the stuff. In many instances, the heavy rains washed fecal material directly into the supply, with disastrous consequences.”⁶

Such situations combined with large entourages of military animals exacerbated conditions. This was a war before high mechanization. Horses and mules provided the means for much of the non-rail transportation. The numbers are staggering by today’s standards. For example, Grant’s Wilderness Campaign in 1864 began with 56,499 mules and horses.⁷ As the beef was supplied on the hoof, the cattle train that followed was estimated between 8,000 and 10,000 head.⁸ Considering the amount of manure produced from these animals, it was a filth fly smorgasbord. A Virginia private elaborated in his diary: “Dec. 3, 1863...On rolling up my bed this morning I found I had been lying in - I won’t say what - something though that didn’t smell like milk and peaches”⁹

Filth Flies

Filth flies are a medically important group of insects because of the role they play in the transmission of disease agents. Feeding freely on human food and excrement, they are structurally well adapted for the transmission of pathogens that cause cholera, diarrhea, dysentery, and typhoid. As early denizens of the camps, the flies multiplied in the squalid conditions. Early in the war, a Confederate elaborated on the dipteran cohabitants in his camp, “When we open our eyes in the morning we find the canvas roofs and walls of our tents black with them [flies] ... It needs no morning reveille then to rouse the soldier from his slumbers. The tickling sensations about the ears, eyes, mouth, nose, etc., caused by the microscopic feet and inquisitive

suckers of an army numerous as the sands of the sea shore will awaken a regiment of men from innocent sleep to wide-awake profanity more promptly than the near beat of the alarming drum.”¹⁰ Union soldiers fared no better. A member of the 72nd Indiana Volunteer Infantry described the fly conditions at his camp by writing, “The deluge of rain which had fallen in the 10 days past had soaked the ground until the whole face of the earth was a reeking sea of carrion; in many places, as we walked over the ground, we could hear and see the sputtering water through which the noxious gases arose to high heaven, blending a thousand filthy smells into one, which no christian olfactory could withstand. Countless thousands of green flies flitted about with nasty, lazy drone, like the hum of a thousand spindles. These flies were constantly depositing their eggs on the ground, on the leaves, on everything - which the broiling sun soon hatched into millions of maggots, which wiggled until the leaves and grass on the ground moved and wiggled too; and in a short time they hatched into flies and added to the swarms in the air, and laid more eggs, &c. We are willing to risk our reputation as a faithful recorder of historic facts in saying that we have seen acres and acres of ground covered with leaves that were in a constant quiver from the motions of the maggots that infested them.”¹¹

Diarrhea and dysentery were by far the most common sicknesses in both Union and Confederate armies. Although flies probably were not involved in every enteric disease, there is little doubt they contributed to the prominence of such ailments. Whether soldiers called it the “quickstep” or the “alvine flux,” diarrhea and dysentery were the Civil War’s greatest cause of

common misery. Symptoms of dysentery and diarrhea presented themselves as more than an occasional case of loose bowels; one soldier noted that his bowels moved 18 times in three hours while he was on as Corporal of the Guard. Union records list more than 1.7 million cases of dysentery and diarrhea, maladies that took the lives of nearly 60,000 soldiers.¹² The suffering from these diseases was especially bad in prisons. Of 12,462 deaths recorded at Andersonville, 5600 (45%) were attributed to diarrhea and dysentery.¹³ Confederate prisoners also suffered; of the nearly 41,000 Rebels held in the North, dysentery and diarrhea took 6,000 lives.

“Curative” measures for dysentery and diarrhea ran the gamut from flannel body bandages, growing a beard, wearing stomach belts, or drinking whisky. Medical doctors prescribed lead acetate, sulfuric acid, calomel (a mercury compound), and silver nitrate. Such prescriptions only worsened matters. However, doses of opium or belladonna were therapeutic.

The omnipresent fly also presented a problem in open wounds of the soldiers. Eggs deposited by flies hatched quickly and the injured area soon teemed with maggots. Union doctors removed the maggots with chloroform but at least one Confederate doctor used maggot therapy to remove the decayed tissue associated with hospital gangrene. J. F. Zacharias, a surgeon in the Confederate army wrote, “During my service in the hospital at Danville, Virginia, I first used maggots to remove the decayed tissue in hospital gangrene and with eminent satisfaction. In a single day, they would clean a wound much better than any agents we had at our command. I used them afterwards at various places. I am sure I

saved many lives by their use, escaped septicemia, and had rapid recoveries.”¹⁴ Besides their efficiency, the maggots also excrete allantoin, a chemical compound that aids the digestion of necrotic tissue and thus promotes new tissue growth. However, maggot therapy works best under sterile conditions -- a rare situation during the Civil War, given the lack of understanding of germs.

