

A SICKLY LITTLE WAR:
EPIDEMIC DISEASE, MILITARY CAMPAIGNS, AND
THE SPANISH-AMERICAN WAR

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ABSTRACT

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Before the twentieth century, disease killed more people during military operations than enemy action. This was particularly the case when soldiers from the temperate regions of Europe and North America were sent to fight in the tropical regions of the world, where they faced a disease environment filled with pathogens against which they possessed no natural defenses. The fear of epidemic disease was a constant companion for senior commanders down to the lowliest soldier, affecting when, where, and how the war was planned, fought, and supported; it affected who was recruited to fight and the willingness of individuals to go to war; and as epidemics began it greatly increased the burden on supply and transportation systems while requiring more and more recruits to simply maintain the numbers available to fight. Despite this, many histories of conflicts fought during this era have treated disease as merely an environmental factor that reduced the fighting strength of each side, less important than the strategies, tactics, and weapons which have been the focus of traditional histories of war. As medicine improved from the humoral theories of the ancient world to the bacteriological revolution that ushered in the germ theory of disease, military commanders and doctors began to understand the disease threats, but even at the end of the nineteenth century that knowledge was frustratingly incomplete.

The Spanish-American War (1898) was one of the last conflicts of this disease era – more than seven men died from a disease for every one killed by enemy action. This research is the first scholarly effort to place as much emphasis on the medical weapons available to fight or

avoid disease as on the military weapons used to fight the enemy, combining medical and epidemiological history with military history to evaluate the decisions made by the senior American leadership in light of the new discoveries on infectious disease and the lessons learned from previous conflicts fought in tropical regions. It shows that many of the deaths from that war were avoidable given the information available to the decision makers; furthermore, the country came close to losing the critical Cuban campaign of the war due to epidemic disease and the failure to prepare for the known disease environment on the island. Doctors were still torn between the older theories of miasma and contagion and the newer theories of bacteriology and insect vectors, puzzled by viral diseases that failed to show a disease bacterium visible under the microscope. To the thousands of men that died from typhoid, dysentery, malaria, and yellow fever, the Spanish-American War was not a “splendid little war” but rather a “sickly little war” that found the military and medical leadership woefully unprepared despite the medical and military knowledge available to them.

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Dedicated to my soulmate and fellow Ph.D.
Who put up with 40 years of late-night, part-time schoolwork and more degrees
Number six is the last one – I promise.

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TABLE OF CONTENTS

LIST OF TABLES.....	x
LIST OF FIGURES.....	xi
PART ONE: DISEASE AND WARFARE.....	1
CHAPTER 1 INTRODUCTION.....	2
CHAPTER 2 EPIDEMIC DISEASE.....	27
The Evolution of Medical Science on Epidemic Diseases.....	27
Immunity – Innate and Acquired.....	40
Disease and the Soldier.....	45
Disease and Warfare – Effects on Military Planning and Actions.....	49
Epidemic Diseases Affecting War.....	55
Cholera.....	57
Dengue.....	59
Dysentery.....	61
Malaria.....	64
Plague.....	68
Smallpox.....	71
Typhoid / Enteric Fever.....	73
Typhus.....	75
Walcheren Fever.....	77
Yellow Fever.....	78
Crowd Diseases.....	81
CHAPTER 3 INTERRELATIONSHIPS BETWEEN DISEASE AND MILITARY CAMPAIGNS	84
Combat Environmental Effects that Increase Disease Susceptibility.....	87
Location.....	87
Season.....	89
Diet – Food and Water.....	90
Sleep Deprivation and Fatigue.....	92
Cleanliness and Hygiene.....	93
Prior Health and Prior Immunities.....	95
Overcrowding.....	98
Multiple Diseases.....	99
Effects of Disease on Military Campaigns.....	101
Where and When to Fight.....	101
Duration (Length of campaign).....	105
Recruitment and Choice of Troops.....	106
Medical Logistics.....	110

	Morale.....	113
	Asymmetry.....	114
	Mobilization and Demobilization.....	116
	Outcomes.....	118
	Conclusion.....	119
CHAPTER 4	19 th CENTURY MEDICINE AND THE DEVELOPMENT OF MILITARY MEDICINE.....	121
	Early Imperial Medicine, 1500 – 1850.....	122
	Nineteenth Century Scientific Medicine and the US Military.....	145
	Disease and Military Medicine.....	165
	The US Army Medical Corps.....	175
	Quarantine and the US Marine Hospital Service.....	184
	The State of Medical Knowledge in 1898.....	188
CHAPTER 5	DISEASE AND MILITARY CAMPAIGNS – CASE STUDIES.....	196
	A Case Study of Failure - the Caribbean.....	199
	General Case Study – The Caribbean, 1740 – 1815.....	204
	Campaign Case Study – Saint Domingue.....	207
	Case Study – Conclusions.....	212
	A Domestic Case Study – the US Civil War.....	215
	A Case Study of Possible Success – Africa.....	225
	General Case Study – The European Conquest of Africa.....	226
	Campaign Case Study – The Third Anglo-Ashanti War.....	231
	Case Study – Conclusions.....	242
	Lessons Learned from Military History	247
	PART TWO: DISEASE AND THE SPANISH-AMERICAN WAR.....	254
CHAPTER 6	THE ROAD TO WAR: THE UNITED STATES ON THE BRINK OF EMPIRE.....	255
	The US Military and the End of the American Frontier.....	255
	The US Army, 1865 – 1898.....	258
	The US Navy, 1865 – 1898.....	266
	The US Military: 1898.....	270
	War Plans.....	273
	US Military Planners and Tropical Diseases, 1898.....	284
CHAPTER 7	SPAIN AND THE DECLINE OF THE SPANISH EMPIRE.....	288
	The Spanish Empire	288
	The Antilles.....	290
	Spain in the Pacific.....	291
	Control of the Seas.....	294
	Spanish Colonial Insurrections.....	296
	The Cuban Rebellions.....	296
	The Philippine Rebellion.....	313

The Road to War -The Cuban Question.....	320
CHAPTER 8 AMERICA GOES TO WAR.....	331
Mobilization – Navy.....	333
Mobilization – Army.....	336
Potholes in the Road to War.....	357
CHAPTER 9 WAR IN THE CARIBBEAN.....	366
The Spanish Fleet Arrives.....	366
Planning for a Caribbean Land War.....	376
CHAPTER 10 THE CUBAN INTERVENTION.....	388
The Spanish Situation.....	388
The U.S. Cuban Campaign.....	396
Disease and the Surrender.....	417
Dying on a Foreign Shore.....	435
CHAPTER 11 THE INDIRECT APPROACH: WAR AGAINST SPANISH COLONIES.....	451
The War in the Philippines.....	451
The Manila Campaign.....	454
The Philippine Insurrection.....	461
The Puerto Rico Campaign.....	467
CHAPTER 12 BEHOLD, THE HORSEMAN OF PESTILENCE APPEARS.....	476
Treating the Survivors – Cuba and Camp Wikoff.....	476
Evacuation and Recuperation.....	491
"The Ghastly Echo of a Thinning and Dying Army Corps".....	511
We Also Served – Training and Typhoid in the United States.....	523
So bad it was impossible to walk.....	533
CHAPTER 13 THE END OF THE ERA OF DISEASE.....	543
Ending the War.....	543
Walter Reed, William Gorgas, and the Defeat of Yellow Fever.....	551
Lessons Learned – Disease and the Spanish-American War.....	556
The Study of War and Disease.....	569
APPENDICES.....	571
Appendix A Morbidity and Mortality Reports.....	572
Appendix B Correspondence.....	575
Appendix C Bibliographic Essay.....	600
BIBLIOGRAPHY.....	662

LIST OF TABLES

Table 1:	Routes of Transmission of Infections.....	30
Table 2:	Disease Classification Used in Official Reports, US Civil War.....	139
Table 3:	Medical Knowledge of Major Diseases.....	161
Table 4:	Causes of US Army Deaths in the Civil War and the Spanish-American War.....	215
Table 5:	Sick Reports and Deaths by Disease.....	534
Table 6:	Cases of Typhoid Fever by Location.....	534
Table 7:	Daily Morbidity and Mortality Reports, Fifth Corps, July 25–August 23, 1898.....	572
Table 8:	Morbidity and Mortality from Typhoid Fever in the United States, by Command.....	573
Table 9:	Casualties During the War With Spain, 1898.....	574

LIST OF FIGURES

Figure 1:	The Epidemiological Triangle.....	167
Figure 2:	19 th Century Disease Mitigation Techniques: Malaria.....	169
Figure 3:	19 th Century Disease Mitigation Techniques: Yellow Fever.....	171
Figure 4:	The Island of Cuba, 1898.....	275
Figure 5:	The Spanish Empire in 1898.....	288
Figure 6:	Santiago de Cuba and Vicinity.....	397
Figure 7:	Map of the Philippine Islands, 1898.....	457
Figure 8:	Puerto Rico, 1898.....	472
Figure 9:	Morbidity Reports, Fifth Army Corps, Cuba July 25 – Aug. 23, 1898.....	492
Figure 10:	Disease Mortality Rates, 1898-1899 versus 1861-1862.....	538

PART ONE: DISEASE AND WARFARE

CHAPTER 1

INTRODUCTION

The soldiers were dying in a sewer, facing death alone and forgotten. They lay unattended except for possibly a steward, likely drunk from liquor used to stupefy the pain, stolen from the patients. Their bed was straw, rags, or the bare ground, colored in a rainbow of filth – brown feces, yellow urine, red blood, and a mix of other colors from bodily fluids expelled by bodies wracked with disease.¹ Such was the scene of a typical battle during the era of uncontrolled epidemic disease – the period before the twentieth century, when disease killed more men² than did the enemy. A quick, sickly death was the expected lot of soldiers for most of recorded history – not glory (for glory is found in songs and stories, not in the battlefield); not the “red badge of courage” of an honorable wound³; not even an honorable death from enemy action – but death from disease. Many died from camp diseases without ever seeing military action. This was

¹ In most campaigns before the recognition of a need for sanitation (generally the latter part of the 19th century), soldiers who were sick were sent to improvised “hospitals” which were typically a dumping ground where the soldier was left to live or die as fate seemed fit. During the Napoleonic Wars, hospitals were frequently located in areas with poor sanitation and men were placed on the floor with at most filthy straw or rags contaminated with the fluids of a previous inhabitant, frequently a fatality. During the siege of Torgau (1813), Prinzing reports that “The patients suffered partly from severe, fetid diarrhea, and partly from typhus. In the courtyards there were enormous accumulations of dirt and refuse, and the doors leading into many of the sick-rooms could scarcely be opened owing to the collections of foul matter which covered the floor ankle-deep; in order to reach the sick it was necessary to wade through this and to climb over dead bodies.” Friedrich Prinzing, *Epidemics Resulting From Wars* (Oxford: The Clarendon Press, 1916), 312.

² This dissertation will use the male gender to denote the male soldiers or sailors that fought in European or American armies before the twentieth century. Although a few women may have participated in battles (generally disguised as young men), they were but a handful compared to tens to hundreds of thousands of men. Using generic male/female genders seems inappropriate, even misleading, under these circumstances. The female gender will be used of course to denote the contributions of females where appropriate, especially as nurses in the hospitals where they saved many (male) lives.

³ The “Red Badge of Courage” comes of course from the short story with that name written by Stephen Crane (Stephen Crane, *The Red Badge of Courage: An Episode of the American Civil War* (New York: D. Appleton & Co., 1895)). An honorable wound is any wound in the front of the body (presumably from facing the enemy).

particularly true for Western⁴ soldiers deployed world-wide during the Age of Discovery (ca. 1500) on the road to empire, from the empires in the New World in the 16th through 18th centuries to the conquest and partitioning of Africa in the late nineteenth century. The last war at the *fin de siècle* dominated by disease marked the beginning of the American equivalent of empire, gained in 1898 through the conquest of the remnants of the once grand overseas Spanish empire. These soldiers of empire left the disease environment they were born into to face disease environments that they were susceptible to: from the camp diseases found in crowded environments (such as measles, mumps, and smallpox) to the diseases found on military deployments such as dysentery, cholera, typhoid, and typhus to the diseases of the tropics such as malaria and yellow fever. Their homelands gained wealth, prestige, and power through their conquest and colonization of the Americas, Asia and the Pacific, and Africa leading to empires that spanned the globe at their height. Many soldiers paid the cost of empire with their lives, dying in a sewer, in a foreign place, from a foreign disease.

The fourth horseman of disease was dominant from the age of clubs and stone knives through the age of artillery and cavalry charges. Although advances in the late nineteenth century such as sanitation, anesthesia, and (by 1898) the X-ray machine greatly improved the outcome for soldiers wounded in combat, the cause and treatment for major epidemic diseases such as malaria, typhoid, and yellow fever was still unknown, so these diseases remained a major killer during war. This was the Era of Disease in warfare. It affected how soldiers and commanders perceived the war, planned and mobilized for it, and how the war was fought.⁵

⁴ The dissertation will focus on the major Western military powers of the time: Britain, France, Spain, and later the United States. Although American troops were not European, they were mostly descended from European immigrants to the US and raised in a disease environment similar to Europe.

⁵ This is the subject of Chapter 3, which will detail how disease affected each aspect of preparing for and conducting war.

This story was repeated time and time again for most of recorded history – but not all. A major threshold was passed in the age-old battle between disease and the enemy to see who could kill the most opposing soldiers. After the turn of the century (1900), advances in medical science had brought a change to the balance between bullets and bacilli (borrowing the term from Vincent Cirillo⁶), aided by the incredible lethality brought by the industrial revolution in the form of indirect artillery, machine guns, mechanized vehicles, and poison gas. Higher lethality had shifted toward enemy action beginning with the Russo-Japanese War (1904-05). Each succeeding war after 1900 has resulted in fewer per capita deaths from disease and a higher survival rate for personnel wounded in battle.⁷

Ironically this threshold was marked by the publication of the first major study of the effects of epidemic disease in wartime, Frederich Prinzing's *Epidemics Resulting From Wars* (1916). The focus of the study was not only on the wartime epidemics themselves, but also the effect of these wartime epidemics sparking greater epidemics among the civilian population; this would be dramatically emphasized by the Spanish Flu pandemic brought back by soldiers returning home from the First World War. John Bates Clark noted in 1916 that "until comparatively recent times the most serious human cost of war has been not losses in the field, nor even the losses from disease in the armies, but the losses from epidemics disseminated among the civil populations." *Epidemics Resulting From Wars* represented the first major study of wartime

⁶ The title of Cirillo's study of the Army Medical Corps during the Spanish-American War is titled *Bullets and Bacilli* (Vincent Cirillo, *Bullets and Bacilli: The Spanish-American War and Military Medicine* (New Brunswick, NJ: Rutgers Univ. Press, 2004)).

⁷ Matthew R. Smallman-Raynor and Andrew D. Cliff, *War Epidemics* (Oxford: Oxford University Press, 2004), 32-35.

epidemics for the major conflicts of the seventeenth through nineteenth centuries, the height of the Era of Disease.⁸

The last major conflicts of the nineteenth century – the Spanish-American War (1898) and the Boer War (1899-1902) are the final wars fought during this Disease Era.⁹ The high disease mortality rate for both conflicts showed the limits of all of the major advances in medicine during the nineteenth century.¹⁰ The Spanish-American War was the last war of the Disease Era for the United States, yet the role of disease in that conflict has been understated in most histories of the war. It is the thesis of this dissertation that the United States came close to losing the Cuban campaign of the Spanish-American War due to epidemic disease; furthermore, the senior military and medical leadership were responsible for the deaths and disablement of thousands of citizen volunteers during the war due to epidemic disease, because they failed to incorporate available knowledge on the effects of disease on military operations in the planning, mobilization, training, and execution of military campaigns in tropical regions during the war. Although the US would have eventually defeated Spanish forces in the Caribbean given the political and public will to continue fighting after a loss in Cuba, the country came close to disaster in the siege of Santiago de Cuba in 1898. Furthermore, the large numbers of deaths from disease were largely avoidable given the current state of medical knowledge in 1898, especially the deaths occurring in training camps in the United States.

Although previous histories have included specific deficiencies in medical planning and medical care in their analysis of the war, as well as documenting the immediate effects that the

⁸ Prinzing, *Epidemics*. viii; Clark was Director of the Division of Economics and History of the Carnegie Endowment for International Peace. Prinzing includes a very brief survey of historical epidemics beginning with the Plague of Athens (430-425 BC) but the first detailed study begins with the Thirty Years War.

⁹ Smallman-Raynor and Cliff, *War Epidemics*, 34 (Table 1.13).

¹⁰ Disease deaths for the Boer War outnumbered deaths from enemy action in a ratio of 1.9:1. The 1895 Cuban Insurrection followed by the Spanish-American War resulted in a disease:enemy action ratio of 5.7:1 for Spanish troops and 7.9:1 for US forces (Ibid.).

outbreak of epidemic disease had on training and military operations, they have failed to investigate the gap between knowledge of the predictable effects of epidemic disease publically available at the time of the war and the information actually used to plan and execute the war.¹¹ The failures of the US leadership were much more than failures of the imagination; they were failures of professional competence. Although one can sympathize with the leadership of the US Army and the Army Medical Corps given the many institutional roadblocks caused by a short-sighted, partisan, and parsimonious Congress, unrealistic public expectations, regulatory red tape, and a shortage of men, materiel,¹² and time, the thousands of unnecessary deaths and permanent disablements resulting from that war demand that they be held accountable for their actions.

The existing scholarship has identified the actions and errors committed by the leaders of the war (as well as some good decisions and commendable deeds), and many works have detailed the specific diseases that afflicted soldiers during the war, the cause of the epidemics, and some specific effects on the war.¹³ These facts are readily available between contemporary and modern texts dealing with the conflict – but they are split between three different fields of study: the history of medicine, the study of the effects of epidemic disease on history (epidemiological history), and military history. Despite the centrality of disease in military campaigns throughout

¹¹ The major histories of the war such as Cosmas (*An Army for Empire*) and Trask (*The War With Spain, 1898*) fail to discuss or identify the state of 19th century medical science with respect to the epidemic diseases (dysentery, typhoid, malaria, yellow fever) that were known to threaten military operations in the tropics (all of which did in fact occur and significantly impact the war). In fact, not one of the military histories discussed in this chapter does so. If they don't summarize the state of knowledge, they can hardly analyze the differences between that knowledge and the information used to make decisions. The single medical history of the war, Vincent Cirillo's *Bullets and Bacilli*, did establish the state of medical knowledge on typhoid. However, this was applied only to typhoid outbreaks in the "National Encampments," and the impact of disease on the war was limited to a few paragraphs (Cirillo, *Bullets and Bacilli*, 57-90).

¹² Materiel (with an *e*) is a term used to indicate military equipment and supplies.

¹³ This scholarship includes the histories included in the brief historiography discussion in this chapter, and also the works listed in the bibliographic essay in Appendix C. Coverage of the events that occurred, the messages sent and decisions made, are all included in any competent history of the war. This includes the actual facts surrounding the epidemics – that they occurred, how many troops became sick and died, and the actions taken by the leadership in response to these outbreaks. These are mentioned in citations throughout this dissertation.

history, especially prior to the twentieth century, there have been few books written that directly address the effects that disease has on military operations. No single work has incorporated a consideration of all of the interactions between disease and warfare, and none have evaluated the quality of the decision making on coping with the predictable outbreak of epidemic disease given the available medical and military knowledge.¹⁴ This paper will in part identify the diseases and environments most hazardous to the imperial soldier and trace the development of military medicine to alleviate these hazards. Case studies of previous military operations combined with a detailed examination of the state of medical knowledge at the start of the war will define the knowledge base available to the leadership. This provides an integrated framework as a basis for a medical and military history of the Spanish-American War, with an emphasis on the quality of leadership and decision making. Prior military histories have evaluated the quality of decision making to minimize casualties from enemy action and accomplish the military objectives, the traditional criteria for evaluation. Although winning the war is always the ultimate measure of success, given that most men died from bacilli than from bullets it seems appropriate that the success of a military campaign should also be judged with respect to how well the leadership minimized death and disablement from infectious disease. This requires an integration of the

¹⁴ As discussed in the previous footnote, the military histories lack a medical (disease) component. The single medical history (*Bullets and Bacilli*) lacks a discussion of prior military history, other than some discussion of disease and wound statistics from the Civil War. All of the histories discussed in this chapter lack any detailed discussion of the previous Caribbean engagements (although a few will mention the losses from the 1741 or 1762 British attacks), any disease history of the Civil War, or any mention of the successful British effort to minimize disease losses to tropical diseases in African campaigns. They also lack any discussion of the state of medical knowledge at the time of the war (with the exception of typhoid in *Bullets and Bacilli*, as noted earlier). This dissertation asserts that the existing medical knowledge and existing military knowledge (lessons learned from other wars) forms the basis upon which to evaluate the wisdom and effectiveness of decisions made to minimize the disease effects during the war, effects that caused by far the most casualties and almost led to the failure of the Santiago campaign (as shown in Part 2 of this work). The lack of interdisciplinary studies has severely limited the analysis of disease effects on the war

medical, epidemiological, and military sources, as each discipline examines the effects of disease on war from a different perspective.¹⁵

Medical history seeks to explain how man has perceived, endured, and fought disease. The emphasis is on the disease itself – what causes the disease; how does it affect the individual; how does it spread; what are the diagnoses and treatments; and what are the outcomes. Early medical texts focused on the known symptoms of disease along with the concurrent conditions that were thought to cause the disease (for example, marshy areas have mosquitoes, fogs and bad smells – so the latter were assumed to cause malaria (which itself is simply a name for “bad air”)). As Western doctors and researchers explored when, where, and how disease occurred, as they began to classify disease to diagnose and treat (to the best of their ability, even if that ability was appallingly meager), as they began to understand the principles and value of basic sanitation, and as they developed a formulary of drugs and other treatments, the knowledge gained from them was applied to military forces in the field – sometimes erroneously, sometimes incompletely, but the medical branches of European, American, and Asian military forces looked to civilian doctors and medical researchers for assistance in understanding disease that put military forces at risk. This included an understanding of when and where disease was likely to occur; ways of avoiding diseases, especially through modern sanitary techniques such as boiling or treating

¹⁵ In addition to the primary sources cited in this dissertation (many of which are also included in the bibliographic essay), medical sources include Cirillo's *Bullets and Bacilli* and multiple journal articles, epidemiological sources include Smallman-Raynor and Cliff's *War Epidemics* and multiple journal articles, and the military histories include the contemporary histories by Alger, Lodge, Chadwick, and Sergeant, and the modern histories, especially Cosmas and Trask, the two most complete histories of the war and the Army's role in the war (the Army was where the epidemics occurred; the Navy had only a military impact on the war). These works are all cited in this chapter. The journal articles are too many to mention, although examples include Vincent Cirillo, “Two Faces of Death: fatalities from disease and combat in America's principal wars, 1775 to present,” *Perspectives in Biology and Medicine* 51, No. 1 (Winter 2008):121–33 or Phyllis Richmond's classic “American Attitudes Toward the Germ Theory of Disease (1860-1880),” *Journal of the History of Medicine* (Oct. 1954): 432-441 as medical examples and Mathew Smallman-Raynor and Andrew Cliff, “The spatial dynamics of epidemic diseases in war and peace: Cuba and the insurrection against Spain, 1895–98,” *Transactions of the Institute of British Geographers* 24 (1999): 331-352 as an epidemiological example.

water and decontaminating hospital sites and medical wastes; and ways of treating diseases. By the end of the Era of Disease (before 1900), disease was just beginning to be understood, basic sanitation largely implemented (at least in theory), and a new revolutionary theory was under development – the germ theory. Although medical researchers were at the cusp of identifying the causative agents and means of transmission of the most deadly diseases by 1900, their discoveries came too late for the nineteenth century soldier. It was not until the twentieth century that soldiers started to benefit from the knowledge so painstakingly gained – when their primary risk became the enemy, not the germ.¹⁶

Medical historians have provided a good understanding of the state of medical knowledge in the 1890s and have documented the outbreaks of disease during and immediately after the war, in the Caribbean, in the Philippines, and in training camps in the United States. The head of the Army Medical Corps, Surgeon-General George Sternberg, was one of the world's leading bacteriologists and arguably the world authority on yellow fever, the disease most feared (and potentially the most dangerous) during the war; his writings help define both the state of medical knowledge in the field in 1898 as well as identify the information base upon which he made his decisions during the war. Contemporary texts were strictly used to evaluate what the assumptions were for the cause, transmission, and treatment of disease at the end of the nineteenth century. Conveniently, a twenty-volume encyclopedia of medical practice was published during the last few years, entitled *Twentieth Century Practice* (denoting the state of the art by 1900). The most useful volumes were volumes 13, 15, 19, and 20, all on infectious disease, covering

¹⁶ Smallman-Raynor and Cliff, "Impact of infectious diseases on war," *Infectious Disease Clinics of North America* 18 (2004): 347. The first war where this trend held was the Russo-Japanese War (1904–1905), but the disease outcome of that war received much less attention than did World War I.

microorganisms and immunity as well as dysentery, typhoid, malaria, and yellow fever.¹⁷ The advice given to US Army line officers regarding disease is contained in Woodhull's 1898 edition of *Notes on Military Hygiene for Officers of the Line*.^{18,19}

Modern medical texts were useful in providing information about the development of nineteenth century medical science. The development of Army medicine in the nineteenth century was largely in the area of preventive medicine, thus Stanhope Bayne-Jones' *The Evolution of Preventive Medicine in the United States Army, 1607-1939* is exceedingly useful in understanding medical knowledge and perhaps more importantly Army Standard Operating Procedures (SOPs) for preventive medicine.²⁰ A useful compendium of the development of scientific medicine is found in W. F. Bynum's *Science and the Practice of Medicine in the Nineteenth Century*, especially the chapter on "Science, disease, and practice." The major drawback in understanding the development over the century lies in its topical organization, which cuts up the chronology into separate chapters.²¹

The only book-length modern medical history of the war is Vincent Cirillo's *Bullets and Bacilli*, a history of the Army Medical Corps during the war. Cirillo's focus is on the Department's performance in planning, preparing, and supporting the war, to include brief discussions of the epidemics and treatment in Cuba, in the recuperation camp, Camp Wikoff, and in the training camps in the US. His coverage is selective, emphasizing certain issues more than others. Cirillo does evaluate the successes and failures of military medicine during the war, but

¹⁷ Thomas Stedman, ed., *Twentieth Century Practice: An International Encyclopedia of Modern Medical Science*, 20 vols. (New York: William Wood & Co., 1898 – 1900).