Mosquitoes

No story of insects in the Civil War could be complete without referring to the biting flies -- especially mosquitoes, biting midges, and black flies or buffalo gnats. Of the biting flies, mosquitoes probably had the greatest impact on soldiering during the Civil War. Mosquitoes played two roles in the Civil War, one a nuisance, the other deadly. As phlebotomists par excellence, they were annoying pests. If they were infected with one of the microorganisms that causes disease, their bites could lead to debilitation or death. Called “gallinippers” by the soldiers, mosquitoes were considered by some Confederates to be a greater nuisance than Yankee bullets.¹⁵

The puddles in the camps on the Peninsula, the trenches at Petersburg, the ditches at Vicksburg – all would have provided attractive breeding areas for mosquitoes. Camp life also produced an excess of breeding habitats such as sinks and water-filled pots and barrels that complemented the natural breeding sites. The standing water was often full of “wiggletails” and “wrigglers” – terms the soldiers used to describe the larval mosquitoes. A Confederate soldier in York Co., Virginia, testified that he “drank more mud and wiggle tails than water.”¹⁶



Figure 1. Trenches near Petersburg attest to both prime breeding habitats for mosquitoes and the filthy conditions. (Library of Congress)

Mosquito abatement was virtually non-existent. Some units were issued mosquito bars but unless the netting was secured correctly, they were ineffectual. Others relied on smoky fires or smudges. One soldier groused, "Mosquito bars and smoke of camp-fires were only slight protection."¹⁷ Many soldiers depended on tobacco smoke as a deterrent. A Captain tormented by mosquitoes while writing up his company books employed tobacco smoke to his advantage. He bought a box of cigars and had the enlisted men come into the tent, smoke the cigars and puff the smoke while he finished his task.¹⁸ The viler the tobacco, the better it was for repelling mosquitoes. Most soldiers had to endure the ravages until cooler weather brought change.

Of the diseases borne by mosquitoes, malaria ranked highest. Malaria was termed "simple intermittent fever" by the medical professionals, but the soldiers referred to the malady as ague or "the shakes." Malaria was so prevalent in some camps that a standard greeting was "Have you had the

shakes?"¹⁹ More than 1.3 million cases and 10,000 deaths from malaria were recorded in the Union Army.²⁰ Fully one quarter of all illness reported in the Union Army was malarial in character.²¹ Treatment for malaria reflected a time of heavy dosing. Pills of mercury, turpentine, carbonate of ammonia, tonic, and brandy represented some of the cure-alls. Nevertheless, an effective drug -- quinine -- was available for prevention and cure of the disease. Union armies used more than 19 tons of quinine sulfate during the war.²²

However, the Northern blockade of the Confederacy made this drug difficult to obtain in the South, which led to quinine smuggling and a black market. Prices of \$400 to \$600 and even \$1,700 an ounce were recorded late in the War.²³

Because a Confederate private was paid only \$18 a month in nearly worthless script, the price became prohibitively expensive.

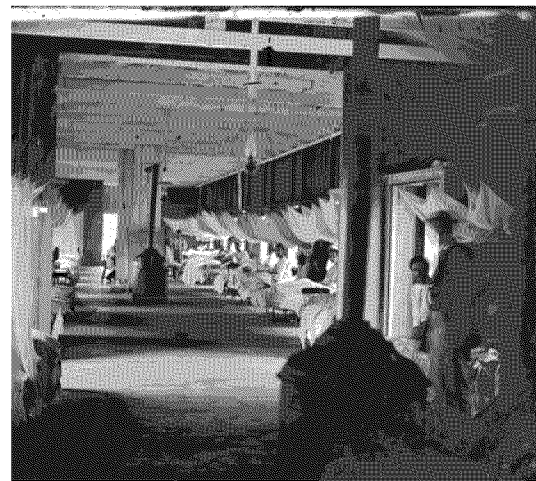


Figure 2. A hospital ward in Washington, D.C. was photographed with mosquito netting draped around the beds. (Library of Congress)

Lice

Introductory books in entomology describe the basis for louse infestations: “People who bathe and change clothes regularly seldom become infested with lice, but when they go for long periods without doing so and live in crowded conditions, lousiness is likely to be prevalent.”²⁴ Such a description was certainly fitting for the Civil War. The participant could have suffered from any one or all the lice that infest humans: the body louse (*Pediculus humanus humanus* L.), the head louse (*Pediculus humanus capitis* DeGeer), and the crab or pubic louse (*Phthirus pubis* [L.]. The vast majority of references were to body lice.