¹⁸ Alfred Woodhull, *Notes on Military Hygiene for Officers of the Line* (New York: John Wiley & Sons, 1898).

¹⁹ Other primary contemporary medical texts are discussed in the bibliographic essay in Appendix C.

²⁰ Stanhope Bayne-Jones, *The Evolution of Preventive Medicine in the United States Army, 1607-1939* (Washington: Office of the Surgeon General, 1968).

²¹ W. F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge Univ. Press, 1994).

his focus is institutional rather than on the senior military and medical leadership, although he does discuss and summarize the conclusions of the postwar Dodge Commission and Typhoid Board, which had their own analyses of the failings of the Medical Department and implicitly the failings of the senior leadership. Much of the discussion of wartime activities is devoted to the treatment of wounds, which included some of the earliest uses of radiology in war.²² The area receiving the greatest focus is the typhoid epidemic in the stateside training camps, drawing on earlier journal articles he wrote on the epidemic; his analysis of the epidemic is excellent. Cirillo does discuss the development of medical knowledge on typhoid in his analysis, but its impact is limited to the stateside training camps and is not applied to military operations.²³ Cirillo provides useful context for the relative losses to disease versus enemy action, providing a comparative analysis to the Civil War, but this is limited to total deaths by disease rather than providing a breakout and analysis of the different disease threats during the war; most of the comparative tables and discussion deal with wounds rather than disease.²⁴ The work is strictly a medical history, so there is limited overlap between his book and this dissertation. Cirillo does provide a brief but thorough coverage of the disease-related events during and after the war, but he does not attempt to discuss how wartime conditions affected the outbreak of disease, how the epidemics affected the planning and preparation for war, or how they affected the course of the war (all topics of this dissertation). His discussion of medical knowledge in 1898 is limited to

²² The first uses were by the British in 1896. The first US use of battlefield X-rays was on the hospital ships *Relief*, *Missouri*, and *Bay State*, deployed near to the front. Cirillo, *Bullets and Bacilli*, 41-43.

²³ Cirillo devotes the longest chapter in the book to the topic (34 pages, about 20% of the total): *Bullets and Bacilli*, 57-90. The articles are Vincent Cirillo, "'WINGED SPONGES': houseflies as carriers of typhoid fever in 19th- and early 20th-century military camps," *Perspectives in Biology and Medicine* 49, No. 1 (Winter 2006): 52-63; _____, "Fever and Reform: The Typhoid Epidemic in the Spanish-American War," *Journal of the History of Medicine* 55 (Oct. 2000): 363-397.

²⁴ A separate chapter is devoted to the Boer War, which had typhoid epidemics comparable to those occurring in the United States. Of 13 tables in Chapter 3, "The Army Medical Department at War," only 3 mention disease from the Spanish-American War (3.2, 3.3, and 3.5, which only provide overall totals), while 7 tables deal with wounds. The one table which breaks out different diseases (3.4 on fevers and fluxes) is for the Civil War only.

sanitation and typhoid; other diseases are not discussed.²⁵ The remaining medical history of the war is contained in a variety of journal articles on various topics found in the bibliography.

Epidemiologists are interested in studying the ways in which disease spreads from a single source to a mass epidemic. From this perspective, researchers have traced the history of each epidemic that occurred in time of war – the type of disease, the symptoms presented, the means and efficiency of transmission, the population affected, and the eventual effects of the disease on the population (in particular, the deaths caused by the disease). This information is readily available from histories of epidemics; books such as Hans Zinnser's *Rats, Lice and History* or R.S. Bray's *Armies of Pestilence: The Effects of Pandemics on History*.²⁶ A few sources have focused specifically on disease in times of wars, such as Friedrich Prinzing's classic *Epidemics Resulting From Wars*, published during the First World War, and recent works such as Smallman-Raynor and Cliff's *War Epidemics*.²⁷ Prinzing's work discusses major epidemics that have occurred during wartime from the sixteenth century up to (but not including) the First World War. His emphasis is on Europe and European wars overseas with only a few exceptions such as the American Civil War and the Russo-Japanese War; the Spanish-American War is not included. He documents the spread of disease but not its impact. *War Epidemics* brings the analysis up to the present day but is selective in its coverage; for example it devotes a section on mobilization and typhoid fever during the Spanish-American War, but does not cover the epidemic in Cuba that had more of a direct effect on the war.²⁸ *War Epidemics* is also much more quantitative than the earlier *Epidemics Resulting From Wars*, analyzing modern

²⁵ Cirillo does discuss misdiagnosis between malaria and typhoid, as well as post-war medical discoveries.

²⁶ Hans Zinnser, *Rats, Lice and History* (Boston: Little, Brown, & Co., 1934); R.S. Bray, *Armies of Pestilence: the Effects of Pandemics on History* (Cambridge: The Lutterworth Press, 1996).

²⁷ Prinzing, *Epidemics*; Smallman-Raynor and Cliff, *War Epidemics*, both cited previously.

²⁸ Smallman-Raynor and Cliff, *War Epidemics*, Section 7.3, "Mobilization and Typhoid Fever in the Spanish-American War," 370-396.

epidemiological concepts such as diffusion rates. These works are an invaluable source of information about the epidemiology of each wartime epidemic. However, although they tabulate the numbers hospitalized and the number of deaths, and often provide horrifying accounts of neglect and medical error, epidemiological studies fail to explain how this suffering affected the course of the military campaign within which the epidemic raged.

From the perspective of military history, standard historical accounts of campaigns and wars tell us how battles were won and lost; when disease epidemics occurred, battle outcomes were often affected by the loss of combat-ready troops due to illness and death. However, disease affected more than the number of troops available for combat on any given day of the war. Military campaigns were often planned and executed on the basis of expected losses from disease; recruitment, morale, training, and experience of troops used in the campaign were shaped by not only the appearance of epidemic disease but also the expectation of such disease. These interactions are discussed in Chapter 3, and are also seen in the case studies in Chapter 5. This dissertation will use these interrelationships as a framework to understand how disease shaped the progress and outcomes of the Spanish-American War.

The existing histories of the war are by definition military histories, with the possible exception of Foner's *The Spanish-Cuban-American War and the Birth of American Imperialism*, which is more about the Cuban conflict and imperialism than it is about the war itself.²⁹ Almost all of the histories of the Spanish-American War fall into two time periods. The first period was immediately after the war. The second time period was from the 1970s through the 1998 centennial, when modern historians took a fresh look at the conflict. Filling in the gaps is a history written in the 1930s (Walter Millis' *The Martial Spirit*) and a variety of journal articles

²⁹ Philip Foner, *The Spanish-Cuban-American War and the Birth of American Imperialism*, 2 vols. (New York: Monthly Review Press, 1972).

written from the 1960s to the 2010s. The bibliographic essay (Appendix C) provides an overview of the different histories written over the years. The accounts by the various leaders (Alger, Miles, Shafter, etc.) are valuable primary sources, especially in defining what information they used (or at least after the fact claimed to use) in making decisions during the war; details are provided in the appendix. Only a few histories, however, deserve serious mention in the scholarship of the war. Two participants wrote “academic quality” histories of the Spanish-American War: French Ensor Chadwick, Flag Captain (chief of staff) to the Admiral commanding the Atlantic Fleet during the war, and Herbert Sargent, a career Army officer who commanded a regiment in Cuba during the war. Sergeant also served in the Philippines during the insurrection; after retirement he wrote military histories – an account of Napoleon’s Italian campaigns and a three volume history of the siege of Santiago de Cuba.

Chadwick’s two volume 1911 history put disease at the center of his description of war planning, basing his analysis on the British Caribbean campaigns: “The very general idea which prevailed, and which was the outcome of the historical records of the great losses met by the British expeditions to the Caribbean in the eighteenth century, was that it was impossible to send a large army to Cuba during the rainy season. Says the then secretary of war [Alger]: ‘As the rainy or ‘sickly’ season was due within a month, and was likely to last until the middle of September, it was determined that the wisest course would be to devote the summer to organizing, equipping, and drilling the volunteers, and to make such harassing incursions into Cuba as might seem to be practicable.’ It was not foreseen that our home camps were to prove more deadly than Cuba and the Philippines in July.” Chadwick was the first author to consider the effect of disease on the Spanish occupying forces. He noted that between March 1895 and February 1897 the Spanish had lost over 13,000 men to yellow fever; at the end of the period

there were 18,000 men in hospital. In weighing the relative military capability of the US and Spain in Cuba, he noted that “These were formidable numbers, the meeting of which under ordinary conditions of warfare would have been a serious problem. But it was an army already faced by an active enemy, in a devastated country, with scanty supplies of food, and ravaged by tropical fever—conditions which were soon to be accentuated by the effect of the blockade.”³⁰

Although the author states in his preface that “This work is intended in the main as a documentary history,” it is not limited to documents or a simple narrative; the work also contains a critical analysis of the conflict that includes a consideration of the Spanish actions during the war as well as American ones. In addition to being an excellent contemporary history of the war, it serves as the best single naval history of the conflict (others being more limited in scope). Above all, it is the closest to a truly joint land-sea history of the war.³¹ Unfortunately his scope is limited from the perspective of this dissertation. His work is strictly a military history of battles and campaigns; he does not discuss the mobilization before the war, all of the issues with supply, recruitment, and the issue of “immunes,” nor does he discuss all of the issues surrounding the management of the epidemics once they occurred (the epidemics at home are not mentioned at all). His focus for analysis is the set of military command decisions made during the war, not the decisions driven by or made about disease.

Sargent provides a similar military focus to his three-volume history; however, the scope is much more limited, being strictly about the Santiago campaign.³² He provides one of the best

³⁰ French Ensor Chadwick, *The Relations of the United States and Spain: The Spanish-American War*, vol. I (New York: Charles Scribner's Sons, 1911), 52, 54.

³¹ Secretary Long's *New American Navy* rivals Chadwick's history from a naval perspective and some readers might find it superior. However, Chadwick narrates the naval actions in context to what was happening on land, providing a better perspective on the war at sea. John D. Long, *The New American Navy*, 2 vols. (New York: The Outlook Co., 1908)

³² Herbert Sargent, *The Campaign of Santiago de Cuba*, 3 vols. (Chicago: A.C. McClurg & Co., 1907).

summaries about how the senior leadership should have regarded the effects of disease on the campaign, given the historical record:

The knowledge derived from the histories of wars in the West Indies could not fail to be of inestimable value to any one responsible for the conduct of a campaign in Cuba. No matter what precautions were taken, it was plain that invading armies could not long keep their health in the island. As a rule, when an army landed, not much sickness developed before the end of the third or fourth week; then suddenly probably a quarter of the command would become ill and continue ill for several weeks, with new cases arising daily, until practically every soldier of the command had passed through a serious spell of sickness. Malarial fever, dysentery, and yellow fever were the prevailing diseases; and at times, especially when the sanitary condition of the troops was bad, the mortality was appalling. When not fatal, so enervating were these tropical diseases that their victims would lose all ambition and energy; and upon convalescence many would be left in such a weak and emaciated condition that they were no longer fit to bear the hardships of an active campaign. In truth, it may be said without any disparagement of the well-known fighting qualities of the Spanish soldiers, that these diseases were more to be feared than the enemy's bullets.³³

He recommended starting a campaign in October; if it must be conducted during the rainy season, “the decisive effort should be made before the fevers had weakened the fighting forces and destroyed the chances of victory.”³⁴ This is precisely the kind of information the senior leadership failed to treat seriously. Unfortunately, the scope of his work is too narrow to understand all of the interrelationships between disease and the war across the spectrum of

³³ Sargent, *The Campaign of Santiago de Cuba*, vol. I, 42-43

³⁴ Ibid.

military operations: planning, recruitment, mobilization, logistics, transportation, command, medical, demobilization, etc.

The first truly post-war history of Spanish-American conflict is Walter Millis' *The Martial Spirit*, first published in 1931, although the author produced an updated edition in 1965.³⁵ As implied in the title, Millis was focused on the “martial spirit” that drove the United States into an unnecessary war for which it was unprepared – unprepared for the war, and unprepared for the spoils of war after the peace treaty was signed. As a journalist for the New York Herald-Tribune, he was particularly scathing in his criticism of the yellow journalism that fanned the flames of public opinion. The book lacks footnotes although it does have a brief “bibliographical acknowledgement” that lists sources.³⁶ Millis emphasizes disease in the planning of the war, quoting Shafter's comment that in order to avoid an epidemic, he was “determined to rush it.”³⁷ He is also careful to include its direct effect on the Cuban campaign and on the morale of both troops and civilians once the epidemics began. However, Millis was not interested in examining the interrelationships between disease and war, so his text has limited utility with respect to this dissertation – especially without footnotes.

The Army of the Spanish-American War has its own history, Graham Cosmas' *An Army for Empire* (1971). Cosmas goes into great detail to explain the organization of the Army and how its many bureaucracies functioned in 1898, which help us understand how and why the service failed so greatly in organizing and preparing for war. He places equal emphasis on the leadership, examining the role of the senior leadership: McKinley, Secretary of War Alger, Commanding General Miles, and Fifth Corps commander Shafter. The politicians in Congress

³⁵ Walter Millis, *The Martial Spirit*, Compass Edition (New York: The Viking Press, 1965)

³⁶ These are incomplete by modern standards; only the title, author, and year of publication are provided.

³⁷ Millis, *Martial Spirit*, 257. Millis does not provide his source for the quote.

share much of the blame. Congress cut the Army to the bone in the many budget cuts before the war, leaving the service without enough men, money, arms, or equipment to fight a major engagement, much less a war. It also oversaw the pettifogging regulations that emphasized cost control and accountability over efficiency. One of Cosmas' strengths is his emphasis on disease in the planning for the campaign: “

Cuba's grim reputation as the breeding ground of malaria and yellow fever led many American strategists to question whether soldiers landed there would live long enough to fight. American generals were inexperienced in tropical campaigning, but most had read histories of earlier wars in the West Indies in which whole armies had succumbed to yellow fever, smallpox, and malaria. Medical science, in spite of decades of effort, had not yet isolated the microorganism that caused yellow fever or discovered how the dread killer spread. There was thus no reliable defense against the disease... Surgeon General Sternberg, one of the world's leading experts on yellow fever, was supported by Americans who had lived in Cuba in his repeated urging of President McKinley not to invade the country during the wet months. Invasion, he predicted, would mean death and disaster for the Army. These forebodings initially impressed the President to the extent that he sought to avoid an invasion if success could be achieved by other means.³⁸

Cosmas also provides significant detail on the epidemics that struck the Army in a chapter entitled “Sickness and Scandal.” However, disease is treated as a separate subject (in a separate chapter), not really part of the war proper except in passing references to rising sick lists. He almost completely ignores the possible effect the epidemics had in pressuring Shafter and Miles

³⁸ Graham A. Cosmas, *An Army for Empire: The United States Army in the Spanish-American War* (Columbia, MO: Univ. of Missouri Press, 1971). 105. However, he fails to comment on the report he provides later (p. 122) that Sternberg had reconsidered the dangers of a Cuban expedition.

to offer a generous surrender offer to the Spanish defending Santiago. He also overlooks how the problems he details in supplying food, medicines, clothing, tentage, etc. to the troops at the front helped foment the outbreak of disease.³⁹

Philip Foner published the two volume *The Spanish-Cuban-American War and the Birth of American Imperialism* in 1972. The first volume deals with the Cuban 1895 rebellion while volume two covers the various theaters of the war. The emphasis of the work is to emphasize Cuban agency before, during, and after the conflict; as the title suggests, the war was in many respects a Cuban war as much as a Spanish or American one (although this deemphasizes the role of the Philippine conquest in the outcome of the war). Foner also analyzes the reasons for American intervention, concluding that the driving force was imperialism. The author is relatively uninterested in the military aspects of the war, and disease receives almost no mention in the narrative. It is for these reasons that Foner's scholarship may not fit into the category of military history despite being centered on a war; similarly, his work is not useful in examining the role of disease in the conflict.

The next major history of the Spanish-American War was David Trask's *The War with Spain in 1898*,⁴⁰ which is still one of the best comprehensive histories of the war. Trask draws heavily on Cosmas for his treatment of the Army in the war, but goes far beyond Cosmas in his presentation of the campaigns in Cuba, Puerto Rico and the Philippines, as well as a detailed history of the war at sea. Like Millis, Trask also places considerable emphasis on disease as a factor in planning for the war, citing the testimony of the senior leadership that universally expected an outbreak of yellow fever in the Cuban campaign. He mentions the incipient yellow

³⁹ Cosmas, *Army for Empire*. All Army Corps other than the Eighth Corps (destined for the Philippines) had an epidemic of typhoid in every regiment; the Fifth Corps had malaria, yellow fever, dysentery, and other ailments as well.

⁴⁰ Trask, *War with Spain*.

fever epidemic as a factor in the negotiations for the surrender of Santiago, a fact expressly noted by both the American and Spanish commanders at the time, but minimizes its impact; instead, Trask criticizes Shafter for his “uncertain performance,” choosing to “emphasize his own difficulties rather than those of the enemy.” Like many other authors, he viewed the Fifth Corps epidemics as an event largely separate from the progress of the war, as they primarily affected the troops after the city’s surrender.⁴¹ As a result, he fails to examine the possible outcome of the campaign if the epidemic had broken out but a few days earlier or if the Spanish commander had held out a few days later – potentially placing Shafter in an untenable spot, unable to invest the city or protect his troops from a Spanish counterattack.

The most recent major history of the war is Ivan Musicant’s *Empire by Default* (1998), produced for the war’s centennial.⁴² Musicant argues that the Spanish-American War marked a turning point in the history of the United States, where the country turned from inward development of its continental frontier to an outward development of an empire. The empire was, however, acquired by default, as the title suggests. Musicant was ambivalent about the possibility that disease had some impact on Shafter’s operations, even if he was less convinced about Shafter’s planning. Despite writing that “Conditions along the front on both sides were awful. The onset of malaria, in most cases mistaken for yellow fever, in the Fifth Corps had now mounted to over a hundred cases, and the medical officers were undecided to what extent it might cripple the command,” concluding that “There had to be a surrender or an attack on the

⁴¹ Trask, *War with Spain*, 290, 329. Trask did state that “Although no great epidemic developed during the first few weeks at Santiago de Cuba, Shafter remained convinced that disease would eventually create serious difficulties. Medical experts in Washington shared this opinion.” However, this point is not developed in his analysis of the surrender. *Ibid.*, 296.

⁴² Ivan Musicant, *Empire by Default: The Spanish-American War and the Dawn of the American Century* (New York: Henry Holt & Co., 1998).

city; neither could wait any longer,”⁴³ Musicant failed to analyze the impact of this urgency. He is the only author to leave out the wording Miles used to convey the importance of the outbreak of disease (“The very serious part of this situation...”) and, like Trask, he only discussed the epidemic during the period just after the surrender. Musicant was sure that “the war, at least in Cuba, the main theater, had ended in sickness and confusion. Epidemics of malaria and other diseases drove the Fifth Corps from Santiago in unqualified panic”; however, he failed to take a stand on whether or not Fifth Corps planning and operations were affected by disease. In all, Musicant mentions disease in his narrative of the Cuban campaign but fails to emphasize it as a major factor in either the planning or the execution of the war. As a result, although numerous quotes on illness could be found among the approximately 700 page book, they get lost in the minutia as the narrative proceeds in a very conventional manner.

This dissertation will advance the scholarship on the Spanish-American War by drawing together the three fields of study into a single analysis of the campaign that uses disease as a central unifying theme through which to examine the conflict. There are many interactions between disease and warfare (discussed in Chapter 3), but no existing text analyzes the effects of all of these interactions. Disease outbreaks were inevitable once the decision was made to send troops to Cuba during the rainy season and to conduct extended land operations in the Philippines to suppress a native rebellion. Typhoid epidemics in the training camps were not inevitable, but should have been anticipated in the poorly policed camps of the volunteer units, and their effects could have been minimized if the leadership had forced commanders to enforce sanitation guidelines and if the medical department had reacted promptly and forcefully before the epidemics got out of control. This paper will emphasize the role that poor leadership, poor

⁴³ Ibid., 488.

decisions, and willful failure to prepare for the predictable occurrence of epidemic disease during the war had in making the war one of the final expressions of the Era of Disease, when soldiers gasped their last breaths in the camps, hospitals, and evacuation ships of the war, finding the bacillus far more deadly than the bullet.

Although this dissertation combines knowledge from the fields of medicine and epidemiology, it is ultimately a history of disease effects on the military campaigns of the Spanish-American War. The focus on military campaigns means that it can be fairly classified a military history, although it could also be classified as a medical history – it is, in fact both a military and medical history. Military history has shifted focus over recent decades, as historiography has shifted from top-down political-diplomatic military history to bottom-up histories of men (and women, and members of groups previously marginalized) engaged in war or cultural histories of societies at time of war. There are many ways through which historians have sought to understand the use of military force. Some have focused on the individual: What motivates a man to serve; how does he fight; how does his family and society support or oppose his military service? This is akin to focusing on the patient from a medical perspective. Although it can lead to a certain type of understanding as much as any history of individuals can, it does not provide an understanding of what happens when many men are stricken with disease during military operations. From a top-down perspective, nations use military force to conquer territory and people to bring both under their control. When the people in these territories resist, this leads to war, and so another way historians have sought to understand the use of military force is through examination of the war as a whole (the more traditional historical viewpoint). This perspective in military history is more akin from a disease perspective to epidemiology than medicine. Both perspectives are valuable, hence both fields have been incorporated into this

history. To understand how disease affects military operations, it is important to consider not just the individual soldier who can fall sick and possibly die, but to also look at the commander of military forces who needs to plan and execute a campaign designed to coerce the opponent through the use of military force and the government or ruler that decides to go to war to seek territory, wealth, or power.

Nineteenth century medicine failed to make the diseases of the Spanish-American War treatable and more readily preventable. It is cruelly ironic that within just a few years the three specters of disease haunting the war – malaria, yellow fever, and typhoid – would finally be fully understood after years of fruitless research into the cause and transmission factors. In 1898 the malaria parasite had been identified but was still assumed to be propagated through miasma, the typhoid bacillus had been identified but the ubiquity of the disease and the role of the fly in transmitting the disease were not fully appreciated, and yellow fever was a complete unknown, assumed to be transmitted by direct contact with infected materials rather than through the bite of the ever-present mosquito.⁴⁴ With respect to yellow fever, the deadliest disease facing the Cuban expeditionary force, the army of early 1898 was no better prepared than the army of 1762 – so the lessons of that earlier conflict were as applicable to upcoming Cuban campaign as they had been over a century before. We cannot fault the doctors for failing to properly treat diseases they as yet did not understand, but when an epidemic is inevitable and very predictable, failure to prepare for the epidemic caused unnecessary sickness and death.

The disease environment of the tropics was well known to be inimical to soldiers from temperate regions, especially vector-borne diseases such as malaria, yellow fever, and trypanosomiasis (sleeping sickness). During the Disease Era, disease was considered an

⁴⁴ See Stedman, *Twentieth Century Practice* for the state of the medical art at the turn of the century. Typhoid is found in Volume 13, malaria in Volume 19, and yellow fever in volume 20..

environmental factor as much as weather or terrain. If soldiers are to be properly prepared to fight in arctic climates, they need to be supplied with long johns. If forces are to fight in rough terrain, pack mules need to be substituted for the carts normally used to transport supplies. If soldiers are sent to fight in tropical regions, then the leadership must take all the preparatory and preventive measures possible to prevent the outbreak of disease. When military leadership failed to do this during times of war, disaster followed, as the 1762-3 Siege of Havana demonstrated. When British leadership took extraordinary measures to prevent disease during the Third Anglo-Ashanti War, the result was an extraordinarily low casualty list from infectious disease.⁴⁵ When the leadership went in expecting the worst but hoping for the best as they did in 1898, disaster almost occurred (although luck turned out in the end) and a scandal ensued when the McKinley Administration and the US Army botched the treatment and evacuation of the Cuban expeditionary force, most of whom were sick from dysentery, malaria, typhoid, or yellow fever.⁴⁶

The military disease disasters of the Spanish-American War paved the way for the relative medical successes of the twentieth century. The typhoid epidemics of war improved the medical knowledge on typhoid and sparked reform of the relationship between doctor and commander; future officers were taught the need for sanitation from the new Department of Military Hygiene at West Point.⁴⁷ The means of transmission of yellow fever by the *Aedes* mosquito was identified

⁴⁵ The siege of Havana is examined in the first case study in Chapter 5; the Third Anglo-Ashanti War is analyzed in the second case study in that chapter.

⁴⁶ U.S. Army Surgeon General, *Report of the Surgeon General of the Army for Fiscal Year 1898* (Washington: GPO, 1899), 60.

⁴⁷ Cirillo, "Fever and Reform," 363-397.

by the US Army in Cuba just after the war, and mosquito eradication measures not only tamed the virulent pesthole of Havana but paved the way for the completion of the Panama Canal.⁴⁸

This dissertation will take a fresh look at epidemic disease during the Spanish-American War: how the wartime conditions facilitated the outbreaks of disease; how the fear of disease affected the planning, mobilization, recruitment, logistics, medical preparations, and other aspects of wartime activity; how the occurrence of disease affected the civilian and military decision making, training, relative balance of forces, military activities including the success or failure of the military campaigns during the war, troop combat effectiveness and morale, and other wartime outcomes; and how the successes and failures of the US government and military in the management of epidemic disease sparked increased research into the etiology of major diseases such as typhoid, malaria, and yellow fever. In order to do so, this dissertation is divided into two parts. Part One (Chapters 1 through 5, 1 being this introduction) provides the background to understand the epidemic diseases of interest (Chapter 2), the interrelationships between diseases and military operations (Chapter 3), the state of medical knowledge in the nineteenth century and the US military medical capabilities (Chapter 4), and case studies of how disease affected military campaigns in the past – cases of medical disaster and medical success (Chapter 5). Chapters 4 and 5 also provide the medical and military knowledge base available to the senior US leadership before and during the war that they could use to make decisions on how best to handle epidemic disease during the war.

Part Two (Chapters 6 through 13) examines disease during the Spanish American War.

Chapter 6 lays out the development of the US military between the US Civil and Spanish-

⁴⁸ Leonard Wood, "The Military Government of Cuba," *Annals of the American Academy of Political and Social Science* 21, *Current Political Problems* (Mar., 1903): 1-30; Alexandra H. Freeman, "The Mosquito of High Crimes: The campaign against Yellow Fever during the American construction of the Panama Canal, 1904-1905," *Historia Medinæ* 2, No. 1. <http://www.medicinae.org/e19>, accessed 9 Nov. 2014.

American Wars, and the plans for war – military war plans, and the diseases that could be anticipated and thus also planned for. Chapter 7 covers the Spanish background leading up to the war – the colonial rebellions and the delicate negotiations with the United States attempting to avert war after the *Maine* disaster. Chapter 8 details the American mobilization of forces once war became inevitable. Chapter 9 examines the war in the Caribbean – the naval campaign in Caribbean waters and planning for a land campaign. Chapter 10 covers the Cuban campaign in detail – laying siege to the city of Santiago de Cuba, and the epidemics that destroyed the fighting capability of the American expeditionary force. Chapter 11 discusses the war on the remaining Spanish imperial possessions – the campaign to capture Puerto Rico and the war in the Philippines, concluding with a brief discussion of the postwar Philippine Insurrection. Chapter 12 analyzes the treatment of the sick at the end of the Cuban campaign (including their evacuation to a treatment and recovery camp in Long Island) and the typhoid epidemics in the stateside training camps. The final Chapter (13) looks at the outcomes of the war and of this dissertation – the medical and military reforms that marked an end to the Era of Disease, and the lessons learned from the study of disease and warfare applied to the Spanish-American War. The Appendices provide various tables of morbidity and mortality (Appendix A), some selected correspondence (Appendix B), and a bibliographic essay on sources (Appendix C).

CHAPTER 2

EPIDEMIC DISEASE

The Evolution of Medical Science on Epidemic Diseases

In order to examine the effect of epidemic disease on pre-twentieth century warfare, it is necessary to begin by defining what epidemic disease is and how it has been viewed by ordinary people and doctors prior to the dawn of the last century.

Begin by considering disease itself. It attacks the human organism, rendering the victim sick; depending upon the disease, circumstances, and treatment, the afflicted individual will recover completely, recover partially but remain infected and/or disabled by the disease, or die. Over the centuries since medicine was first defined as a profession doctors (and later biologists, geneticists, etc.) have tried to characterize disease.⁴⁹ The most obvious characteristic is its effect on the human body. From before recorded history men observed the effects of sickness in themselves and in others. At first, this was characterized as simply a fact of life – fate or capricious gods caused a multitude of woes to fall upon humanity.⁵⁰ But soon those afflicted and those that cared for the afflicted tried to understand what was happening when sickness occurred

⁴⁹ This discussion will focus on “Western medicine” as it developed over the past 300 years. Other cultures have different views of what disease is and how it relates to human existence. For a contrast between Western and African medicine, see Gwyn Prins, “But What Was the Disease? The Present State of Health and Healing in African Studies,” *Past & Present* 124 (Aug., 1989): 159-179.

⁵⁰ The transition from a belief in gods and spirits to natural causes is part of the Western medical tradition. However, in regions such as Africa, traditional belief in the metaphysical origins of disease still holds. This was clearly demonstrated in the recent Ebola epidemic, where some aid workers were massacred by natives who refused to believe in viruses or natural causes. Angellar Manguvo and Benford Mafuvadze, “The impact of traditional and religious practices on the spread of Ebola in West Africa: time for a strategic shift,” *The Pan African Medical Journal* 22, Suppl. 1 (Oct. 10, 2015): 9. <http://doi.org/10.11694/pamj.supp.2015.22.1.6190>, accessed 21 June 2016.

(the diagnosis) and what would become of the victim (the prognosis). Before diseases could be scientifically classified by the microorganisms that caused them and by the genetic code that allowed doctors to separate various mutations and permutations of disease, they were characterized by their symptoms. Medical texts from the seventeenth through nineteenth centuries, which are discussed in this paper, provided detailed descriptions of what doctors observed when sickness befell a patient. When the same patterns were observed over and over again, doctors attempted to classify them. Before the development of a scientific classification system, this process was fraught with error. Diseases were frequently confused with one another. In tropical regions fevers in particular might be caused by malaria, yellow fever, typhus, typhoid, influenza, or other diseases, and men afflicted with one were frequently diagnosed with another. Doctors disagreed on whether some of the described diseases existed.⁵¹ In other cases outbreaks were classified as diseases such as “typho-malaria” that eighteenth and nineteenth century doctors swore existed but are now assumed to have been the result of either a misdiagnosis or a combination of two diseases. Typho-malaria is now presumed to have been typhoid fever (or in rare cases a combination of typhoid and malaria).⁵²

A disease epidemic occurs when an infectious disease that can be spread from one person to another is transmitted among a large number of people in a relatively short period of time (typically days to months, although epidemics can last for years). A disease can be transmitted directly from one person to another through respiration (e.g., airborne infectious diseases such as

⁵¹ For example, Bastian argued that yellow fever “is but an aggravated form of remittent fever, as it occurs in warm countries” (remittent fever being another name for malaria). H. Charlton Bastian, “Epidemic And Specific Contagious Diseases: Considerations As To Their Nature And Mode Of Origin,” *The British Medical Journal* 2, No. 562 (Oct. 7, 1871): 405.

⁵² Dale C Smith, “The Rise and Fall of Typhomalarial Fever: I. Origins,” *Journal of the History of Medicine and Allied Sciences* 37, No. 2 (April, 1982): 182-220.

influenza and pneumonic plague); direct contact (e.g., anthrax); insect vectors⁵³ such as mosquitoes, ticks, fleas, and lice (e.g., malaria, yellow fever); and through exposure to a common infected medium (e.g., contaminated water for cholera and dysentery). Table 1 provides a summary of disease transmission for the major diseases of interest. When epidemics are sudden and widespread, especially when high rates of infections occur, they may be referred to as pandemics.⁵⁴

Recently, medical historians have begun to realize that although a disease might be an objective manifestation of a biological process acting on a human body, “illness” is more of a social construct. A person is ill if he exhibits some feature(s) out of the norm, but what is considered “normal” is often subjective.⁵⁵ What constitutes an “epidemic” is also a matter of judgment. An epidemic is normally considered temporary and results in morbidity and/or mortality rates significantly above normal. Yet temporary and normal may be difficult to define. A disease is considered endemic if it persists and the morbidity/mortality rate remains relatively low but constant.⁵⁶ Endemic diseases are often contracted in childhood in regions where they are prevalent; this may confer partial or complete immunity from the disease to the survivors.

⁵³ The World Health Organization (WHO) defines disease vectors as “organisms that transmit pathogens and parasites from one infected person (or animal) to another, causing serious diseases in human populations.” “About vector-borne diseases,” World Health Organization, <http://www.who.int/campaigns/world-health-day/2014/vector-borne-diseases/en/>, accessed 17 Jun 2014.

⁵⁴ David M. Morens, Gregory K. Folkers, and Anthony S. Fauci, “What Is a Pandemic?” *Journal of Infectious Diseases* 200 (October 1, 2009): 1018-1021.

⁵⁵ Robert Hudson provided an example of a social definition of illness: “If a medical or social consensus defined freckles as a disease, this benign and often winsome skin condition would become a disease. Patients would consult physicians complaining of freckles, physicians would diagnose and treat freckles, and, presumably, in time we would have a National Institute of Freckle Research.” Robert Hudson, *Disease and its Control: The Shaping of Modern Thought* (Westport, CN: Greenwood Press, 1983), x. Also found in J.N. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History* (New Brunswick, NJ: Rutgers Univ. Press, 1998), 4.

⁵⁶ Hays, *Burdens of Disease*, 4-5.

Table 1: Routes of Transmission of Infections

Route of exit	Route of transmission	Diseases	Routes of entry
Respiratory	Aerosol	diphtheria	? Mouth
		influenza	
		smallpox	
	Nasal discharges	smallpox	? Mouth
	Mouth: hand or object	diphtheria	
		smallpox	
Gastrointestinal tract	Stool: hand	Cholera	
		typhoid	
		paratyphoid	
	Stool: water, milk	Cholera	Mouth
Skin	Air	poxviruses	Respiratory
Blood	Mosquitoes	malaria	Skin
		yellow fever	
	Ticks	relapsing fever	Skin
	Lice	typhus fever	Skin
	Fleas	plague	Skin

(Source: Smallman-Raynor & Cliff, *War Epidemics*, 33)

Over the course of human history, the treatment of epidemic diseases has varied over time and across cultures. In some cultures, for example, treatment might consist of appeals to gods or spirits or efforts to counter to a curse thought to have created a disease. Shamans, priests, mediums, witches and others have all served the place of doctors in various cultures, treating the disease in ways approved by their culture. This was observed in Africa during the recent Ebola epidemic; there were a few incidents where aid workers were massacred when they challenged traditional beliefs and healers.⁵⁷ In Western society, physicians (sometimes priests of gods related to medicine) emerged in Greece and Rome. In the Western tradition, physicians began to use empirical observations to treat the disease, or at least to alleviate the symptoms and concerns of the patient. Unfortunately many of the observations led to incorrect assumptions about the causes of disease and the effectiveness of treatments. As late as the early nineteenth century, before the modern understanding of germ theory, medical knowledge emphasized the humoral theory of disease and the miasmatic theory of disease transmission. The humoral theory was first suggested by Hippocrates but was specifically described in a book by Claudius Galenus, known simply as Galen. Galen's book served as a standard medical text for over a millennium (roughly 200 – 1700 AD). There were four humors – choleric, phlegmatic, sanguine, and melancholic; disease was attributed to an imbalance of these humors, and balancing through purging, blistering, and/or bleeding were popular treatments.⁵⁸ The body's humors could become unbalanced from contact with the poisonous air or "miasma" emanating from marshy areas or brought about by temperature differentials, sun exposure, indigestion, or any other factor that could upset the humors. Dr. Southwood Smith, an English physician, explained in 1830 that

⁵⁷ Manguvo, "The impact of traditional and religious practices," 9-13.

⁵⁸ Carol Buck et al., *The Challenge of Epidemiology: Issues and Selected Readings*, WHO Scientific Publication 505 (Washington, DC: World Health Organization, 1988), 18-19; George Newman, *The Rise of Preventive Medicine* (Oxford: Oxford Univ. Press, 1932), 59-67.

“The immediate, or the exciting cause of fever is a poison formed by the corruption or decomposition of organic matter.” Such materials “give off a principle, or give origin to a new compound, which, when applied to the human body, produces the phenomena known as fever.”⁵⁹ Yet Southwood Smith realized that medicine had not yet developed remedies for fever; in fact he declared that “The pursuit of a remedy, so long and so earnestly sought, endowed with the power of cutting short the disease, is to the physician what the search after the philosopher's stone was to the alchemist, with this difference, that the alchemist, engaged in a vain pursuit, lost only his time and labour; but the physician, engaged in a pursuit equally hopeless, will often, in addition, lose his patient.”⁶⁰

However, some substances appeared to help alleviate symptoms of disease even if they could not cure it. In addition to purging, blistering, and bleeding to balance the humors, treatment consisted of the application of a variety of substances that were applied either externally to the skin or internally via suppository, enema, or oral medicine.. For example, Dr. Robert Jackson lists the following remedies in his *A Sketch of the History and Cure of Febrile Diseases* (1817): subtraction of blood, heat, warm bath, cold, frictions, gestations, emetic, purgative, diaphoretic, mercury, Peruvian bark, wine, opium, cobweb, blisters, and charcoal.⁶¹

Scientific inquiry into the nature of infectious diseases evolved by fits and starts in the nineteenth century.. By the middle of the century, three types of infectious diseases were recognized. The first type was *contagious* in a limited sense – spread only by direct contact. The second type was *miasmatic*, spread by bad air (miasma). The last type was called *miasmatic-contagious*, arising from miasma but then spread by contact. Syphilis was an example of a

⁵⁹ Thomas Southwood Smith, *A Treatise on Fever* (London: Longman, Rees, Orme, Brown, and Green, 1830), 348-349.

⁶⁰ Ibid, 222.

⁶¹ Robert Jackson, *A Sketch of the History and Cure of Febrile Diseases* (London: T. and H. Eeles, 1817), xii.

contagious disease in the nineteenth century sense of the word, while malaria was considered miasmatic. Most of major infectious diseases such as smallpox, typhoid, cholera, plague, and yellow fever were characterized as miasmatic-contagious.⁶² These classifications focused on the means of transmission of the disease. Yet medical professionals and scientists groped to identify the specific cause of the illnesses. Germ theory developed from the idea that a living organism afflicted the body (*contagium vivum*), rather than a chemical poison found in vegetation, water, soil, or air. Another term for the living substances was animalculæ; proponents of this idea were referred to as animalculists. But early germ theorists struggled to convince the scientific community that they were on the right track. A competing theory, zymosis, posited the idea that disease was caused by fermentation. Yet another was spontaneous generation (also known as *heterogenesis*), the idea that disease sprang up suddenly in a natural process.⁶³ Eventually the zymotic theory merged with the germ theory, and zymosis became another word for the process of infection.⁶⁴

In 1835, Italian researcher Agostino Bassi proved that a fungus transmitted muscardine, a disease of silkworms. The spores of the fungus, living organisms, could cause the disease in other silkworms.⁶⁵ But what relationship did this have with diseases in humans? Most nineteenth century doctors believed in a chemical basis for disease, a product of fermentation and putrefaction. The first major challenge to this idea came from French scientist Louis Pasteur, who studied fermentation experimentally and became convinced by the 1860s that the process of

⁶² Lester King, "Germ Theory and Its Influence," *Journal of the American Medical Association* 249, No. 6 (Feb. 11, 1983):794.

⁶³ Phyllis Allen Richmond, "Some Variant Theories in Opposition to the Germ Theory of Disease," *Journal of the History of Medicine* (July 1954): 290-291.

⁶⁴ ⁶⁴ Zymoticians began to suggest an organic substance similar to yeast as the zyme, which eventually came to be recognized as a germ. Ironically, the discovery of the virus identified a disease causing agent that acted in a manner very similar to that earlier proposed by the zymoticians. Richmond, "Some Variant Theories in Opposition to the Germ Theory of Disease," 298-299. See also John M. Eyler, "William Farr on the Cholera: The Sanitarian's Disease Theory and the Statistician's Method," *Journal of the History of Medicine* (April 1954): 82-83.

⁶⁵ King, "Germ Theory," 794-795.

decomposition was based on living microorganisms rather than on inanimate poisons. He was not the first scientist to advance the theory that diseases were caused by microorganisms (German physician Jakob Henle had suggested in 1840 that many diseases were caused by living agents) but his work received the most attention.⁶⁶

Germ theory depended upon the discovery of living microorganisms that were the *contagium vivum*; however, critics clung to earlier explanations. At times this required stretching logic to its breaking point. When Robert Koch discovered that the bacterium *Vibrio cholera* was the agent of the disease, an epidemiologist called Pettenkofer claimed that the bacillus was benign when excreted from a cholera victim but became virulent when it combined with the soil.⁶⁷ Germ theory received significant support from Koch's research in the 1870s and 1880s; in 1876 he demonstrated that the anthrax bacillus was the causative agent of the disease, the first definitive proof that a bacterium could be the infectious agent of a human disease.⁶⁸ In 1878 he identified six diseases that were associated with specific microorganisms, and in 1882 he identified the tubercule bacillus. Despite these advances, many doctors and researchers in the nineteenth century continued to hold onto alternative theories, especially the miasmatic theory.

Germ theory also had limited applicability to doctors concerned with treatment of their patients. The path to treatment had been pioneered by Edward Jenner and continued by Pasteur: the search for an attenuated form of the *contagium vivum* that could create an acquired immunity. Pasteur had created an immunization for fowl cholera, and the search was on for similar treatments for the diseases of mankind.⁶⁹ The first advance in this direction came from Edwin

⁶⁶ Bynum, *Science and the Practice of Medicine*, 127-128

⁶⁷ *Ibid.*, 294.

⁶⁸ The anthrax bacillus had been found in the 1850s and earlier researchers had suggested a causal link, but Koch's work formed the first demonstrable proof of the assertion. King, "Germ Theory," 796.

⁶⁹ The development of reliable theories of acquired immunity lagged the practical development of vaccines; "neither Edward Jenner with smallpox or Louis Pasteur with chicken cholera had understood the mechanism responsible for

Klebs and Friederich Löffler, who identified the bacillus causing diphtheria. Once the cause of diphtheria was identified, the mechanism causing disease symptoms was found to be a toxin released by the bacterium, which pointed to an antitoxin as the best means of treatment. By 1892, antitoxin for human diphtheria was commercially available.⁷⁰

Based on previous successes with chicken cholera and diphtheria, it was assumed that diseases like yellow fever were caused by an unknown bacillus. Researchers focused on identification of the microorganism from samples taken from patients stricken with yellow fever and the development of an attenuated form of the microorganism that could be used for inoculation. When George Sternberg was ordered to investigate the disease by the Army in the late 1880s, he was directed to conduct “an examination of the alleged germ as shown you by those engaged in the business of inoculation.” These assumptions consistently led researchers down blind alleys for the remainder of the nineteenth century, as yellow fever was caused by a virus, not a bacterium, too small to detect in the microscopes of the day.⁷¹

The uncertainty within the scientific community about the nature and spread of infectious diseases in turn retarded both civilian and military efforts to limit epidemics. For the military, the

the immunity which they were able to induce.” Arthur M. Silverstein, *A History of Immunology*, 2nd ed. (Oxford: Academic Press, 2009), 4-5, 17, 29.

⁷⁰ King, “Germ Theory,” 797.