Lice were known by a number of names: bluebellies, rebels, tigers, Bragg’s body-guard, soldier’s body-guard, zouaves, graybacks, vermin, travelers, cattle, and livestock.²⁵ The term used most commonly by both Yank and Reb was “grayback”. Rare individuals claimed not to have had lice.²⁶ However, lice were so common that it would have been unusual for an enlisted man or an officer not to harbor them. They permeated nearly every aspect of a soldier’s life to the point that they even filled his dreams. A Yankee prisoner wrote, “Had a funny dream last night. Thought the rebels were so hard up for mules that they hitched up a couple of grayback lice to draw in the bread...”²⁷ A veteran summarized his opinion of the ubiquitous louse, “Like death, it was no respecter of persons. It preyed alike on the just and the unjust.”²⁸ Many soldiers certainly sheltered a healthy colony of lice. An orderly of one company officer picked 52 graybacks from the shirt of his chief at one sitting.²⁹

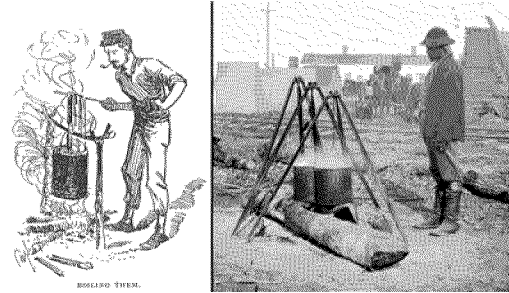


Figure 3. Delousing included several techniques such as boiling clothes. Finding a receptacle big enough for the job often meant the company’s cook pot served double duty. (Illustration from Billings 1887; photograph from Library of Congress)

Delousing or “skirmishing” as it was called took up a good portion of free time. It also served as time for socializing while the individuals methodically inspected the seams and folds of their clothing. Numerous skirmishing techniques were employed. Often the graybacks and nits were simply crushed between the thumb and finger but, quicker methods also were used when available. These included painting the seams of the clothing with “blue ointment” (a mercury compound), singeing clothing over a campfire, or boiling, beating, and scrubbing it. A Yankee prisoner elaborated on the singeing procedure: “One of the most effectual ways of doing this [singeing] was to turn the garments wrong side out and hold the seams as close to the fire as possible, without burning the cloth. In a short time the lice would swell up and burst open, like pop-corn. This method was a favorite one for a reason other than its efficacy: it gave one a keener sense of revenge upon his rascally little tormentors than he could get in any other way.”³⁰ The boiling method also could be effectual -- if one could find enough water or a receptacle big enough. To this means, the company cook pot would

serve to boil shirts.³¹ However, the residue left in the pots was another formula for intestinal distress.

Additionally, the hot water could shrink woolen clothing to an unwearable size.

Lice were not without redeeming value. As a topic of conversation, soldiers would sometimes compare captured graybacks. Several Confederates claimed they caught lice embellished with the letters C.S. (Confederate States) and I.W. (In for the War).³² For soldiers, probably the greatest source of entertainment (and at least some income) that involved lice centered on the louse races. Wagers were placed on louse races, where the arena was often a mess plate. Sam Watkins described one of these events among his fellow Confederates, "The boys would frequently have a louse race. There was one fellow who was winning all the money; his lice would run quicker and crawl faster than anybody's lice. We could not understand it. If some fellow happened to catch a fierce-looking louse, he would call on [Fred] Dornin for a race. Dornin would come and always win the stake. The lice were placed in plates – this was the race course – and the first that crawled off was the winner. At last we found out D's trick; he always heated his plate."³³

Soldiers endured their associations with the louse until the muster out. There is little doubt that the life cycle of the omnipresent louse was intertwined with the daily life of the Civil War soldier. What remains a mystery is why neither Confederate nor Federal (nor corresponding civilians) ever suffered extensively from louse-borne typhus. The conditions certainly seemed rife for such an epidemic. With the exception of a possible outbreak of asymptomatic

typhus in Willington, NC, the disease never really materialized.³⁴

Conclusion

This subject not only underscores the hardships and misery that Americans on both sides had to endure, but it also highlights how far we have come in medical entomology and preventative medicine over the past century and a half. It also reminds us how much has not changed since 1861.

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Military medical entomology during the Mexican-American and First World Wars: A coming of age

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An inchoate appreciation for the profound impacts poor field sanitation exacted on troop strength and morale during the Civil War led to the establishment of the US Sanitary Commission in 1861. Even so, a full

realization of the critical role sanitation and insect control play in the prevention of communicable diseases had to await the birth of medical entomology brought about by the brilliant discoveries of pioneers in tropical medicine decades