⁷¹ Sternberg concluded: “No one can regret more than I do that the question of the etiology of yellow fever is not yet solved in a definite manner, but I at least have not to reproach myself with want of diligence or failure to embrace every opportunity for pursuing the research. The difficulties have proved to be much greater than I anticipated at the outset. If the task before me had been to find an organism in the blood, like that of relapsing fever or of anthrax, or an organism in the organs principally involved, as in typhoid fever, or leprosy, or glanders, or in the intestine, as in cholera, the researches I have made could scarcely have failed to be crowned with complete success. But this has not proved to be the case, and among the microorganisms encountered there is not one which by its constant presence and special pathogenic power can be shown indisputably to be the specific infectious agent in this disease. If I have not succeeded in making a positive demonstration which will satisfy the exactions of science I have at least been able to exclude in a definite manner a majority of the microorganisms which I have encountered in my culture experiments...” George Sternberg, *Report on the Etiology and Prevention of Yellow Fever*, US Marine Hospital Service document 1328 (Washington: GPO, 1890), 11-35. It wasn’t until after the means of transmission of yellow fever had been identified by Walter Reed and his team that the quest for the causative germ led the team to conclude that it was “ultramicroscopic”; i.e., too small to detect in a microscope. Howard Kelley, *Walter Reed and Yellow Fever* (New York: McClure, Phillips & Co., 1906), 163-165

only effective nineteenth century means of prevention for the tropical diseases of malaria and yellow fever was to avoid sending troops to regions where either disease was endemic during known fever seasons (generally the rainy season). Unfortunately, in most cases a country's objectives in warfare – especially imperial conquest in tropical regions such as the Caribbean or Africa – could only be met by sending soldiers in harm's way.⁷²

The public health and sanitation movement of the nineteenth century might be best described as the policy side of the evolving scientific evolution of germ theory. The provision of clean water, safe food, quality housing, and the elimination of “filth” in urban slums in the late-nineteenth century was predicated in part on better understandings of both germ theory and early epidemiology. John Snow (1854) showed that cholera was spread by the contamination of food or water, while William Budd (1873) did the same for typhoid fever. Of course these findings were disputed; for example William Farr (1852) conducted mortality studies that demonstrated that cholera mortality is inversely related to elevation, supporting his theory that cholera was spread by the zymotic material “cholerine.”⁷³ In the United States, reformers ranging from Jane Addams to Jacob Riis spearheaded efforts to clean up American cities, partly through voluntary associations and partly through public funding for proper sewage systems, street cleaning, new housing, parks, education, and recreational facilities. Early on, the leading advocates of

⁷² This tradeoff was illustrated in the Third Anglo-Ashanti War (see case study, Chapter 5) and the Spanish-American War. The Ashanti war was planned and executed around the dry season when malaria and yellow fever were not prevalent, and few disease deaths occurred. During the Spanish-American War, planners tried to avoid the Cuban rainy season for the same reason, but troops were ordered to Santiago during this period and epidemics of malaria and yellow fever resulted in widespread debilitation and some deaths. Philip D. Curtin. *Disease and Empire: The Health of European Troops in the Conquest of Africa* (Cambridge: Cambridge University Press, 1998), 49-73; Cirillo, *Bullets and Bacilli*, 12.

⁷³ John M. Eyler. “The changing assessments of John Snow's and William Farr's cholera studies,” *Series: History of epidemiology, Präventivmed* 46 (2001): 226-228. Budd's work on typhoid is found in William Budd, *Typhoid: Its Nature, Mode of Spread, and Prevention* (London: Longman, Greens & Co., 1873). See also William Budd, “Typhoid Fever: Its Nature, Mode of Spread, and Prevention,” *The American Journal of Public Health* (1873): 610-613; Robert Moorhead, “William Budd and typhoid fever,” *Journal of the Royal Society of Medicine* 95 (2002): 561-4.

sanitation were believers in miasma, believing that “the extraordinary filth in the growing urban areas had produced the conditions for the spread of miasma.” However, as microorganisms were discovered and linked to syphilis, cholera, diphtheria, and other epidemic diseases, by the 1870s sanitarians such as William Farr could accept the germ theory.⁷⁴ The 1882 publication of Koch’s paper on the tubercle bacillus marked a shift in the epidemiological model from disease statistics to the experimental study of infectious disease. In the public arena the emphasis shifted from sanitation and housing to specific measures that could prevent the transmission of a disease from someone stricken by a disease to the entire neighborhood.⁷⁵

Although they could not substitute for a definitive acceptance of germ theory, public health and sanitation movements did have an impact on military planning, especially in instances when Western armies were to be deployed to areas known for malaria and yellow fever. For example, the British improved sanitation during the Third Anglo-Ashanti War (1873-4) after previous outbreaks of disease in the region resulted in significantly adverse effects. An 1895 *British Medical Journal* article warned that in wartime “the ignorance of, and disbelief in, the efficacy of sanitary precautions, intensified by naturally filthy habits, impure drinking water, and squalor of living, the demoralization of defeat, the crowding of vast numbers of men in insanitary dwellings, and the absence of discipline and moral control, it may well happen that diseases such as fevers, dysentery, diarrhoea, cholera may at any time assume a virulent and epidemic type...”⁷⁶ Yet so long as germ theory remained controversial, sanitation efforts could only go so far in preventing outbreaks. Because sanitation advocates did not understand germ theory in full, they failed to understand that certain diseases—such as yellow fever—might be spread by other

⁷⁴ Eyler, “William Farr on the Cholera,” 83.

⁷⁵ Ezra Susser and Michaeline Bresnahan, “Origins of Epidemiology,” *Annals of the New York Academy of Sciences* 954 (Dec., 2001): 10-12.

⁷⁶ “Sanitation In War,” *The British Medical Journal* 1, No. 1779 (Feb. 2, 1895): 265.

means. For the purposes of this study, the means by which military and civilian leaders attempted (or failed) to incorporate nineteenth century medical and scientific advancements into their strategic planning plays a decisive role in the analysis. Thus, the limitations of this understanding become crucial. These limitations would have disastrous effects in Cuba in 1898, as we will see.

For the purposes of this study, the means by which military and civilian leaders attempted (or failed) to incorporate nineteenth century medical and scientific advancements into their strategic planning plays a decisive role in the analysis. Soldiers, sailors, and other military personnel are subject to treatment when they fall ill. Treatment is necessary for a variety of reasons – humanity, necessity (soldiers must be healthy to fight effectively), logistics (sick soldiers need more care, caregivers, medical professionals, and facilities such as hospitals), training (replacements need time, facilities, and teachers to learn the skills of fighting, so it is often faster and cheaper to heal trained soldiers), and morale (soldiers who see their peers denied treatment may refuse to fight or even rebel). As early as the 1740s, physicians have accompanied troops for these reasons,⁷⁷ and military physicians need two separate skill sets – the ability to treat wounds inflicted by enemy weapons and the ability to treat soldiers for the diseases that occur when armies gather to mobilize, train, and fight. Although soldiers were more likely to die from disease than from enemy action before the twentieth century, it was not unusual for commanders to focus on the ability of military doctors to heal wounds rather than to treat the sick, or to prioritize bullets over medical supplies.⁷⁸

⁷⁷ An excellent example was Sir John Pringle, who published his studies of disease among the British troops in his *Observations on the Diseases of the Army*, which appeared in at least seven editions (2nd ed. (London: A. Miller et al., 1753); 7th ed. (London: W. Strahan, et. al., 1765)).

⁷⁸ See for example Louis L. Seaman's critique of the US Army medical system during the Spanish-American War and its aftermath (Louis L. Seaman, "A Crisis in the History of the American Army," *North American Review* 187 (Jan./June, 1908): 749-757).

For many physicians throughout history, treatment was the end of their concern. The patient lived or died; the doctor waited for the next patient to fall ill. But a subset of doctors went beyond simple diagnosis and treatment to a third area related to disease: prevention – what to do to avoid disease in the future. This is this perspective that forms the other part of the focus of this dissertation: how have actions or refraining from action in order to prevent the outbreak of disease affected military operations? How has the medical profession understood the occurrence of disease among the military, how has disease influenced military commanders and other decision makers in war, and how has that knowledge of potential disease affected decisions related to the use of military forces and the planning and execution of military operations?

Disease can affect warfare in a variety of ways. Death from disease forms the most obvious way in which disease influences the outcome of war. In 1812-13, Napoleon lost his army in Russia not to “Marshal Ney’s General Winter or General Famine but General Typhus.”⁷⁹ Earlier, he had sent an army to Saint Domingue to quell a rebellion of free and enslaved blacks; between 1802 and 1804 he lost virtually his entire army to yellow fever and malaria. The recapture of Saint Domingue was only the first step in the planned establishment of a French empire in America; when that army was lost, Napoleon gave up his dream and sold the vast territory of Louisiana to the United States, which in turn launched a period of rapid territorial and economic expansion for the new nation.⁸⁰ In addition to deaths from disease occurring during combat operations, soldiers are susceptible in camps before they are deployed and between combat operations; in some cases the losses to disease in camp exceeded the losses to disease in the

⁷⁹ Bray, *Armies of Pestilence*, 143, 145. See also Adam Zamoyski, *Moscow 1812: Napoleon’s Fatal March* (New York: HarperCollins Publishers, 2004), 529; Zinnser, *Rats, Lice and History*, 164. Dysentery was the leading cause of death in the Crimean War (1853-6), the U.S. Civil War (1861-5), the Franco-Prussian War (1870-1), and the Sino-Japanese War (1894-5) (Smallman-Raynor and Cliff, *War Epidemics*, 37).

⁸⁰ Theodore Stoddard, *The French Revolution in San Domingo* (Westport, CT: Negro Universities Press, 1973), 348

field.⁸¹ Morbidity and mortality rates were particularly high for virgin populations – those without any immunity to specific diseases.

Immunity – Innate and Acquired

Sickness is not the inevitable outcome of exposure to a contagious disease. Sometimes the body is prepared for a disease through immunity, and the disease can be defeated. During the historic plague epidemics, such as the Plague of Athens (430 BC) or the Plague of Justinian (541 AD), it was observed that the few lucky enough to survive the plague never contracted it twice. Fracastorius (1483-1553) wrote in his seminal book *On Contagion* that he knew “certain persons who were regularly immune, though surrounded by the plague-stricken...”. Despite these observations, the concept of immunity did not seem to be widely employed until the smallpox inoculation was shown to render persons immune to smallpox infection.⁸²

Partial or complete immunity is conferred when a human is exposed to the disease and survives; this form of immunity is called *acquired* immunity. Historically, immunity was only acquired through exposure to the disease. However, the introduction of inoculation for smallpox created a new kind of acquired immunity sometimes referred to as *artificial* immunity. *Genetic* or *innate* immunity occurs when the body’s genetic structure naturally recognizes and responds

⁸¹ An example is the Spanish-American War, where approximately 24,000 recruits contracted typhoid in training camps in the U.S. with about 2,000 deaths. In contrast, only 257 soldiers died from enemy action during the war. Matthew Smallman-Raynor and Andrew D. Cliff, “Epidemic Diffusion Processes in a System of U.S. Military Camps: Transfer Diffusion and the Spread of Typhoid Fever in the Spanish-American War, 1898,” *Annals of the Association of American Geographers* 91, No. 1 (Mar., 2001): 72; *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War With Spain* (Washington: US Govt. Printing Office, 1899), vol. 1 (Appendices), 265. The latter is hereafter referred to as the *Dodge Commission Report*.

⁸² Procopius, a historian of the Justinian period, noted that when the plague returned to an area those “whom formerly it had afflicted most sorely, it did not touch at all... .” This quotation and the one by Fracastorius (also known as Fracastoro) are cited in Silverstein, *History of Immunology*, 4. It should be noted that some medical historians think that the Plague of Athens might have been caused by a disease other than the plague (ibid).

to the disease.⁸³ Large populations can develop acquired immunity when living in an area where a specific disease is endemic; typically individuals contract the disease when young and if they survive they often have lifetime immunity. Many diseases including yellow fever are less severe when they occur at an early age.

As discussed previously, the presence of acquired and innate immunities was apparent to doctors from observation when it became apparent that survivors of certain diseases never had a repeat infection. As blacks began to be imported into the Americas in the 1700s for slave labor in lieu of white indentured servants, the black slaves seemed to be largely immune to the “seasoning” diseases that caused significant white mortality. The reverse also seemed to be true – when whites entered the regions in Africa from which the slaves were bought or seized, the extremely high white mortality rate made Africa deadly to European settlers. In the sixteenth through early nineteenth centuries, before the nature, cause, and transmission of tropical diseases were known, the differences in mortality were attributed to race – the notion that blacks had immunity from many fevers (especially those which were later identified as malaria and yellow fever). This immunity was assumed to be a racial trait regardless of where black individuals were born and lived.⁸⁴

Historians cannot ignore the link between disease and race – too many trends and events resulted from the nearly universal assumption that held before the twentieth century – that blacks were racially immune to tropical diseases (or at least had lower incidence rates and higher survival rates for these diseases). The fact of higher survival rates for slaves recently arrived from Africa contributed to the shift from free to slave labor in American tropical regions,

⁸³ Deborah A. Kimbrell and Bruce Beutler, “The Evolution and Genetics of Innate Immunity,” *Nature Reviews: Genetics* 2 (April, 2001): 256-267.

⁸⁴ Kenneth F. Kiple and Virginia H. Kiple, “Black Yellow Fever Immunities, Innate and Acquired, as Revealed in the American South,” *Social Science History* 1, No. 4 (Summer, 1977): 419-420.

although it is only one of many reasons for black slavery to become entrenched in the Americas.⁸⁵ The presumption of racial immunity led to the recruitment of blacks by the British during the Napoleonic Wars and beyond in the Caribbean and in Africa, and led to the recruitment of blacks for the “immune regiments” raised by the United States for the Spanish-American War.

The issue of genetic immunities among blacks, in particular whether or not blacks have a genetic predisposition against yellow fever has been a source of considerable controversy among historians.⁸⁶ The notion of race itself has become problematic; geneticists have demonstrated that the genetic diversity between individuals far exceeds the genetic diversity between races, while historians have largely concluded that race is a social construct rather than a biological fact.⁸⁷ However, the idea of a genetic basis for race is still being debated. Medical researchers consistently find statistical differences in disease susceptibility between races, although part of

⁸⁵ Philip D. Curtin, “Epidemiology and the Slave Trade,” *Political Science Quarterly* LXXXIII, No. 2 (1968): 207-208. See also Edmund S. Morgan, *American Slavery, American Freedom: The Ordeal of Colonial Virginia* (New York: Norton & Company, 1975), 295-301.

⁸⁶ The actual immunity of blacks to tropical disease is disputed. A relative immunity to malaria conferred by the sickle cell trait has been positively established, although *P. ovale*, a parasite found in West Africa, probably evolved as a mean to bypass the partial protection offered by the sickle cell. Most historians dismiss the perceived immunity to yellow fever as false. However, this has been disputed by Kenneth F. Kiple (see Kiple, “Black Yellow Fever Immunities,” 419-36; Kenneth F. Kiple and Virginia Himmelsteib King, *Another Dimension to the Black Diaspora: Diet, Disease, and Racism* (Cambridge: Cambridge Univ. Press, 1981); Kenneth Kiple, *African Exchange* (Durham, NC: Duke Univ. Press, 1987); Kenneth K. Kiple and Brian T. Higgins, “Yellow Fever and the Africanization of the Caribbean,” in John W. Verano and Douglas H. Ubelaker, eds., *Disease and Demography in the Americas* (Washington: Smithsonian Institution Press, 1992), 237-48; Kenneth Kiple and Donald Cooper, “Yellow Fever,” in Kenneth Kiple, ed., *Cambridge World History of Human Disease* (Cambridge: Cambridge Univ. Press, 1993); Kenneth F. Kiple “Review of Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism* (New Haven, CT, 1998),” in *Journal of Interdisciplinary History* 30 No. 1 (Summer, 1999): 104-5.). Reflecting the majority view, Sheldon Watts calls Kiple’s theories “examples of disease determinism.” (Sheldon Watts, “Yellow Fever Immunities in West Africa and the Americas in the Age of Slavery and beyond: A Reappraisal,” *Journal of Social History* 34, No. 4 (Summer, 2001): 963). See also Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism* (New Haven, CT, 1998), 244-47; he calls the specific concept “Cartrightian-Carter biological determinism” and notes that it is “nourished now by home-grown racism...among its other redoubts was the oath of the Ku-Klux-Klan...” (p. 244). The debate can become particularly nasty when taking one side is called racism.

⁸⁷ Jay S. Kaufman, “How Inconsistencies in Racial Classification Demystify the Race Construct in Public Health Statistics,” *Epidemiology* 10, No. 2 (Mar., 1999): 101-103; Jan Sapp, “Race Finished,” *American Scientist* 100, No. 2 (March-April, 2012): 164

the issue remains how groups are categorized by race before identifying statistically significant relationships.⁸⁸

Regardless of whether blacks had an innate (genetic) or acquired immunity to yellow fever, it is clear that blacks recruited from Africa or from first-generation slaves by the British in the nineteenth century had significantly lower yellow fever rates than whites in both the Caribbean and in Africa. However, blacks that lived in Britain or in the northern United States that were sent into tropic regions contracted the disease, showing a lack of complete immunity although they did have higher recovery rates from the disease. On the other hand, blacks or whites that acquired and survived an attack of yellow fever were (correctly) assumed to have an acquired immunity from the previous infection.⁸⁹

The key variable is the disease environment that a soldier is exposed to before recruitment. Soldiers recruited outside of tropical environments suffered greatly when sent to a disease environment where malaria and yellow fever were present regardless of race. Almost all soldiers suffered from bacterial diseases such as cholera, dysentery, etc. because these diseases are not endemic; although previous exposure can result in acquired immunity (e.g., cholera), few if any soldiers on any specific campaign are likely to be survivors of any previous epidemic.⁹⁰

⁸⁸ Kaufman, "Inconsistencies in Racial Classification," 102; Reanne Frank, "What to make of it? The (Re)emergence of a biological conceptualization of race in health disparities research," *Social Science & Medicine* 64 (2007): 1977–1983; Sophia Efstathiou, "How Ordinary Race Concepts Get to Be Usable in Biomedical Science: An Account of Founded Race Concepts," *Philosophy of Science* 79, No. 5 (December, 2012): 701–713.

⁸⁹ Although blacks contracted yellow fever in the same port cities as whites did, the occurrence of yellow fever among the peacetime Army between the Civil and Spanish-American Wars was sufficiently infrequent (partially due to the small size of the Army) that the Army had no meaningful statistics on the incidence of yellow fever among their colored troops. Even during the Civil War when several hundred thousand blacks served under the colors there were only a few hundred cases of yellow fever among the black Army population. US Army Surgeon General, *The Medical and Surgical History of the War of the Rebellion (1861–65)*, vol. I, part III (Washington: Government Printing Office, 1888), 679.

⁹⁰ It must be noted that immunity from one strain of a disease does not confer immunity to other strains of the same disease. This is most easily seen in influenza – each year a new cocktail of prevalent strains is created to offer protection from the most likely strains of the flu – but sometimes the vaccine manufacturers guess wrongly, and the

This conflation of immunity with race came from the same confusion between correlation and causation that led physicians down the wrong path in determining the cause and means of transmission of infectious diseases. Troops contracted malaria when they were sent to warm subtropical or tropical regions near low, marshy ground. The marshy areas are associated with mists and bad odors from organic decomposition – thus malaria must be caused by poisons in bad-smelling air. Similarly, slaves imported directly from Africa seemed immune to yellow fever. Slaves were black, so the cause of the immunity must be conferred by their black skin – i.e., by their race. This confusion was a direct result of the limitations of nineteenth century science. What made these associations so persistent is the fact that they sometimes worked to reduce the actual incidence of disease; when they did not, the exception could always be blamed on some extraneous factor such as personal hygiene. Recruiting former slaves into the black West Indian Regiments worked for the British in the early 1800s, as these slaves were typically recruited directly from slavers bound from Africa (seized and impounded under anti-slave trade laws). Keeping troops away from the miasmas found in low-lying marshy areas actually reduced the incidence of malaria. Confirmation bias caused doctors and decision makers to focus on the successes of the attributed causation of these diseases and ignore the failures. Unfortunately, reality is less forgiving, to the detriment of the soldiers of the Spanish-American War.

When there is no innate or acquired immunity present in the population of soldiers, it is necessary to create an artificial immunity through vaccination (e.g., smallpox), avoid exposing the soldier to the potential disease environment, or be prepared to treat the illness when it occurs. Washington immunized the Continental Army to avoid smallpox;⁹¹ Sir Garnet (later Lord)

flu shot offers poor protection from the dominant strain(s) for that year. For information on cholera immunity, see the section *Cholera* below.

⁹¹ Ann M. Becker, “Smallpox in Washington's Army: Strategic Implications of the Disease during the American Revolutionary War,” *The Journal of Military History* 68, No. 2 (Apr., 2004): 381-430.

Wolseley avoided the yellow fever season almost entirely during the Third Anglo-Ashanti War, then declared victory and left when it started to appear among his British soldiers (see case study on the war in Chapter 5). Unfortunately for soldiers throughout history, the most common outcome was fatalistic – send the soldiers when and where needed and hope for the best. Sometimes this resulted in failure (see the case study on St. Domingue, Chapter 5); sometimes it resulted in success by the closest margin, as in the Cuban campaign of the Spanish American War.

Disease and the Soldier

Disease is part of the human experience; almost all humans suffer from illness during their lifetimes and all suffer from the greatest of all diseases: old age. Being a soldier (or sailor, or marine, or more recently airman⁹²) does not in itself alter that commonality all humans share. However, the subset of humans that become soldiers have a different disease experience than the average human. This is true for a variety of reasons. First, there is the issue of selection; except under extreme circumstances not everyone can become a soldier. The criteria for selection have varied due to time and place and circumstances; in general only able-bodied men of a prime age for difficult military service were recruited. The use of men only alters the genetic susceptibility to disease, but gender-specific differences are unimportant for the epidemic diseases of interest.⁹³ More important was the age criteria; although some minors were recruited as drummer boys, powder boys, etc. soldiers were at least in their teen years, which meant that they had survived

⁹² For convenience, I will refer to military personnel as “soldiers” unless their specific vocation is needed.

⁹³ A possible exception is venereal disease, which was rampant in almost all armies. They tend to be a chronic rather than epidemic in nature; however, at specific times and places armies have lost a significant number of troops to these diseases, reducing the number of troops in good enough condition to fight. Jeffrey S. Sartin, “Infectious Diseases during the Civil War: The Triumph of the ‘Third Army’,” *Clinical Infectious Diseases* 16, No. 4 (Apr., 1993): 582.

whatever childhood diseases endemic to their home that they had been exposed to. Although rural youth had often not been exposed to crowd diseases such as measles or mumps, they still had a lower susceptibility to certain diseases based on previous exposure.⁹⁴ Armies have at times had to recruit the very old as well, but in general soldiers were in their teens through thirties which meant they were harder than the old or young in the general population. It is the “able-bodied” requirement that has varied the most over the ages. At times of war there were incentives in place for recruiters that often led them to ignore health requirements; medical examinations could be forged, or the “doctor”⁹⁵ could be bribed to pass almost anyone breathing. The minimal diagnostic tools available before the late nineteenth century also meant that many feeble men were passed into military service.⁹⁶ Nevertheless, some standards were upheld, and professional long-service armies tended to have generally healthy troops.⁹⁷

These criteria also became stricter as armies were professionalized in the nineteenth century. The standards were much lower during the previous centuries. Supposedly a recruit for Frederick the Great’s army (1740-1786) had to meet the following criteria: (1) have a right trigger finger and at least one finger on the opposite hand, (2) have at least one tooth in front at the top and

⁹⁴ On the other hand, youth ages 18-21 were considered less able to endure the rigors of active service than men in their 20s. Surgeon-General Sternberg blamed some of the high morbidity rates of the Spanish-American War on the recruitment of young men into the volunteer ranks: “when the age limit for enlistment in the Volunteer Army was reduced to 18 years, patriotism, enthusiasm, and desire for excitement led the schoolboys to the recruiting offices, and the ranks of the Army became crowded with undeveloped youths ready to break down under the slightest exposures of war service...All military experience shows that young men under 21 years of age break down readily under the strain of war service.” U.S. Army Surgeon General, *Report of the Surgeon General of the Army for Fiscal Year 1899* (Washington: GPO, 1900), 37. Sternberg is likely reacting to the higher incidence of crowd diseases, as many recruits were from rural areas. He also considered them imbued with “the recklessness and the ignorance of youth...” If Sternberg had been born one hundred years later, one wonders if he would also blame drugs and rock-and-roll. *Ibid.*, 38.

⁹⁵ At times doctors performing the examinations were unqualified, lacking a medical degree and simple competence.

⁹⁶ Sternberg blamed this on the “principle that in time of war anyone is good enough to be food for powder.” *Ibid.*, 37.

⁹⁷ The total number of days lost to disease and injury per US Army soldier between 1887 and 1896 was 13.14 days annually. This was in spite of the peacetime requirement that “every man who is excused from any part of his military duties on account of some slight ailment or injury is taken on sick report” and thus included in the statistics. *Ibid.*, 236-237.

bottom respectively (in order to bite off a paper cartridge), and (3) not be feeble-minded, which was measured by placing a ring 4” in diameter over the head; if the ring did not fit, you were eligible to serve.⁹⁸ By the 1880s, British army recruits had to submit to a detailed examination by Royal Medical Corps doctors, meeting at least 12 criteria from “sufficiently intelligent” to not “bear traces of previous acute or chronic disease.”⁹⁹ The American recruit for the Army during the Spanish-American War had to meet a detailed set of requirements, including height, weight, chest mobility; having perfect hearing, vision, and speech; etc.; the regulations conclude that “The recruit must be effective, able-bodied, sober, free from disease, and of good character and habits.”¹⁰⁰ These standards were even more important during the Disease Era than they are today. When troops were sent to tropical regions in the nineteenth century, many of not most of them would contract serious diseases such as malaria and yellow fever. The difference between a survivor and a casualty was the innate constitution of the soldier; healthier soldiers in the prime of life would stand a statistically better chance of survival. Today the modern soldier receives a series of shots that make him immune to many diseases; for those that lack vaccines (such as malaria) or when immunity fails, modern medicine has many treatments from antibiotics to antivirals.¹⁰¹

A soldier is an asset for the state; a trained soldier is an expensive asset that requires time, effort, and money to replace. The state therefore has a vested interest in keeping the soldier

⁹⁸ This is a well-known story among Army officers but is likely apocryphal; no reference is available.

⁹⁹ United Kingdom War Office, *Army Regulations, vol. VI: Regulations for the Medical Department of Her Majesty's Army* (London: War Office, 1885), Section II – Medical Examination of Recruits and Re-engaged Men, para. 969, 168

¹⁰⁰ U.S. Army Surgeon General, *Manual for the Medical Department* (Washington: GPO, 1898), para. 167, 64.

¹⁰¹ A US soldier deployed to the Southern Command (which includes the Caribbean) is required to be immunized against the following diseases: Chickenpox, Hepatitis A, Hepatitis B, Influenza (Seasonal), Measles, Mumps, Polio, Rubella, Tetanus, and Typhoid. He or she also must get a yellow fever vaccine if deployed to a country where it is present, and certain high risk individuals also receive vaccinations for Rabies and Pneumococcal disease. “Vaccine Recommendations,” Defense Health Agency Immunization Healthcare Branch, <http://www.vaccines.mil/qr/> Policies, accessed 6 July 2016. Treatments for infectious diseases are listed in Chapter 2 in the section dealing with each disease.

healthy enough to serve. Militaries have employed physicians to accompany troops to advise the commander on how to keep the soldier healthy (the military doctor was responsible for camp sanitation, although it was only the commander that could order troops to engage in sanitary activities), to treat the soldier when sick, and to treat the soldier when wounded or otherwise injured during military service. Although contract surgeons were used by American and European armies throughout the period 1500 – 1900, these armies also had a military medical service that gave doctors rank (or equivalent rank) as officers; these doctors joined the military officer corps in the nineteenth century trend toward professionalization, creating a subculture with its own ethics, standards, professional organizations and professional development. European and American armies also established schools and fields of study in doctrine and tactics for the officer and military medicine for the doctor.¹⁰²

Disease becomes significant to the soldier when he becomes sick; he can be stricken for days or weeks or have chronic damage that persists for life – or he can die. Disease becomes significant to other soldiers when one of them becomes sick – depending upon the circumstances his fellow soldiers may have to care for him; they will have to make up for his absence through additional duties, or simply assume the additional risk that comes when a comrade is no longer at one's side. Other soldiers may also fear getting sick themselves; morale will suffer. These effects are significant to the individual but not to his unit; individual cases of disease will not significantly affect military operations unless one of two outcomes occurs. The first outcome is

¹⁰² Robert Wiebe documented late 19th century movements toward middle class professionalism in society in *The Search for Order: 1877-1920* (New York: Hill and Wang, 1967). The development of the professional US Army officer is described in William B. Skelton, *An American Profession of Arms: The Army Officer Corps, 1784 – 1861* (Lawrence: University Press of Kansas, 1992) and Edward M. Coffman, *The Old Army: A Portrait of the American Army in Peacetime, 1784 – 1898* (Oxford: Oxford University Press, 1986). Skelton and Coffman differ only in their timing; Coffman credits the development of the military professional to Wiebe's late 19th century movements toward professionalism while Skelton argues that the officer corps had become a profession much earlier, before the Civil War.

rather obvious and is treated adequately in existing historical writing – enough individual sicknesses occur that cumulatively inhibit then destroy the unit's ability to fight. Disease becomes important to the outcome of a war when it rises to epidemic levels. This fact was commonly understood by the 1890s. Yet military doctors, like their civilian counterparts, still groped to resolve the harsh consequences of disease on enlisted men and the armies they served. The other outcome is an unusual disease or disease for which there is no treatment which has a high risk of uncontrolled spread. This could trigger a quarantine of the combat unit, which may remove it from active service.

Disease and Warfare – Effects on Military Planning and Actions

In addition to the direct effects of epidemic disease on the unit, disease has an effect on the planning and execution of military campaigns and wars. Disease often affected the planning for military actions at the strategic, the operational (campaign), and tactical levels. Obviously an outbreak of disease during a campaign or battle caused plans to change, which has been documented by military and medical historians; however, the degree to which it affected planning before a campaign or battle began has been largely overlooked. Beginning in the late 18th century and increasingly as the nineteenth century progressed, military planners and commanders based several aspects of a planned campaign on the perception of possible outbreaks of disease. This planning sometimes occurred only after thousands of avoidable deaths were incurred by an earlier failure to take disease into account. Eventually, however, certain areas and later certain times of year were identified as potentially hazardous to European troops; these regions contained endemic diseases to which they were not immune. The first area identified as potentially hazardous was the Caribbean, especially the islands of the West Indies.

Scott observes that “In 1741, of 12,000 men under Admiral Vernon and General Whitworth at Cartagena 8431 died; in 1762 at Havana 3000 sailors and 5000 soldiers were down with fever within a month of landing under Count Albemarle.”¹⁰³ Despite this, the British were to suffer over 30,000 casualties from 1794-98 and France was to lose an army, a highly valuable, wealthy colony, and even a North American empire to disease while attempting to recapture Saint Domingue after the slave rebellion.¹⁰⁴ Later the West Coast of Africa became notorious for its unhealthiness; such high mortality rates were observed that certain regions were deemed uninhabitable by military forces from Europe.¹⁰⁵ After these hard lessons, military planners began to take several measures detailed below. The first was to choose when and where to send European troops; campaigns began to be planned around objectives on high ground perceived to be free from disease and around months that were perceived to be free from epidemic disease. Since the major threats in these regions (malaria and yellow fever) were mosquito borne, this tactic was often effective when executed properly.¹⁰⁶

Another policy based on expected losses due to disease was the recruitment of African and native men into special regiments for tropical service, adopted by both the French and the British armies for service in Africa and the Caribbean. Britain bought slaves specifically to fill positions in black regiments formed in the West Indies during the Napoleonic Wars; once slavery was abolished slaves liberated from slavers captured off the African coast were “recruited” into these

¹⁰³ H. Harold Scott, *A History of Tropical Medicine*, vol. I (Baltimore: The Williams & Wilkins Co., 1942), 296.

¹⁰⁴ Ibid. The army Napoleon sent to recapture Saint Domingue was intended to occupy the territory France had extorted from Spain once it had put down the rebellion. After losing his army, Napoleon was willing to sell the Louisiana Territory to the United States, changing the course of history. Counts of French losses vary; Scott puts them at 23,000 out of 30,000 for a fatality rate of 77% (p. 281). For details, see the case study on Saint Domingue.

¹⁰⁵ Curtin, *Disease and Empire*, 3-5. See also C.P. Lucas, *A Historical Geography of the British Colonies, vol. III: West Africa* (Oxford: Clarendon Press, 1894), 8.

¹⁰⁶ The best example of this was the Third Anglo-Ashanti War discussed in Chapter 5. Curtin, *Disease and Empire*, 49-73.

regiments through the 1850s and 1860s.¹⁰⁷ Even where native soldiers were not trusted to fight, European forces fighting in areas such as Africa during the last three decades of the nineteenth century used vast numbers of natives as laborers, bearers, road-builders, and for other tasks not directly related to fighting but essential for the landing and maintenance of the force from start to finish.¹⁰⁸ As late as 1898, the US Army formed volunteer “Immune Regiments” using black American citizens, based on their perceived “immunity from diseases incident to tropical climates.”¹⁰⁹

Perceived risk of disease could have a significant effect on the ability to recruit troops for service in dangerous areas and morale could disintegrate when disease broke out. For example, Buckley tells us that in the late 1700s “West Indian service was in itself a deterrent to recruiting; it was rightly considered a death sentence by those destined to garrison the plantations.”¹¹⁰ Desertion, malingering, and self-inflicted wounds were common means used by troops to avoid service; officers resigned or sold their commissions.

One of the significant effects caused by disease is the creation of large numbers of sick individuals who need to be treated. Although this appears obvious, what is less obvious is the effect that large numbers of sick personnel have on the conduct of war. They need to have medical personnel to treat them; nurses and attendants are needed to take care of their needs while being treated; hospitals need to be created with overhead cover, beds, bedding, clean

¹⁰⁷ Norman Buckley, *Slaves in Red Coats - The British West India Regiments, 1795-1815* (New Haven: Yale University Press, 1979), 94-99.

¹⁰⁸ Winwood Reade, *The Story of the Ashantee Campaign* (London: Smith, Elder, & Co., 1874), 237-238; Curtin, *Disease and Empire*, 106-107.

¹⁰⁹ Marvin Fletcher, “The Black Volunteers in the Spanish-American War,” *Military Affairs* 38, No. 2 (April 1974): 49. Two volunteer regiments raised for the Philippine Insurrection (1899-1902) were also reserved for blacks based on their perceived fitness for duties in the tropics (Roger D. Cunningham, “The Black “Immune” Regiments in the Spanish-American War,” The Army Historical Foundation, <https://armyhistory.org/the-black-immune-regiments-in-the-spanish-american-war>, accessed April 25, 2015, 7).

¹¹⁰ Buckley, *Slaves in Red Coats*, 3.

clothing, food, water, heat, medicines, etc.; transport (ambulances, stretchers, stretcher-bearers, etc.) need to be provided in order to take the sick from their units to the medical facilities which may be miles away; the very sick need to be transported to hospital ships or home for extended treatment; the dead need some type of burial; and all of the previous people and things need to be transported from “home” to wherever the campaign is being fought. One of the major failings during the Spanish-American War was the failure to provide these services and supplies to the sick and wounded both in training camps at home and during overseas deployment. This was particularly egregious as the deliberate decision to send troops to Cuba during the rainy season was expected to result in large numbers of sick personnel.

Large numbers of sick troops could also have an impact on morale and soldiers’ willingness to fight, especially if the casualties¹¹¹ occurred within a short period of time. This problem was exacerbated when there appeared to be no escape from disease – this occurred when troops were stationed in areas with endemic disease and when epidemics broke out, especially when besieged. This has been documented in cases such as epidemics of yellow fever in Saint Domingue (1790s-1810s), the plague in Egypt and Syria (1790s), and smallpox during the American Revolution (1770s).¹¹² As noted previously, it also made it much harder to recruit replacement personnel, who rightfully feared dying from the disease that killed their predecessors. The morale amongst civilians in the home front could also be adversely affected by reports of epidemic disease among troops; not only did it cause family members to fear for their

¹¹¹ A casualty includes anyone who is dead, missing, wounded, injured, ill, or captured. US Army Field Manual (FM) 1-02, *Operational Terms and Graphics* (Washington: HQ, Department of the Army, 21 Sept. 2004), 1-27.

¹¹² Ott, *The Haitian Revolution*, 92; Christopher Herold, *Bonaparte in Egypt* (New York: Harper & Row, 1962), 305-9; Richard L. Blanco, “Military Medicine in Northern New York, 1776-1777,” *New York History* 63, No. 1 (Jan., 1982): 48.

loved ones, there was a perceived danger that the troops could bring the disease back with them.¹¹³

Tending to large numbers of sick personnel could also slow the progress of a campaign, although generals were often callous when dealing with disease casualties. Napoleon simply left his sick behind during the Russian campaign; these troops were left not only without medicine or treatment for their illness, they were left without food and water and anyone healthy to fetch these necessities for survival. There were horrific accounts of the dead and dying lying scattered all throughout a “hospital,” often dying from simple starvation or dehydration. There are even reports of wounded soldiers resorting to cannibalism in their effort to survive.¹¹⁴ This harsh treatment also led to serious morale problems among the survivors; after Napoleon left the sick and wounded from the Syrian campaign along the roadside during his retreat from Syria, the army grew to hate him and mutinies began to occur among isolated garrisons.¹¹⁵

Those that did receive treatment and eventually survived nevertheless could take weeks or even months to recover. During this period, they were not only unavailable to fight, but they diverted resources from those who were able to fight. The dead could be buried and mourned later, while the living went on to fight. The sick and wounded, however, in all humanity could not be left behind as were the dead, although (as noted previously) that did not stop some generals from leaving the sick and wounded as if they were dead.

One of the greatest impacts of disease on military operations occurred when there was an asymmetry in either susceptibility or the occurrence of disease itself. This occurred most often in

¹¹³ Prinzing noted that “Whether the germ of the disease is already in the place, or whether the soldiers bring it with them, in either case there is danger that the fighting armies will cause the disease to spread over the entire scene of the war, and thus seriously endanger thousands of human lives.” Prinzing, *Epidemics*, 3.

¹¹⁴ Zamoycki, *Moscow 1812*, 529.

¹¹⁵ Herold, *Bonaparte in Egypt*, 305-9.

sieges, where an epidemic would break out within the besieged city but not in the army besieging the city (occasionally the outbreak would occur in the other direction; among the besiegers and not the besieged). It also occurred when one side was naturally immune or had been vaccinated whereas the other had not. Examples include smallpox in the siege of Boston in 1775 (British regulars had largely been vaccinated while Colonial troops had not) and various wars between European and African forces in Africa, where the natives had natural immunity from prior exposure. Sometimes the perception of asymmetry would affect decisions made by opposing commanders; for example Washington hesitated to attack Boston in 1775 partly out of fear of exposure to the smallpox epidemic raging inside the besieged city.¹¹⁶ Another example is from 1741; Zinsser states that “the Austrian army surrendered Prague to the French army because 30,000 soldiers died of typhus and the Austrians could not defend the city.”¹¹⁷

Battles, campaigns, and wars could be won partly or wholly as a result of disease in one or both of the opposing armies. The factors that affect military planning and execution are discussed in more detail in the next chapter. The case studies in a Chapter 5 provide specific instances where one or more of these factors affected the outcome of military operations.

¹¹⁶ Becker, “Smallpox in Washington's Army,” 399.

¹¹⁷ Zinsser, *Rats, Lice, and History*, as cited in Peterson (no page numbers).

Epidemic Diseases Affecting War

There are many diseases that can assume epidemic proportions, some directly contagious, such as smallpox, and some relying on intermediary hosts such as mosquitoes and lice. Only some of these have historically affected military operations; they are listed below. There are a few other diseases which are common to soldiers and sailors, such as venereal disease and tuberculosis; however, these diseases do not assume epidemic proportions within a timeframe that would affect a military campaign. Although the latter diseases do affect long-term availability of soldiers, they are omitted from this study; this dissertation will emphasize diseases whose outbreak is sufficiently quick as to affect current military operations at the time of occurrence. Childhood diseases such as measles and mumps could kill thousands in camps where new recruits, typically from rural areas, were first exposed when crowded into barracks or packed tents in training camps.¹¹⁸ These are discussed under the category of “crowd diseases.” Smallpox is a crowd disease that deserves separate analysis. Although survival did create immunity, smallpox was so contagious and highly lethal to non-immune populations that it did have a demonstrable effect when it occurred on campaign; the American Revolution serves as an example of a case where smallpox greatly affected the outcome of a campaign and possibly the outcomes of a war.¹¹⁹

¹¹⁸ See, for example, Smallman-Raynor and Cliff, “Spread of Typhoid Fever,” 71-91; Major Greenwood, “Epidemics and Crowd-Diseases: Measles,” *Reviews of Infectious Diseases* 10, No. 2 (Mar. - Apr., 1988): 492-499; Cirillo, “Fever and Reform,” 363-397; Sartin, “Infectious Diseases during the Civil War,” 580-584; Bruce Fetter and Stowell Kessler, “Scars from a Childhood Disease: Measles in the Concentration Camps during the Boer War,” *Social Science History* 20, No. 4 (Winter, 1996): 593-611; and Alfred Jay Bollet, “The major infectious epidemic diseases of Civil War soldiers,” *Infectious Disease Clinics of North America* 18 (2004): 293-309.

¹¹⁹ See Becker, “Smallpox in Washington’s Army”; Blanco, “Military Medicine in Northern New York”

Prinzing identified typhus fever, bubonic plague, cholera, typhoid fever, dysentery, smallpox, and scurvy as the major war diseases.¹²⁰ The diseases that will be included in this study extend the list, especially as the focus is on operations in the tropics, which were not a problem in the European wars studied in Prinzing's groundbreaking treatise. This dissertation will include the following in the study of epidemic diseases affecting military operations:

- Cholera
- Dengue fever
- Dysentery, bacillary and amoebic
- Malaria
- Plague
- Smallpox
- Typhoid (enteric fever)
- Typhus fever
- Walcheren fever
- Yellow fever
- Crowd diseases (measles, mumps, chicken pox, etc.)

The characteristics of each disease are provided below. Dietary diseases (scurvy, beriberi) are discussed in the narrative but are omitted as a focus of study, as their effects were only a factor in extended sieges, which were did not occur during the Spanish-American War or the campaigns discussed in the case studies.

¹²⁰ Prinzing, *Epidemics*, 4.

Cholera

Cholera is caused by a bacterium called *vibrio cholera*. It is spread from man to man through contamination of food, clothing, and particularly water by the feces of individuals stricken with the disease. The bacterium can also be spread from contact with vomit (another disease symptom) as well as from person-to-person contact transferring contaminated fluid from victim to new host. The most common means of transmission is through the use of contaminated water for drinking, cooking, or washing. The primary symptom of cholera is vomiting and violent diarrhea. The vomit and diarrheal fluid are watery and almost colorless; only the initial stools will contain any solid material. The diarrheal fluid contains white flocculi; it is often referred to as “rice water.” Other symptoms include the suppression of urine, cold skin, and cramps. The cramps and diarrhea continue until a swift collapse; the skin becomes shriveled, the pulse thready and weak, and the patient will become comatose. Severe dehydration from the diarrhea causes the blood to thicken (hence the weak pulse) and darken, turning the skin a dark blue – leading to a colloquial term for cholera, the Blue Death.¹²¹ Symptoms can occur within hours to days after infection. The patient may die within a day or go into a febrile state that indicates eventual recovery. Treatment was and is primarily palliative¹²² and consists of replacement of fluid and salt losses; only mild cases can be treated orally (severe cases require intravenous treatment).¹²³ Before the use of intravenous hydration in the 20th century serious cases resulted in death.

¹²¹ Diane Bailey, *Cholera* (New York: Rosen Publishing, 2011), 8.

¹²² The bacterium can be killed with sulfonamides and wide-spectrum antibiotics; however, fluid loss can be so quick and severe that untreated it can kill before the bacterium is eliminated from the system. Also, fluid loss can continue even after the bacterium is killed.

¹²³ Bray, *Armies of Pestilence*, 154-5.

Cholera is a disease which has created pandemics lasting years in civilian populations, although prior infection appears to create an acquired immunity to re-infection.¹²⁴ Cholera tended to kill armies when they encamped for long periods during a campaign, such as winter camp, and when engaged in siege warfare, whether on the offense or defense. One of the most notable outbreaks was during the Crimean War; it reportedly killed 20,000 Russian troops, 7,000 French troops and hospitalized another 7,000 British troops in 1854 alone.¹²⁵ Once the mechanism for transmission was publicized by John Snow in that same year (drinking water contaminated with fecal matter),¹²⁶ sanitation measures designed to prevent cholera started to affect military campaigns later in the century. The British medical establishment helped the British commander (Lord Woseley) avoid cholera and other diseases transmitted through fecal contamination (e.g., typhoid) by instituting extraordinary sanitation measures during the Third Anglo-Ashanti War (1874-5). Native labor was used to prepare camps for British troops, filtering or boiling water in advance for drinking and cooking purposes. Native labor even bridged the smallest streams such that “no man [British soldier] should be permitted upon any pretence whatever either to walk through the water or to use it.”¹²⁷ Despite this medical knowledge, some

¹²⁴ Six pandemics occurred within approximately a century. The first occurred in Asia between 1817-23; hence the term “Asiatic cholera” sometimes applied to the disease. The second (1826-37) and third (1841-59) also hit Europe and the Americas. The fourth was global and had the greatest extant of all (1863-75). The fifth hit Europe, North Africa, and some areas elsewhere between 1881 and 1896. The last pandemic was, like the first, in Asia (1899-1923). Richard J. Evans, “Epidemics and Revolutions: Cholera in Nineteenth-Century Europe,” *Past & Present* 120 (Aug., 1988): 123-146. Some bacteriologists identify a seventh wave pandemic between 1961-71 from the “El Tor” biotype. “*Vibrio cholerae* and Asiatic Cholera,” *Textbook of Bacteriology*, http://textbookofbacteriology.net/cholera_1.html, accessed 12 Oct 2014.

¹²⁵ Bray, *Armies of Pestilence*, 173.

¹²⁶ Snow first advanced his theory in 1849 in a pamphlet entitled “On the Mode of Communication of Cholera” based on an analysis of South London water districts. The second volume with the same name published in 1855 was a book-length treatise that included his identification of the famous Broad Street pump outbreak in London the previous year. The original 1855 text has been posted on the internet by the UCLA Department of Epidemiology, <http://www.ph.ucla.edu/epi/snow/snowbook.html>.

¹²⁷ “The Ashantee Expedition,” *The British Medical Journal* 1, No. 686 (Feb. 21, 1874): 248-249.

doctors still contested the cause of cholera and nostrums such as cloth “cholera belts” were used by British troops during that campaign.¹²⁸

Fear of cholera outbreaks also had a significant effect on troop morale, as a soldier could be stricken in the morning and lie dead from the disease that evening. The speed of such attacks prevented potential victims from psychologically preparing themselves for the risks or having time to take measures to prevent infection.¹²⁹

Dengue

Dengue is caused by the dengue virus and is transmitted by a mosquito bite of a female *Aedes* mosquito (primarily *Aedes aegypti*; also *A. albopictus*) [*A. aegypti* is also the carrier of yellow fever].¹³⁰ The virus breeds within the female mosquito, which becomes infective after eight to fourteen days from acquiring the virus; she remains infective for the remainder of her life (three or more months). Once a person has been bitten by an infected mosquito, he or she shows symptoms between two and fifteen days after infection.¹³¹ The threat from dengue is the incapacitation resulting from infection; it rarely leads to death. The infection rate from dengue varies; 10% of troops stationed in the Philippines during 1902-1904 were hospitalized from dengue,¹³² while it reached a high of 80% among US troops stationed in Queensland, Australia

¹²⁸ E. T. Renbourn, “The History of the Flannel Binder and Cholera Belt,” *Medical History* 1, No. 3 (July 1957): 211-225.

¹²⁹ Evans, “Epidemics and Revolutions,” 127-128.

¹³⁰ The dengue virus appears as one of four strains (DENV-1 through DENV-4). Hiroshi Nishiura and Scott B. Halstead, “Natural History of Dengue Virus (DENV)-1 and DENV-4 Infections: Reanalysis of Classic Studies,” *The Journal of Infectious Diseases* 195 (1 April 2007): 1007-1013. Only the *Aedes aegypti* mosquito has been known to carry dengue in the Western hemisphere (N. J. Ehrenkranz et al., “Pandemic dengue in Caribbean countries and the southern United States—past, present, and potential problems,” *New England Journal of Medicine* 285 (Dec 23, 1971): 1460-1469).

¹³¹ Ehrenkranz, “Pandemic dengue,” 1460-1461.

¹³² Robert V. Gibbons et al., “Dengue and US Military Operations from the Spanish–American War through Today,” *Emerging Infectious Diseases* 18, No. 4 (April, 2012): 624.

between March and May 1942. A survey of Rockhampton, Australia at that time showed that 80% of the housing stock contained infectious dengue-carrying *Aedes aegypti* mosquitoes.¹³³

Historically dengue was often known as “breakbone fever” from its most noticeable symptom – extreme pain in the joints as if the bones were being broken. It is accompanied by a headache, fever and usually a rash as well; it can be (and probably was) misdiagnosed as malaria, typhoid, yellow fever, or measles. Before the 1940s, dengue epidemics could only be diagnosed through clinical and epidemiological characteristics.¹³⁴ Transmission by mosquito was verified by earlier studies between 1900 and 1906; however, the species of mosquito carrying the virus was in dispute until the US Army conducted studies using troops in the Philippines in the 1920s.¹³⁵

Dengue is a tropical disease and has been found in the Caribbean, Africa, the Philippines, India and other regions in Asia, and in the southern US. Rogers reported in 1908 that “at variable intervals epidemics of dengue have spread widely in the East [Asia], attacking three-fourths or more of the entire population of large towns within a very few weeks, producing great dislocation of business, and then disappearing again, often for a period of years.”¹³⁶ Dengue epidemics occurred in Havana in 1897 and in Texas later that year; it also broke out in Florida

¹³³ Col. John Coates, Jr., ed., *Internal Medicine in World War II, Volume II: Infectious Diseases* (Washington: Office of the Surgeon General, Department of the Army, 1963), 60.

¹³⁴ Other arboviruses such as Venezuelan equine encephalitis, Mayaro, Changuinola, Colorado tick virus, and yellow fever all create dengue-like symptoms. This became a major issue with respect to yellow fever; as yellow fever survivors are immune to further infections of that virus, when dengue patients were misdiagnosed with yellow fever, survivors were then assumed to be immune to yellow fever, which could have tragic results. Ehrenkranz, “Pandemic dengue,” 1461.

¹³⁵ J.F. Siler, Milton W. Hall, and A. Parker Hitchens, *Dengue: its history, epidemiology, mechanism of transmission, etiology, clinical manifestations, immunity, and prevention* (Manila: Bureau of Printing, 1926). Early work by Graham (1902) claimed *Culex quinquefasciatus* as the vector, while Bancroft suggested *Aedes aegypti* in 1906, which was confirmed by Siler, Hall, and Hitchens in 1926 (Coates: 59). See also Nishiura, “Natural History of Dengue Virus,” 1007-1009.

¹³⁶ Rogers, *Fevers in the Tropics*, 242-4.

1898-99, the latter almost certainly as a consequence of the Spanish-American War.¹³⁷ It was also a persistent hazard to troops stationed in the Philippines during the Philippine Insurrection (1899-1902) and remained a problems for US troops stationed in Asia throughout the twentieth century, especially during World War II and the Vietnam War.¹³⁸ Dengue was capable of creating “explosive epidemics which may temporarily incapacitate an entire unit of men” rendering that unit incapable of combat.¹³⁹

The misdiagnosis of dengue fever as yellow fever proved to be a problem during the Spanish-American War, when troops considered immune to yellow fever (from previous outbreaks in the southern United States) succumbed to the disease. Since yellow fever exposure provides immunity to survivors, these troops had likely been survivors of dengue fever, not yellow fever.¹⁴⁰

Dysentery

Dysentery is caused by various species of the *Shigella* bacillus or the *Entamoeba histolytica* amoeba; bacillary dysentery is also known as *Shigellosis*. Like cholera, it is caused by contamination from fecal material, typically of food or water. According to Bray “Epidemic dysentery is a disease of the rainy season in the tropics because, it is said, that in the rural areas the rain inhibits people from defecating far from the dwellings, the organisms are not destroyed by desiccation and the waterlogged soil retains the organisms on its surface.”¹⁴¹ The primary symptom is diarrhea; in fact until the end of the nineteenth century “diarrhea and dysentery were

¹³⁷ Ehrenkranz, “Pandemic dengue,” 1461–3.

¹³⁸ Gibbons, “Dengue and US Military Operations,” 623-30.

¹³⁹ M. Laird, “Mosquito Borne Disease and the War in the Pacific,” *Tuatara : Journal of the Biological Society* [New Zealand] 1, No. 1 (September 1947): 12.

¹⁴⁰ Ehrenkranz, “Pandemic dengue,” 1463.

¹⁴¹ Bray, *Armies of Pestilence*, 156.

always spoken of together and it was generally held that diarrhea, if neglected, developed into dysentery.”¹⁴² At that time, no distinction was made between amoebic and bacillary dysentery; however, epidemic dysentery was usually bacillary, caused by the strain *Shigella dysenteriae*. Other symptoms noted by Sir James Ranald Martin, a British physician stationed in India in the mid nineteenth century, included “swollen, loose, and livid gums, with ulcerated and sloughing edges, fetid breath, pain and hard swellings in the calves, and purple discoloration of the skin of the lower extremities.”¹⁴³ The disease could kill swiftly; Martin claims to have seen “forty die in a single night.”¹⁴⁴

Studies of the US Army’s historical experience with dysentery and associated diarrheal diseases has shown that many fatal incidences of these diseases were in reality typhoid fever, misdiagnosed during wars of the 18th through early 20th century. By the Spanish-American War, officers were instructed to disinfect all diarrheal discharges as it was impossible to distinguish between the initial stages of typhoid and simple diarrhea. In addition, the 1898 edition of *Notes on Military Hygiene* stated that “There is plausibility in the yet undemonstrated doctrine that, especially under heat and in crowded camps, ordinary diarrheas may gradually develop a virulence that culminates in typhoid fever.”¹⁴⁵ During the nineteenth century, dysentery could occur as an acute or as a chronic disease. It presented with bloody stools (leading to another name, “bloody flux”), painful straining and hardened feces, and ulceration of the large intestine. Although the exact cause and means of transmission were not known, it was known to be passed person-to-person when large numbers of people were brought together, as in a military camp. By the time of the Civil War, dysentery was classified as a *zymotic* disease, caused by fermentation.

¹⁴² H. Harold Scott, *A History of Tropical Medicine*, vol. II (Baltimore: The Williams & Wilkins Co., 1942), 822-3.

¹⁴³ *Ibid.*, 825.

¹⁴⁴ *Ibid.*

¹⁴⁵ Woodhull, *Notes on Military Hygiene* (1898), 156. The 1904 edition of the manual removed any mention of diarrhea becoming typhoid fever.

By the end of the century, the amoebic form of dysentery had been identified (*Entamoeba histolytica*), and in 1898 Kiyoshi Shiga identified the bacillary agent as *Bacillus dysenteriae*, now given the name *Shigella dysenteriae* in his honor.¹⁴⁶

Dysentery also presented in a chronic form, with emaciation and extreme weakness from malnutrition. Cirillo cites eyewitness testimony from an Army hospital during the Mexican War with patients who were “bony skeletons, torn and racked by disease, struggling to make a step, tottering along like Hamlet’s ghost.”¹⁴⁷ Chronic dysentery could also lead to carriers who were infectious with either the bacillary or amoebic form yet presenting no visible symptoms. These carriers could shed the microbe which in turn could infect others; the amoebic form could be transported via cysts in the stools containing dormant amoeba, which upon ingestion become motile and embed first in the large intestine and then the liver. Chronic infection could create long-term headaches for armies long after they leave the battlefield. For example, there were 7,228 cases of incurable chronic dysentery in the peacetime army resulting from Mexican War service by late 1849.¹⁴⁸ Amoebic dysentery (also known as Amebiasis) is now treated using isolation, rehydration, and tinidazole or metronidazole. Bacillary dysentery (shigellosis) is treated using isolation, rehydration, and an antibiotic such as sulfamethoxazole, ampicillin, or tetracycline, although many strains have become antibiotic resistant.¹⁴⁹

¹⁴⁶ Vincent J. Cirillo, “‘More Fatal than Powder and Shot’: Dysentery in the U.S. Army during the Mexican War, 1846–48,” *Perspectives in Biology and Medicine* 52, No. 3 (Summer 2009):404-405. There was some disagreement on the amoebic form; the medical encyclopedia *Twentieth Century Practice* identified “real tropical dysentery” as caused by an amoeba called either the *amoeba coli* or the *amoeba dysenteriae* depending upon the source. Thomas Stedman, ed., *Twentieth Century Practice, Vol. XIII Infectious Diseases* (New York: William Wood & Co., 1898), 357.

¹⁴⁷ Cirillo, “‘More Fatal than Powder and Shot,” 405, citing A.A. Livermore, *The war with Mexico reviewed* (Boston: American Peace Society, 1850), 118.

¹⁴⁸ Cirillo, “‘More Fatal than Powder and Shot,” 405-6.

¹⁴⁹ Abram Bersenson, ed., *Control of Communicable Diseases in Man*, 13th Edition (Washington: American Public Health Association, 1980). The CDC declared antibiotic resistant shigellosis an urgent threat to the United States in 2013. “Shigella – Shigelosis,” Centers for Disease Control, <http://www.cdc.gov/shigella/general-information.html#treatment>, accessed 15 May 2016.

As with cholera, dysentery resulted from poor camp sanitation and poor personal hygiene. The most common means of transmission is fecal contaminated water, food, flies, and direct contact from dirty hands. Flies proved to be the primary carrier of dysentery during the Spanish-American War; they were also the major carrier of typhoid during that conflict.¹⁵⁰ By the end of the nineteenth century, doctors were familiar with the connection between contaminated water and dysentery, but they attributed diarrhea (also the initial symptom of dysentery) in part to imbalances of temperature in the abdomen, which could be rectified using a cholera belt or other flannel-type wrapping around the abdomen (such as a cummerbund).¹⁵¹

Armies were particularly susceptible to dysentery when establishing winter camps; long-term camps for garrisons occupying territory or key military objectives such as cities, ports, and key terrain; and encamped to besiege a city or when besieged. Dysentery was the leading cause of military losses in the Mexican War (1846-48),¹⁵² Crimean War (1853-56), U.S. Civil War (1861-65), the Franco-Prussian War (1870-71), and the Sino-Japanese War (1894-95).¹⁵³

Malaria

Malaria has been the classic cause of fever over the course of history; Bray states that “whenever, in the older records, one sees mention of fever the first disease to come to mind of the unobsessed observer is malaria.”¹⁵⁴ Malaria is caused by the protozoa *Plasmodium malariae*, *P. vivax*, *P. ovale*, and *P. falciparum*, all transmitted by mosquitoes of the genus *Anopheles*. All

¹⁵⁰ For dysentery, see Bersenson, *Control of Communicable Diseases in Man*, 407. For typhoid, see Walter Reed, Victor Vaughan, Edward Shakespeare, *Abstract of Report on The Origin and Spread of Typhoid Fever in U. S. Military Camps during the Spanish War of 1898* (Washington: GPO, 1899), 183-184.

¹⁵¹ Woodhull, *Notes on Military Hygiene* (1898), 154-155, 157-158.

¹⁵² 88% of all Mexican War deaths were from infectious disease, “overwhelmingly dysentery.” Cirillo, “More Fatal than Powder and Shot,” 402.

¹⁵³ Smallman-Raynor and Cliff, *War Epidemics*, 37 citing Prinzing, *Epidemics* (page(s) not specified).

¹⁵⁴ Bray, *Armies of Pestilence*, 89.

four *Plasmodia* cause intermittent fever; the pattern of intermittency is different for the different species. *P. malariae* causes quartan malaria, so-called as the fever peaks every four days (four as the Romans counted with the first being day one; by our methods we would say it peaks every three days or 72 hours). The fever is relatively benign (although very unpleasant to the infected) and can persist in the body for decades. *P. vivax* causes benign tertian malaria; tertian indicates a 48-hour peak cycle. It is benign (like *P. malariae*) as it does not kill. Tertian malaria can appear to relapse but it persists in the liver and typically reappears a year later, lasting two to three years. *P. ovale* is also benign, tertian, and can relapse; it is a parasite found in West Africa, probably evolving as a means to bypass the partial protection offered by sickle cell anemia. *P. falciparum*, on the other hand, causes malignant tertian malaria in humans; it either kills or disappears completely within the system within six months. Most of the epidemic malaria in the United States was caused by *P. falciparum*, which has a death rate of up to 25%.¹⁵⁵ However, armies could be easily incapacitated for weeks from one of the three benign strains of malaria, rendering them incapable of fighting and thus as much out of action as actual deaths. Incapacitation from *vivax* malaria and possibly a mild form of yellow fever turned the US Fifth Corps into an army of invalids during the Spanish-American War despite few deaths from either disease.¹⁵⁶

Malaria is carried by the female mosquito of the *Anopheles* genus. The specific species of mosquito helps to determine the efficiency of mosquito-to-human transmission; i.e., the density of mosquitoes needed to create malaria outbreaks. The African *An. gambiae* is highly efficient;

¹⁵⁵ Andrew McIlwaine Bell, *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War* (Baton Rouge, LA: Louisiana State Univ. Press, 2010), 11. *P. vivax* was the major source of endemic malaria.

¹⁵⁶ *Report of the Surgeon General 1898*, 133. The fact that the Cuban malaria was from *P. vivax* rather than *P. falciparum* follows from the course of the disease during the campaign (Stephen C. Craig, *In the interest of truth : the life and science of Surgeon General George Miller Sternberg* (Fort Sam Houston, TX: Office of The Surgeon General, n.d.), 232).

American species such as *An. quadrimaculatus* less so. Initially the malaria strains in the New World were primarily *P. vivax*, but the introduction of African slaves brought the more deadly *P. falciparum* with them.¹⁵⁷ Once transmitted by a bite from an infected mosquito, the malaria parasite enters the liver where it multiplies for 10 – 14 days, and then it leaves to infect red blood cells. Inside the cell the plasmodia multiplies; every 48 or 72 hours the infected red cells explode, releasing the parasite (with toxic waste products) into the blood stream for further red cell infection – the cause of the tertian or quartan fevers. *Falciparum* malaria multiplies the fastest, and can infect up to 60% of the body's red cells (other strains infect fewer than 2%); this sometimes leads to infection of the blood cells in the brain, which leads to death for untreated individuals. Persons with malaria are particularly infectious for biting mosquitoes at the peak of the cycle when the parasites are released into the blood stream. The *Anopheles* mosquito requires suitable humidity and temperatures, with access to standing to breed; malaria transmission does not occur when temperatures are below 16° C or above 30°C.¹⁵⁸

People living in malarial areas typically incur the disease in childhood, being reinfected frequently. Those that survive have relative immunity from fever attacks. Malaria in these areas is endemic; it does not create periodic epidemics – its greatest effect is the reduction in population resulting from high childhood fatality rates. Epidemic malaria occurs when large numbers of non-immune individuals enter a malarial area; the disease is quickly spread from man to man through the *Anopheles* mosquito.¹⁵⁹ This is the type of malaria of greatest interest for this study. Even in epidemics, malaria usually sickens but does not kill; its major effect is the

¹⁵⁷ Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria* (Baltimore: Johns Hopkins Univ. Press, 2007), 54-55; Marianne E Sinka et al., "The dominant *Anopheles* vectors of human malaria in Africa, Europe and the Middle East: occurrence data, distribution maps and bionomic précis," *Parasites & Vectors* 3, No. 117 (2010): 1-34.

¹⁵⁸ Dorothy Crawford, *Deadly Companions: How Microbes Shaped Our History* (Oxford: Oxford Univ. Press, 2007), 36-40.

¹⁵⁹ *Ibid.*, 89-91.

reduction of effective manpower when large numbers of soldiers are too sick and weak to fight. For example, in Salonika in 1916 (WWI) the French Army had 120,000 soldiers in the field but could muster only 20,000 men capable of fighting; the British Army by its side had 30,000 men in the hospital that year, rising to 70,000 by 1917. An estimated 2,000,000 man-days were lost to malaria during the war.¹⁶⁰

The original treatment for malaria, quinine, was used to reduce fever symptoms and as prophylaxis to reduce the likelihood of contracting the disease. Quinine was originally derived from the bark of the chichona tree grown in South America; Jesuit missionaries accompanying Spanish conquistadores would harvest and sell the bark, leading to the original name of “Jesuit’s bark.” Quinine is still sometimes used today, although synthetic drugs such as chloroquine and other antimalarials (Atabrine, etc.) are preferred as quinine sometimes only suppresses the plasmodia rather than curing the infected individual. The most effective measures target the mosquito, preventing them from breeding and/or biting. Water suitable for breeding mosquito larvae can be drained or sprayed with oil, Paris green, or other substances that prevent mosquito breeding. Mosquitoes can be killed directly using DDT (now banned in most countries) or other insecticides, and chemicals such as DEET can be used as insect repellents. The use of mosquito netting, especially around beds at night, has also provided significant reductions in malaria infections.¹⁶¹

Soldiers were subject to malaria when marching through or occupying areas infested with mosquitoes; sailors also were subject to malaria when anchored too close to land or when landing for watering, gathering firewood, etc. Garrisons along rivers or to protect civilian trade

¹⁶⁰ Ibid., 98.

¹⁶¹ Bernard Marcus, *Deadly Diseases and Epidemics: Malaria* (Philadelphia: Chelsea House Publishers, 2004). 46-67.

and agriculture were subject to malaria when these garrisons were located in marshy areas; for example, British garrisons in Jamaica were subject to high casualty rates from malaria because they were posted close to plantations for use as slave patrols in addition to military duties.¹⁶²

Malaria had a significant effect in the U.S. Civil War when unexposed Northern troops attempted to attack and/or garrison posts across the Southern United States. Malaria remained a major problem through World War II; over 460,000 US soldiers developed malaria between 1942 and 1945.¹⁶³

Repeated attacks of malaria can cause severe debilitation in both mind and body, and weakens the body for opportunistic infections. Individuals repeatedly exposed to malaria can acquire a degree of acquired immunity, although this happens only after many infections with the disease. Individuals constantly exposed to epidemic or unstable malaria are so debilitated that life expectancy can be half of that otherwise expected. A quotation about the nineteenth century illustrates this: “The most fertile portions of Italy are prey to [malaria]; the laborer wanders...the ghost of a man, a sufferer from the cradle to his grave, aged even in childhood, and laying down in misery that [brief] life which was but one disease...”¹⁶⁴

Plague

The plague has arguably had the greatest effect on human history of any epidemic disease. Successive waves of plague caused the end of the Roman Empire and prevented its restoration

¹⁶² Buckley, *Slaves in Red Coats*, 100.

¹⁶³ Andrew McIlwaine Bell, “‘Gallinippers’ and Glory: The Links Between Mosquito-Borne Disease and US Civil War Operations and Strategy, 1862,” *The Journal of Military History* 74 (April, 2010): 383-385; Marcus, *Malaria*, 9.

¹⁶⁴ An exception is *falciparum* malaria; persons infected with this can acquire immunity after only one or two infections (if they live). Richard Carter and Kamini Mendis, “Evolutionary and Historical Aspects of the Burden of Malaria,” *Clinical Microbiology Reviews* 15, No. 4 (Oct., 2002): 564-594. The quote is directly taken from p. 568.

under Justinian; Justinian's Plague has been called "the most disastrous event in the history of man."¹⁶⁵ The medieval Black Death epidemic killed a third of the entire population of Europe between 1348 and 1350; the fatality rate was 70% of those infected.¹⁶⁶ The tremendous loss of population changed the political and economic systems; society changed from labor-intensive to land-intensive. Plague epidemics during the eighteenth and nineteenth centuries were not as extensive or deadly as these pandemics; nevertheless, plague affected the course of military campaigns along with the other diseases discussed in this chapter.

The plague is caused by a bacillus named *Yersinia pestis*. Plague can take on any of three forms: bubonic, pneumonic, or septicemic. Bubonic plague is transmitted from an infected rat to man via the flea, and is characterized primarily by large masses (enlarged lymph nodes or buboes) primarily in the armpits and groin. The buboes appear within 2 – 7 days after infection and are accompanied with chills, aches, giddiness, and/or palpitations, which is followed by a high fever. Frequent vomiting may be accompanied with either diarrhea or constipation or both. The fatality rate of the bubonic form of plague varies between 25 and 95% of infected persons without treatment.

¹⁶⁵ Quote in Bray, *Armies of Pestilence*, 19. Chapter 2 of Bray's book has a good discussion of the historiography surrounding this issue. Not everyone agrees that the Antonine, Aurelian, and AD 310-12 epidemics were caused by plague; smallpox, typhus, and malaria have also been suggested. Whether or not the epidemics caused the downfall of the empire is also a subject of debate; the major reason the epidemics have been suggested is the massive depopulation resulting from these epidemics which weakened the empire; successive waves of diseases weakened it beyond recovery.

¹⁶⁶ Ibid., 57, 68. Interestingly, despite a general consensus among historians of epidemics, some researchers attempting to verify the disease that caused the Black Death have questioned the assumption that it was caused by the bubonic plague. A team from the Liverpool University School of Biological Sciences has studied the Black Death outbreak in England, the incubation time and transmission factors do not appear to match those known for the plague. Donald Emmeluth, *Deadly Diseases and Epidemics: Plague* (Philadelphia: Chelsea House Publishers, 2005), 13-14. Other "plague revisionists" have made similar arguments based on historical data. However, more recent genetic studies of plague victims buried in East Smithfield, UK has matched DNA from teeth to *Yersinia pestis*. However, skeptics have argued that the samples could have been contaminated with *Y. pestis* or a related strain of soil-dwelling bacterium, so the issue remains controversial. Ewen Callaway, "Plague genome: The Black Death decoded," *Nature* 478 (2011): 444-446. See also Crawford, *Deadly Companions*, 99-103.

Pneumonic plague is highly contagious, transmitted from person to person via coughing or sneezing of droplets from the lungs of the infected person. It overwhelms the victim before buboes can occur and is fatal in 90% to almost 100% of those infected unless treated very soon after exposure. Pneumonic plague starts as a secondary infection acquired from an individual stricken with the bubonic form whose lungs become infected with the bacterium; once the pneumonic form develops, it then spreads from person to person via aerosol.¹⁶⁷ Septicemic plague is also transmitted by the flea and occurs when the blood stream is infected with vast numbers of bacilli; as the Cunhas describe it, “the hallmark of septicemic plague is high-grade *Y pestis* bacteremia in all patients.”¹⁶⁸ Black or dusky skin hemorrhages occur. The patient is prostrated quickly but the accompanying fever is low and no buboes occur; death occurs within one to three days in virtually all affected unless treated.¹⁶⁹ Plague has become established in many counties in the Western United States (especially the high desert regions of Arizona and New Mexico), with single-digit numbers of infections per county per year. It is currently treatable with antibiotics, but can still be fatal if not treated promptly; it can also result in permanent injury if limbs become gangrenous from septicemic plague. A recent case where a couple from New Mexico was treated for plague in New York City shows how quickly the disease can spread given modern air transportation.¹⁷⁰

The plague had a great impact on warfare during the Thirty Years War (1618-48). The only major example of the plague affecting military outcomes between 1750 and 1900 occurred

¹⁶⁷ Emmeluth, *Plague*, 28-29, 36.

¹⁶⁸ Cheston B. Cunha and Burke A. Cunha, “Impact of Plague on Human History,” *Infectious Disease Clinics of North America* 20 (2006): 255.

¹⁶⁹ Bray, *Armies of Pestilence*, 19-22.

¹⁷⁰ A vaccine is also available in some countries (former Soviet Union, China) for plague, but its efficacy is in doubt. Valentina A Feodorova and Vladimir L Motin, “Plague vaccines: current developments and future perspectives,” *Emerging Microbes & Infections* 1 (November 7, 2012): 36. There is no vaccine currently available in the United States, and the CDC states that “Research is in progress, but we are not likely to have vaccines for several years or more.” “Frequently Asked Questions (FAQ) About Plague,” Centers for Disease Control, Emergency Preparedness and Response, <http://emergency.cdc.gov/agent/plague/faq.asp>, accessed 15 May 2016.

during the invasion of Egypt and the Middle East by France, affecting both sides (British and French). The total losses to the French due to the plague are not known, but some authors think that it caused the French to lose Cairo in 1801 (see case study on the Egyptian campaign, Chapter 5).¹⁷¹ Military forces were not especially susceptible to plague compared to civilians; although armies were subject to overcrowding and increased susceptibility created by poor diet, fatigue, etc. (see section on *Combat Environmental Effects that Increase Disease Susceptibility* below), these were often present in civilian populations as well.

Smallpox

Smallpox is the only epidemic disease actually eliminated by modern medicine and public health. Historically, however, it was a great killer, especially among non-exposed populations such as the indigenous peoples of the New World. It was termed “small” pox because of the concurrent epidemic of the “great pox” (syphilis) during the era when diseases were formally classified; smallpox has smaller pustules than other poxes.

Smallpox is caused by the virus *Variola major*,¹⁷² which is spread by droplets from one lung to another. The primary symptom is the bright red pustules (pocks) that spread rapidly over most of the body; the disease becomes contagious when these pustules appear in the mouth and pharynx. Despite the primary route of infection being droplets from the lungs, the virus can live on bedding and clothes of infected persons and become aerosolized and infect others indirectly.

¹⁷¹ Smallman-Raynor, *War Epidemics*, 103, citing R. Major, *War and Disease* (London: Hutchinson, 1940), page not provided. See also Herold, *Bonaparte in Egypt*, 382.

¹⁷² A variant called *Variola minor* causes a much less dangerous disease called alastrim. However, according to Bray (*Armies of Pestilence*, 114), this fact is in dispute.

The most deadly form of smallpox is hemorrhagic (also called black or purpuric) smallpox, which can be 100% fatal. Another form of smallpox is confluent smallpox, when the pocks coalesce; this form is also almost inevitably fatal. Ordinary smallpox is less fatal, causing about 25% fatalities in typical populations, rising up to 99% for isolated populations never previously exposed to smallpox,¹⁷³ leaving the survivors scarred with the characteristic pitting common in previous centuries. Fever also accompanied the pustules, and eye involvement was common which led to blindness.¹⁷⁴ There was no treatment for smallpox other than palliative measures; emphasis was placed on vaccination to avoid infection.

Smallpox was a major factor in the American Revolution, despite the fact that inoculation had been developed. The problem was that inoculation used a live virus, causing a mild case of smallpox that could be contagious. Its use was therefore controversial and regulated; most rebel soldiers lacked inoculation.¹⁷⁵ Washington imposed mandatory inoculation on the regular force (the Continentals), a controversial decision at the time, in order to reduce the risk of further losses due to the disease.¹⁷⁶ Armies that failed to inoculate recruits continued to suffer losses until it became routine. Like the plague, the military was not necessarily more susceptible to smallpox than civilians; however, the effect was significant when outbreaks did occur. Smallpox was greatly feared by troops and civilians alike; Thomas Macaulay referred to it as “the most terrible of all the ministers of death. The havoc of the Plague had been far more rapid; but the

¹⁷³ See for example Burke A. Cunha, “Smallpox and measles: historical aspects and clinical differentiation,” *Infectious Disease Clinics of North America* 18 (2004): 84. Part of the variation in death rates is that historical sources rarely distinguish between “ordinary” smallpox and confluent or hemorrhagic smallpox. The extremely high rates are generally for Native American and other isolated populations such as the Easter Islanders (they had 111 survivors from a population of approximately 100,000). Cunha indicates that an epidemic of smallpox in Europe killed only 20% – 40% of the population (Ibid., 84, 82).

¹⁷⁴ Bray, *Armies of Pestilence*, 114-5.

¹⁷⁵ For the controversy, see John B. Blake, “The Inoculation Controversy in Boston, 1721-1722,” *The New England Quarterly* 25, No. 4 (Dec. 1952):489-506, Genevieve Miller, “Smallpox Inoculation in England and America: A Reappraisal,” *The William and Mary Quarterly*, 3rd series, 13, No. 4 (Oct., 1956): 476-492. Both the controversy and the resulting colonial regulations are discussed in Becker, “Smallpox in Washington's Army,” 383-388.

¹⁷⁶ Becker, “Smallpox in Washington's Army,” 383, 388.

Plague had visited...once or twice and the smallpox was always present... tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power.”¹⁷⁷ Smallpox also serves as a good example of the military effects of asymmetry in disease vulnerability; the British routinely inoculated their long-term professional soldiers while the American volunteers of 1775 coming from the civilian world were largely not inoculated.

Typhoid / Enteric Fever

Typhoid fever, also known as enteric fever until the late nineteenth century, is a disease spread primarily by contaminated water supplies in a manner similar to cholera. It is caused by the bacterium *Salmonella typhi*. During the late nineteenth century, typhoid was assumed to be spread by ingesting water or food contaminated with the feces or urine of infected persons; it was not until the “Typhoid Board” investigation of typhoid epidemics during the Spanish-American war that the role of flies, direct contact, and even dust containing particles of dried feces in the spread of typhoid was recognized.¹⁷⁸ Typhoid has a 6 – 14 day incubation period followed by fever, headaches, abdominal distention, a “rose spot” rash on the trunk, and diarrhea (although constipation sometimes occurs). A soldier can be incapacitated from typhoid for approximately four weeks with a 10 – 20% fatality rate. Carriers of the disease can shed bacilli to infect others; about ten percent do so for up to three months and about 2% are permanently contagious and thus remain carriers of the disease for life.¹⁷⁹

¹⁷⁷ Thomas Babington Macaulay as cited in *ibid.*, 383.

¹⁷⁸ In the training camps in the United States during the Spanish-American War, the primary routes of transmission were dust, flies, and direct contact rather than contaminated water. Reed et al., *Abstract of Typhoid Board Report*, 183-184. See also Cirillo, “WINGED SPONGES,” 52-63

¹⁷⁹ Smallman-Raynor and Cliff, “Spread of Typhoid Fever,” 74.

There was no treatment for typhoid fever before antibiotics other than palliative measures involving food, drink, and baths. At the end of the nineteenth century medical science was “far removed from a specific treatment of typhoid fever, i. e., a method capable of destroying its exciting causes, the typhoid-bacillus, in the human body and preventing its dissemination, or at least of neutralizing or attenuating the activity of its toxins...”¹⁸⁰ Treatment of the fever (antipyretic treatment) consisted of baths; in addition some synthetic antipyretic drugs were experimented with for typhoid treatment but they sometimes led to alarming side effects.¹⁸¹ Many physicians used calomel (purgative) or quinine to treat the symptoms, although most physicians found quinine to be ineffective; in massive doses (needed when the fever did not respond to lower doses) it could lead to cinchonism. By the end of the century, the Widal test was available that could reliably diagnose typhoid, but the test required expertise and a suitable laboratory.¹⁸² Modern treatment for typhoid uses the antibiotic fluroquinolone, although antibiotic resistance is increasingly prevalent requiring alternatives such as gatifloxacin, azithromycin, or ceftriaxone.¹⁸³

The disease is primarily a camp disease occurring when many troops are based closely together with inadequate sanitation; however, typhoid could also occur on campaign such as the African campaigns of the British and French armies late in the nineteenth century (it was so prevalent in North Africa in the late nineteenth century that the British campaigns in the region

¹⁸⁰ H. Curschmann, *Typhoid Fever and Typhus Fever* (Philadelphia: W.B. Saunders & Co., 1902), 440.

¹⁸¹ One class of drug (aniline derivatives such as Antifebrin) was based on chemical dyes and could turn the patient dark blue from aniline poisoning. Jan R. McTavish, “Antipyretic Treatment and Typhoid Fever: 1860-1900,” *Journal of the History of Medicine* 42 (Oct., 1987): 486-506.

¹⁸² Cirillo, “Fever and Reform,” 363-397; Basil M. Taylor, “The Practical Treatment of Typhoid Fever,” *Journal of the Military Service Institution of the United States* XXV (1899): 426-433.

¹⁸³ Buddha Basnyat, “The treatment of enteric fever,” *Journal of the Royal Society of Medicine* 100, No. 4 (April, 2007): 161-162.

were referred to as the “typhoid campaigns”).¹⁸⁴ It also affected the US Army; in the Spanish-American War there were 20,738 cases of typhoid fever out of 107,973 troops in theater.¹⁸⁵ Typhoid was particularly prominent in besieged cities such as Torgau (1813) and Port Arthur (1904).¹⁸⁶

Typhus

Typhus has been historically known as “gaol fever,” “ship fever,” or “war fever” due to its prevalence in times of war; it is a disease of “war and famine and overcrowding.” It is caused by the parasite *Rickettsia prowazeki*, named after two researchers who discovered and subsequently died of the disease. It is spread by the feces of the body louse; the most common means of infection is scratching the louse feces (or the crushed body of the louse) into the skin; since incredible itching is the primary result of lousiness, infection occurs rapidly after the vermin appear. Symptoms occur within five to 14 days after a bite from an infected louse. The most noticeable symptom is a rash on the extremities and abdomen but not the head or neck, accompanied first with a malaise followed in one to three days by a high fever and severe headaches. Coughs are common as are some form of CNS abnormality such as confusion, drowsiness, seizures, coma, or deafness. The fatality rate is up to 60%.¹⁸⁷ Survivors can harbor the virus and suffer a recurrence of the disease (recrudescent typhus, or Brill-Zinnser disease), which is fortunately milder but is infectious and can restart an epidemic if the victim is bit by fleas who then bite others.¹⁸⁸ There was no nineteenth century treatment for typhus; patients

¹⁸⁴ Curtin, *Disease and Empire*, 149.

¹⁸⁵ Scott, *A History of Tropical Medicine*, vol. I, 59.

¹⁸⁶ Prinzing, *Epidemics*, 315, 326.

¹⁸⁷ Ibid, 135-36; Yassina Bechah et al., “Epidemic Typhus,” *Lancet Infectious Disease*. 8 (2008): 421.

¹⁸⁸ Bersenson, *Control of Communicable Diseases*, 386-387.

were isolated and disinfected, with palliative care given.¹⁸⁹ A vaccine is currently available, and the disease can be cured with antibiotics (tetracyclines or chloramphenicol followed by doxycycline). Related illness include murine typhus (*R. typhi*) and scrub typhus (*Orientia tsutsugamushi*) as well as various spotted fevers, but the historical epidemics were caused by *R. prowazecki*.¹⁹⁰

During the Thirty Years War (1618-48), Germany lost between one-third and one-half of its population due to epidemic typhus aided by plague and dysentery; in some places the fatality rate was up to 70%. Typhus is considered a disease of armies; Prinzing noted that it appeared in “almost every war that was waged between the sixteenth century and the middle of the nineteenth century.”¹⁹¹ It is a direct result of the inability to wash and launder clothes; that inability has remained a basic fact of warfare even into the present day. In the eighteenth and early nineteenth centuries, soldiers were infected with lice as a matter of course; for example Colonel Griois of Napoleon’s Grand Armée reported that “Shirts, waistcoats, coats, everything was infested with them [lice]. Horrible itching would keep us awake half of the night and drive us mad.”¹⁹² The greatest impact of typhus on military campaigns came during Napoleon’s disastrous retreat from Moscow in 1812; according to Bray the war was won not by “Marshal Ney’s General Winter or General Famine but General Typhus.”¹⁹³

¹⁸⁹ Eduardo Liceaga, “Typhus Fever,” *Twentieth Century Practice, Vol. XV, Infectious Diseases* ed. Thomas Stedman (New York: William Wood & Co., 1898), 306-308.

¹⁹⁰ Bersenson, *Control of Communicable Diseases*, 386-392. See also “Rickettsial (Spotted & Typhus Fevers) & Related Infections (Anaplasmosis & Ehrlichiosis),” Centers for Disease Control, <http://wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/rickettsial-spotted-typhus-fevers-related-infections-anaplasmosis-ehrlichiosis>, accessed 15 May 2016.

¹⁹¹ Prinzing, *Epidemics*, 328.

¹⁹² Zamoyiski, *Moscow 1812*, 452.

¹⁹³ Bray, *Armies of Pestilence*, 143, 145.

Walcheren Fever

Walcheren fever is an unknown fever that affected troops stationed at Walcheren Island and nearby areas in the marshy lowlands along the Dutch coast. It became famous among 19th-century epidemiologists when a British army expedition to Walcheren Island in 1809 numbering 30,000 to 40,000¹⁹⁴ suffered a mortality of 346.9 per thousand.¹⁹⁵ The force invaded the island in July 1809, and by September 8,000 were hospitalized with fever, rising to 9,000 in October. By the time the expedition was recalled in February 1810 40% of the force had been hospitalized; 3,960 men died and about 11,000 were still sick six months later.¹⁹⁶ The exact nature of Walcheren fever is unknown. Smallman-Raynor states that “Clinically, the disease followed a relapsing course and this has been interpreted by some as evidence of malaria. Howard (1999), however, contends that malaria alone would not account for the severe and rapidly fatal nature of the disease. Walcheren fever, he suggests, was a combination of malaria, along with typhus fever.”¹⁹⁷

Walcheren fever is a classic example of the difficulties surrounding diagnosis during the era before the exact cause of diseases was known; even today the cause of this fever remains unknown. It is also likely an example of the difficulty surrounding the occurrence of multiple diseases in the field (see discussion of multiple diseases in Chapter 3). The expedition is also an example of the possible outcome from ignoring the risks of epidemic disease. The island was known to be deadly but this information was ignored by British planners. According to Scott, “a Scottish regiment in the Dutch service had been known to lose their whole numbers in three

¹⁹⁴ Sources vary on the number of troops engaged. Smallman-Raynor & Cliff in *War Epidemics* state that the force was 40,000 while Scott, *A History of Tropical Medicine*, says 30,000.

¹⁹⁵ Scott, *A History of Tropical Medicine*, vol. I, 43.

¹⁹⁶ Smallman-Raynor & Cliff, *War Epidemics*, p. 106. See also Martin R. Howard, “Walcheren 1809: a medical catastrophe,” *British Medical Journal* 319 (Dec. 18-25, 1999): 1643.

¹⁹⁷ Smallman-Raynor & Cliff, *War Epidemics*, 106; Howard, “Walcheren 1809,” 1644. Howard suggests that typhoid and dysentery were also among the diseases present during the expedition.

years, was ignored; it was known that the French Army annually lost one-third of its complement there, and a Dutch corps, which on arrival in 1806 was 800 strong, by 1809 had become reduced to eighty-five.”¹⁹⁸ Despite this, the number of casualties caught British planners by surprise; furthermore, it was only when the epidemic was out of control that the military was willing to call off the expedition and recall the troops.

Yellow Fever

Yellow fever is transmitted by mosquito like malaria, but unlike malaria it is caused by a virus which is part of the *flavovirus* family. The incubation period is 3 – 6 days after a bite from an infected mosquito. A few fortunate individuals will suffer no more than a backache, influenza-like symptoms (fever, chills, headache), and some prostration. More severe cases exhibit a high fever, a severe ache in the long bones and the head, and the characteristic jaundice that provides the disease its name. The patient will vomit fluid tinged with blood from bleeding in the intestine. As the vomiting continues, the old blood makes the vomit black, providing an alternative name for the disease: *vomito negro* (black vomit in Spanish). Spontaneous bleeding may occur anywhere in the body both internally and externally. If a patient recovers, he gains long-term immunity; however, yellow fever has a very high fatality rate – up to 50% or more.¹⁹⁹ In 1898, the disease was considered “a filth-disease. Whether it may arise *de novo* or not, it is fostered by a temperature of not less than 72° F., moisture, and human filth. ... The exact nature of the cause is undetermined, but it is probably inhaled rather than taken with food, and it certainly is most active at night. From any given point it advances with a regular and measurable

¹⁹⁸ Scott, *A History of Tropical Medicine*, vol. I, 47.

¹⁹⁹ K. David Patterson, “Yellow Fever Epidemics and Mortality in the United States, 1693-1905,” *Social Science Medicine* 34, No. 8 (1992): 855.

progress. Fermenting cesspools are foci of development, and apartments, furniture, or articles of clothing, having been infected, are sources of peril. Having appeared, yellow fever will ravage an unprotected command while it remains near the sea-level and in proximity to bodies of water. Ultimate military success will, therefore, best be attained by the most successful avoidance of any place known to be infected, by rigidly excluding every article belonging to that zone, by having all infected material (*fomites*) burned, and again by the strictest personal and general cleanliness.”²⁰⁰ In the nineteenth century many cases were treated with quinine, which is ineffective, often because doctors were unsure if the patient was exhibiting the symptoms of malaria or yellow fever (or typhomalaria, or typhoid fever). Some doctors actually used quinine as an initial diagnostic tool; if the patient responded to quinine, he had malaria, otherwise he did not. All other treatment was palliative; Nelson in *Twentieth Century Practice* recommended vapor baths, acidic drinks, and water.²⁰¹ Doctors of the US Marine Hospital Service (who treated patients in quarantine as well as sailors) recommended no formal treatment in 75% of the cases; for the remainder, mustard plasters, baths, cathartic pills, antipyretics, and a liquid diet were used, with other symptomatic treatment as needed.²⁰²

Historically yellow fever could destroy armies; during the British attack on Cartagena in 1741, 8431 out of 12,000 died; the attack on Havana in 1762 resulting in 8,000 men stricken with fever within a month of landing. Possible the greatest effect on an army was during the French attempt to recapture their former colony of Saint Domingue (in Spanish Santo Domingo, later

²⁰⁰ Woodhull, *Notes on Military Hygiene* (1898), 156-157.

²⁰¹ Wolfred Nelson, “Yellow Fever,” in *Twentieth Century Practice: An International Encyclopedia Of Modern Medical Science, Vol. XX: Infectious Diseases* ed. Thomas Stedman (New York: William Wood & Co., 1900): 475-478.

²⁰² R. D. Murray, “The treatment of yellow fever,” in U.S. Treasury Department, *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898*, Treasury Doc. 1419 (Washington: GPO, 1899), 303-306; H. D. Geddings, “Therapeutic treatment of yellow fever,” U.S. Treasury Department, *Annual Report MHSUS 1898*, 313-318.

Haiti); they lost over 30,000 out of 50,000 troops and 10,000 sailors to disease, almost entirely yellow fever (see the case study on the West Indies and the case study on Saint Domingue, both in Chapter 5).²⁰³ One of the factors affecting the morale of troops affected by the disease is that death can occur within one to a few days after onset of symptoms; this rapid onset along with large numbers of troops infected could lead to panic or despair (see the section on *Morale* in the next chapter).

Armies were subject to yellow fever when engaged in operations in tropical areas where the *Aedes* family of mosquitoes (usually *Aedes aegypti*) are found. Until the disease vector was determined it was almost unavoidable for armies sent to Africa or the Caribbean; the only successful avoidance mechanism was the use of immune soldiers (normally Africans recruited for this specific purpose; see discussion on recruitment and choice of troops in the next chapter). However, the immunity was assumed to be a function of race; the use of blacks as a means of avoiding yellow fever was unsuccessful when blacks from other disease environments were recruited.²⁰⁴

Incredibly, even today yellow fever is very hard to diagnose; only detailed and expensive laboratory tests of blood specimens can detect the presence of the disease; until 1995 the serology test was liable to contamination with numerous flavoviruses. A modern ELISA test can only be done in biosafety level 3 or 4 labs using immune personnel. The World Health Organization estimates that today only 1 – 2% of yellow fever cases are reported, largely because it is so difficult for health care workers to diagnose the disease correctly from symptoms

²⁰³ Scott, *A History of Tropical Medicine*, vol. I, 296; Stoddard, *The French Revolution in San Domingo*, 348. The exact percent of losses is a bit uncertain; another source states that British losses at Cartagena were 80% of the force (Clive Bell and Maureen Lewis, “The Economic Implications of Epidemics Old and New,” Center for Global Development Working Paper #54, Feb. 2005, 5).

²⁰⁴ For the recruitment of blacks into the British army, see Buckley, *Slaves in Red Coats - The British West India Regiments, 1795-1815*; for the recruitment of African-Americans into the US Army see Marvin Fletcher, “The Black Volunteers in the Spanish-American War,” *Military Affairs* 38, No. 2 (Apr., 1974), 48-53..

alone.²⁰⁵ Although a vaccine is available, there remains no specific treatment for yellow fever other than palliative measures.²⁰⁶ Given that all of modern medicine has problems with diagnosing the disease, we should not be surprised that there was significant difficulty getting reliable diagnoses during the Spanish-American and other wars; historians are often unsure of the extent of historical yellow fever epidemics because of the likelihood of misdiagnosis. At the time of these epidemics doctors also disagreed with each other's estimates of the number of yellow fever cases and the severity of the epidemic.

Crowd Diseases

Some diseases tend to flourish when people are concentrated in groups; these are known as "crowd diseases," such as measles, mumps, whooping cough (pertussis), chickenpox, and smallpox (discussed separately above). They evolved in the past when hunter-gatherers settled down to agriculture and domesticated animals; in early civilizations people and animals crowded together under one roof. Agriculture also made large settlements possible; settlements and regions populated densely enough to sustain crowd diseases over time. Disease passed from animals to humans and back; they were common in Europe, Africa, and Asia but did not occur in the Americas, where only a handful of animals were domesticated.²⁰⁷ To these previously unexposed populations, these diseases could kill in great numbers, leading to a demographic

²⁰⁵ World Health Organization Department of Immunization, Vaccines and Biologicals, *Manual for the Monitoring of Yellow Fever Virus Infection* (Geneva, Switzerland: World Health Organization, 2004), 2, 15-17. Personnel are considered immune 30 days after taking a yellow fever vaccination.

²⁰⁶ Berenson, *Control of Communicable Diseases*, 33. See also "Yellow fever: Symptoms and Treatment," Centers for Disease Control, <http://www.cdc.gov/yellowfever/symptoms/>, accessed 15 May 2016.

²⁰⁷ Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W. W. Norton & Company, 2005), 212-214. See also Alfred W. Crosby, "Infectious Disease and the Demography of the Atlantic Peoples," *Journal of World History* 2, No. 2 (Fall, 1991): 119-133.

collapse.²⁰⁸ Although the initial population estimates of pre-contact American natives is a subject of debate, epidemic disease pandemics killed millions across the Americas in a relatively short period of time. Henry Dobyns states that “ninety percent of the population of civilized Mesoamerica and Andean America perished by 1568.”²⁰⁹

During the twentieth century, these crowd diseases were typically known as childhood diseases, especially early in the century before the development of vaccines. Measles, mumps, and chickenpox were typical rites of passage for youngsters, who normally suffered only a minor form of the disease. However, during the nineteenth century much of the population was rural, which meant that potential subjects were spread out and therefore much less likely to sustain an outbreak of these diseases; even if an individual were to become sick he or she was less likely to spread the disease to others. Measles was particularly widespread in the 19th and early 20th centuries; epidemics periodically broke out in cities and would subside when most of the population was exposed (survival infers lifelong immunity).²¹⁰ However, when people were concentrated into training camps (soldiers) or concentration camps (civilians) during wartime, these crowd diseases would break out in the concentrated populations and could be deadly to adults. When measles epidemics occurred in small geographic areas with immunologically naïve populations, such as in the South Pacific islands, the lethality rates could approach 90%. However, among relatively healthy soldiers, the mortality rates were low although the morbidity rates were high, resulting in delays and disruption of training; Cunha reports 75,000 cases in the

²⁰⁸ The greatest killer was undoubtedly smallpox with lethality estimates from 20% to 90%; lethality due to measles and other crowd diseases mentioned were below 10% according to Massimo Livi-Bacci, “The Depopulation of Hispania After the Conquest,” *Population and Development Review* 32, No. 2 (June 2006): 206.

²⁰⁹ Henry Dobyns, “Disease Transfer at Contact,” *Annual Review of Anthropology* 22 (1993): 276. For a counter to Dobyns’s arguments, see David Henige, Primary Source by Primary Source? On the Role of Epidemics in New World Depopulation,” *Ethnohistory* 33, No. 3 (Summer, 1986): 293-312.

²¹⁰ Greenwood, “Epidemics and Crowd-Diseases: Measles,” 492-499.

Union Army over the course of the war.²¹¹ 1.2% of deaths from disease among Confederate soldiers of the Civil War were due to measles; 2.7% of white and 3.2% of black Union soldiers died from the disease. Measles was also a killer of children and adults in Boer War concentration camps, accounting for up to 30 – 40% of all deaths due to disease in the camps.²¹²

These crowd diseases affected military readiness by creating large numbers of sick individuals in training camps, which delayed training, imposed high costs for treatment, supplies, hospital beds, etc., lowered morale, and reduced the number of soldiers available for combat. However, the number of soldiers lost was relatively lower than the numbers lost to the other epidemic diseases discussed in this section, and the military impact was lower when it occurred in training instead of contact. As a result, crowd diseases are often ignored in military histories except for brief mentions related to the mobilization of troops and preparation for war.

²¹¹ Cunha, “Smallpox and measles,” 79–100. He also presents a higher total mortality rate of 6.7%, citing Alfred Jay Bollet, *Plagues & Poxes: the Rise and Fall of Epidemic Disease* (New York: Demos Publications; 1987), 17–27.

²¹² Fetter and Kessler, “Scars from a Childhood Disease,” 593–611.

CHAPTER 3

INTERRELATIONSHIPS BETWEEN DISEASE AND MILITARY CAMPAIGNS

This chapter will examine how war and disease affect each other. Actions taken in wartime increase the likelihood and impact of disease on both soldiers and civilians while both the fear of and the appearance of disease affects military operations and the outcomes of war.

Disease enters military history primarily when it disables or kills troops. In addition to losses in battle, soldiers are susceptible to disease in camps before they are deployed for combat and also during rest and training periods between combat operations; Zinnser noted that warfare consists of “only the terminal operations engaged in by those remnants of the armies which have survived the camp epidemics.”²¹³ For example, one contributor to US casualties from the Spanish-American War was a typhoid outbreak in the training camps in the United States.²¹⁴ A study conducted just after the US Civil War noted that measles, mumps, influenza, and other diseases easily spread through close contact adversely affected new recruits in their initial mobilization and training camps. These diseases “occur under similar conditions in civil life. Recruits were more subject to them than the same number of civilians of corresponding ages, because they were placed in circumstances more fully exposing them to the action of morbid agents.”²¹⁵ Disease can also strike during combat operations; as noted below, the conditions facing fighting troops in the field makes them especially susceptible to disease. The Spanish-

²¹³ Hans Zinnser, as cited in R. K. D. Peterson, “Insects, disease, and military history: the Napoleonic campaigns and historical perception,” *American Entomologist* 41 (1995): 147-160, <http://entomology.montana.edu/historybug/napoleon/napoleon.htm>, accessed 25 April 2015.

²¹⁴ Smallman-Raynor and Cliff, “Spread of Typhoid Fever,” 71-91; Cirillo, “Fever and Reform,” 363-397.

²¹⁵ Austin Flint, ed., *Contributions Relating to the Causation and Prevention of Camp Diseases* (New York: Hurd and Houghton, 1867), 12.

American War also illustrates this point; up to 90% of the US army deployed in Cuba in 1898 was stricken by disease toward the end of the war.²¹⁶ Despite this, military histories have often omitted the effects of disease outside of the direct losses at times of immediate conflict – and thus overlooked many significant effects of epidemic disease on the outcome of war.

Although military service *per se* does not alter the disease environment for a soldier, the training and mobilization for service does create additional hazards. When troops are brought together in one place for training and/or military operations, they are brought into close contact in barracks or field encampments. This makes them susceptible to crowd diseases, especially rural recruits that have never come into close contact with large numbers of different people. The fact that recruits are drawn from different communities means that the disease exposures become commingled; recruits carrying the germs for a specific disease come into contact with other recruits that have no prior contact with that disease. This is true even when soldiers are trained in peacetime on their native soil. When soldiers are displaced from their native environment to serve overseas, they often are placed into different disease environments than they were when growing up. Thus, military operations alter the disease environment for soldiers, increasing their susceptibility for disease. In addition, as Prizing noted in 1916 (as is still true today):

Every aggregation of people, even in times of peace, at celebrations and annual fairs, in barracks, and so forth, is necessarily exposed to the danger of pestilence; but this danger is ten times as great in large assemblages of troops during a war. The soldiers are then subjected to all possible kinds of hardship and suffering—lack of food, or food which is inferior and badly cooked, sleeping out in the cold and rain, fatiguing marches, constant

²¹⁶ Col. Theodore Roosevelt told the New York Times on August 4th that 90% of the troops were unfit for active work (“Nine Men out of Ten Sick.: Colo. Roosevelt Declares the Whole Army Is in Danger Unless Moved North at Once,” *New York Times*, Aug 5, 1898, 7).

excitement, and homesickness—and all these things greatly lessen their power of resistance. When large bodies of troops are obliged to remain in one and the same place for a considerable length of time, the additional difficulty presents itself of keeping the locality unpolluted by the excrement of men and animals, and by refuse of all kinds. If an infectious disease reveals its presence in such an aggregation of people, energetic and stringent measures must be adopted, even in times of peace, to prevent it from spreading. In war times it is often impossible to take the necessary precautions, since the attention of the commanders is directed toward very definite objects, to which all other considerations are subordinate.²¹⁷

The lessened resistance from the fatigues of combat (even if not actively engaged against the enemy), accompanied by filth, overcrowding in close quarters, and constant cold or heat (the battlefield is rarely temperate) renders soldiers susceptible to diseases their bodies might shrug off if exposed in the comforts of their heated homes.

Combat conditions pose further hazards for the soldier as described in the next section. Historians have long recognized the most obvious combat hazard for soldiers: being wounded or killed from military action. However, before the twentieth century, the most *likely* hazard for soldiers was exposure to disease, resulting in illness and all too often in death.

²¹⁷ Prinzing, *Epidemics*, 2-3.

Combat Environmental Effects that Increase Disease Susceptibility

Combat conditions often make the incidence of disease among troops higher when engaged in military operations than when they are stationed in their base camps, which in turn is higher than their native (civilian) environment. Some of these environmental effects were known to military commanders, thus they could be minimized to the extent possible through prior preparation – but this preparation in turn could affect military operations. For example, it was known that a lack of anti-scorbutics would lead to scurvy, but getting these items to troops required time, transportation to the theater of operations, and availability of local transport to bring them from ships to camp. The lack of local transport (plus a great deal of red tape and incompetence) led to a significant outbreak of scurvy during the Crimean War. This section outlines various environmental conditions that increased the risk and the occurrence of disease during times of war. Disease outbreaks, or even a commander's fear of disease outbreaks, in turn affected planning, strategy, the execution of military operations, and historical campaigns and battles.

Location

The first environmental condition was location. It was well known that European troops assigned to tropical areas were subject to high casualty rates from diseases such as malaria and yellow fever. European incursions into the African interior were avoided for decades during the early nineteenth century largely for that reason. However, not all locations were created equal with respect to disease. Low-lying, marshy areas are where disease-carrying mosquitoes are

found; troops are more susceptible to diseases such as malaria and yellow fever when fighting on or simply occupying these areas. The predominant theory of disease during the period of study was miasmatic; disease was thought to be caught from poised air or miasma found in these regions.²¹⁸ Although many errors were made from ignorance in both prevention and treatment of disease during this era, the miasma theory was actually useful in identifying mosquito-infested marshy areas as hazardous to military forces.

Despite high disease rates in these areas, barracks and military posts in the West Indies were frequently built in low-lying, often swampy, areas in order to protect either seaward approaches (e.g., land-based batteries for coastal defense) or nearby plantations; posts were often located near plantations to protect against slave rebellions. Attempts to identify and avoid dangerous areas were conducted by military physicians; for example Dr. John Davy reported on a notoriously unhealthy post called Brimstone Hill on St. Kitts: “The barracks of this fortress are a striking example of defective construction in a sanitary point of view: the worst of them have undrained and unventilated ground floors, the flooring of boards, pervious to exhalations from beneath and to all liquid impurities from above...”²¹⁹ Similarly, forts were constructed along rivers in West Africa in order to protect traders and intercept slavers. These posts had predictably high fatality rates, especially when epidemics broke out. On the island of St. Louis in the Senegal River, the fatality rate from disease was 22% *per year* on average; during a yellow fever epidemic in 1830 the fatality rate was 57.3%.²²⁰ In Gambia in 1825 the fatality rate was over

²¹⁸ The early theories of disease are discussed in Chapter 7 (Disease Environment).

²¹⁹ Buckley, *Slaves in Red Coats*, 100.

²²⁰ Curtin, *Disease and Empire*, 4.

100% (due to replacements); 279 died in a force that numbered at any one time between 40 and 120.²²¹

Doctors quickly noticed that troops stationed at higher elevations failed to catch yellow fever. By 1898 commanders were advised that “If military conditions permit, the removal of a command even in the tropics to an elevation of 1000 feet and away from bodies of water will check the progress of the disease [yellow fever].²²² If cities or regions needed to be quarantined after an outbreak of yellow fever, official US government policy called for the evacuation of citizens in these areas to cooler regions to the north where yellow fever did not occur.²²³ Neither policy was based on the presence and prevalence of mosquitoes, but both policies were effective nonetheless.

Season

The “fever season” was associated with higher rates of febrile disease, often the rainy season. It is now known that these “seasons” were the periods when large concentrations of disease-carrying mosquitoes such as *Anopheles* for malaria and various strains of *Aedes* for yellow fever (most commonly *Aedes aegypti*) were present. The rainy season, June through October, forms the period where *Anopheles gambiae* and *Anopheles funestus*, that are responsible for 95% of the infectious bites for malaria in Africa, are most active and the greatest number of bites occur.²²⁴ Many of the rivers of Western Africa, such as the Senegal River, are only navigable to any

²²¹ Ibid., 10.

²²² Woodhull, *Notes on Military Hygiene* (1898), 157.

²²³ “Persons whose destination is north of the southern boundary of Maryland and who do not intend to return within ten days to a point quarantined against the infected territory, may be allowed to proceed.” US Treasury Department, *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898* (Washington: GPO, 1899): 338.

²²⁴ Curtin, *Disease and Empire*, 6-7.

significant extent during the rainy season. These facts combined to make expeditions up the river particularly hazardous. In 1841, Britain mounted an expedition up the Senegal River using modern steamboats; in just two months 82% of the crew were sick from malaria and 30% died. This represented a fatality rate of 16.2% *per month* during the fever season.²²⁵

The association of mosquitoes with disease was not known in the nineteenth century but medical statistics showed an increase in sickness and death during the periods when mosquitoes were swarming. Correlation and causation are frequently confused by non-statisticians, and in this case the correlation between season and disease was assumed to demonstrate the cause of the disease – the weather contributing to atmospheric miasma, or the increased decomposition of organic material heated and soaked during the tropical rains. Despite this significant error in assigning the cause of seasonal diseases such as malaria and yellow fever, the seasonal variation still yielded vital information. The known dangers of the fever season in the tropics caused some military campaigns in those regions began to be planned around these periods. Avoiding the rainy season saved lives regardless of the fact that soldiers were protected from mosquito bites rather than from miasma – the result was the same. However, this incorrect assignment of cause created problems when troops were sent to these regions during the sickly season, as the measures used to minimize exposure to miasma or filth did nothing to minimize exposure to infected mosquitoes.

Diet – Food and Water

The food made available to soldiers and sailors prior to the twentieth century was poor and lacking in most nutrients when available. Soldiers were often forced to rely on foraging; when

²²⁵ Ibid., 23.

going through an area already ravaged by war, or during times of the year when crops are not mature, food was often not available at all. Dietary deficiency diseases such as scurvy and beriberi were common before canned and refrigerated rations became available in the latter part of the nineteenth century.²²⁶ In addition, the body's immune system is weakened by malnutrition, making soldiers more susceptible to contagious disease. Beriberi was particularly a problem in the Japanese Army during the first half of the twentieth century; it relied primarily on rice as their standard ration. Alan Hawk reports that approximately 80,000 soldiers were sent home with beriberi during the Russo-Japanese War; 10% of this force died.²²⁷

Scurvy is typically thought of as a disease affecting sailors on long voyages; however, it has killed soldiers in wartime, especially when combined with malnutrition during the course of a siege. For example, during the siege of Mantua, 1,968 men in the garrison died of scurvy in a single month (January 1797).

The water made available to sailors was often filled with algae and animalcule, but it usually lacked disease parasites unless filled from a contaminated water source. Soldiers, on the other hand, were forced to use whatever bodies of water that were available in the area. These bodies of water were frequently contaminated with feces, dead animals, and after battle were often filled with dead and dying men. Dysentery was a frequent soldier's disease; other diseases caused by contaminated water, such as cholera and typhoid, also appeared. At the beginning of the First Coalition War (1792-97), dysentery broke out in the Prussian army as it advanced into the Champagne region of France; Prinzing states that "this was chiefly responsible for the failure of

²²⁶ The US Army placed canned beef on its travel ration in 1878; the Spanish-American War marked the first use of refrigerated beef for issue as "fresh beef" rather than beef on the hoof served in prior conflicts. *Bullets and Bacilli*, 104-105. During the war, the major problem was transporting rations to the front rather than the availability of rations in country. Trask, *War with Spain*, 215, 297.

²²⁷ Alan Hawk, "The Great Disease Enemy, Kak'ke (Beriberi) and the Imperial Japanese Army," *Military Medicine* 171, No. 4 (April, 2006): 333. The missing vitamin, thiamin (B₁) was identified in 1915, but the deficiency cropped up again during World War II.

the invasion.” During the Franco-Prussian War (1870), 88,975 German soldiers contracted dysentery at a rate of 47.8 per thousand. Cholera was a killer in the Crimean War; the French Army lost 5,183 men in July and August 1854.²²⁸ Dysentery was still a major factor in warfare as late as World War II, where it was credited as playing “a great part” in the Allied victory at El-Alamein.²²⁹

Contamination of the liquor supply from lead (used in the stills, especially those used to create rum) was also a problem. Although not a disease, plumbism (chronic lead poisoning) led to the discharge of thousands of troops with the symptoms of advanced lead poisoning and undoubtedly led to the deaths of many more. The danger of lead contamination in rum was known at the time; John Hunter reported that the rum issued to troops in Jamaica was grossly contaminated with lead in 1788 in his *Observations on the Diseases of the Army in Jamaica*.²³⁰

Sleep Deprivation and Fatigue

Soldiers are typically sleep deprived when on campaign; this also weakens the body’s immune system and leads to higher rates of disease when outbreaks occur. Various studies have demonstrated that “soldiers do not get enough sleep in either combat or training geared towards combat.”²³¹ No records of the sleep patterns of soldiers before the twentieth century are available, so it is not possible to identify specific historic instances where fatigue and sleep deprivation caused a significant military effect. However, modern medical studies have shown a

²²⁸ Prinzing, *Epidemics*, 92, 195, 171.

²²⁹ The German and Italian troops used shallow trench latrines with no oil seal. British troops reported that their former camp (occupied by the Allies after the battle) was “just one huge fly farm, and has to be seen to be believed.” According to captured German and Italian doctors, dysentery or diarrhea affected 40 – 50% of their troops. H. S. Gear, M.D., “Hygiene Aspects of the El Alamein Victory, 1942,” *British Medical Journal* (March 18, 1944): 384.

²³⁰ Curtin, *Disease and Empire*, 101-2.

²³¹ Eyal Ben-Ari, “Docile Bodies, Pharmorgs and Military Knowledge: The Regulation of Sleep and Night-Time Combat in the American Army,” *Paideuma: Mitteilungen zur Kulturkunde* 51 (2005): 165-179.

decrease in natural immunity resulting from these factors, so it is reasonable to assume it was a factor in indirectly affecting military outcomes even if it cannot be measured.²³²

Cleanliness and Hygiene

It is extremely difficult for soldiers to stay clean when in combat even in the 21st century; it was generally impossible before the nineteenth century. The rise of the sanitation and public health movement increased public awareness of the necessity of cleanliness, even of troops in combat. However, military commanders were often spotty when it came to enforcing sanitary rules. During the nineteenth century, civilian organizations (such as the American Sanitary Commission during the US Civil War) were created to assist soldiers in basic hygiene.²³³ Their effectiveness was reduced as these organizations and military sanitation policies were generally available only when soldiers were in base camps and not actually on military campaigns. Even into the end of the nineteenth century, poor hygiene was responsible for the high incidence of typhoid in the French seizure of Tunisia, the British capture of Cairo, and in the base camps of the American Army during the Spanish American War.²³⁴

Sanitation was particularly a problem in besieged cities. During the siege of Verdun in 1792, there was widespread disease attributed to the lack of sanitation. Maréchal Didion stated that “One of the most potent causes of the infection at Verdun was the unpaved state of the town at the time of the siege. Every day refuse of all kinds was thrown from each house out into the street—the evacuations of men and animals, rubbish, and garbage—and there it mixed with the

²³² “A brief period of sleep deprivation lowers resistance to influenza infection, while sustained sleep loss may bring on certain bacteria-caused illnesses.” “Fail to snooze, immune cells lose,” *Science News* 147, No. 1 (Jan. 7, 1995): 11. For more detail, see Matt T. Bianchi, ed., *Sleep Deprivation and Disease: Effects on the Body, Brain and Behavior* (New York: Springer, 2014).

²³³ Prinzing, *Epidemics*, 176.

²³⁴ Curtin, *Disease and Empire*, 149; 153-154; 166-167; Cirillo, *Bullets and Bacilli*, 75-76.

mud, liquefied and rotted through the action of the rain. The officials in charge of street sanitation were powerless. All this filth emitted a foul odor when a carriage drove through it, and one often saw people seized with convulsions and sickness, or even suffocated while crossing the streets.”²³⁵ During the Napoleonic Wars, hospitals were frequently located in areas with poor sanitation and men were placed on the floor with at most filthy straw or rags contaminated with the fluids of a previous inhabitant, frequently a fatality. At the siege of Torgau (1813), Prinzing reports that “The patients suffered partly from severe, fetid diarrhea, and partly from typhus. In the courtyards there were enormous accumulations of dirt and refuse, and the doors leading into many of the sick-rooms could scarcely be opened owing to the collections of foul matter which covered the floor ankle-deep; in order to reach the sick it was necessary to wade through this and to climb over dead bodies.” It is no wonder that over 8,000 men died of disease in this city during November 1813 alone.²³⁶

Soldiers were frequently at fault for the unsanitary conditions they lived in. Confederate General Robert E. Lee once commented about their cleanliness (or more precisely the lack of cleanliness): “They are worse than children [at keeping clean], for the latter can be forced.”²³⁷ They frequently made their camps into noxious outdoor sewers; at Vicksburg, “Men were in the habit of going out into the bushes, and not infrequently some 30 or 40 feet from some of their tents and relieving themselves; in fact, human excrement has been promiscuously deposited in every direction, until the atmosphere . . . is so heavily loaded with effluvia that it is sickening.”²³⁸

²³⁵ Prinzing, *Epidemics*, 92.

²³⁶ *Ibid.*, 312.

²³⁷ H.H. Cunningham, *Doctors in Grey: The Confederate Medical Service* (Baton Rouge: State University Press, 1958), 167 cited in Sartin, “Infectious Diseases during the Civil War,” 581.

²³⁸ Sartin, “Infectious Diseases during the Civil War,” 581.

The Spanish-American War's volunteer soldier was no better, as it proved almost impossible to keep volunteers from defecating in woods and fields near their campsites.²³⁹

Soldiers during this era were typically issued only one uniform; typically soldiers in active combat are unable to wash either themselves or their clothes. The soldier of the late 18th and early nineteenth centuries often failed to wash for days to weeks at a time. "I have seen men literally wear out their underclothes [sic] without a change and when they threw them off they swarm with Vermin like a live Ant hill when disturbed," reported an Iowa volunteer during the Civil War.²⁴⁰ Lice were a lousy part of a soldier's existence and made louse-borne typhus a "disease of armies."²⁴¹ Even the twentieth century soldier was often subject to lice until DDT was invented and widely used.

Prior Health and Prior Immunities

The conscript armies of the late 18th through the 19th centuries were often filled with men taken from prisons or those unfit for any other work. It was so difficult for the British to fill their army during the American Revolution that standards were lowered to admit virtually anyone from any source, to include prisons and those who were unemployed for reasons of health or age. 11% of the new recruits sent to the West Indies between October 1776 and February 1780 died during transport to the islands; "many of those who reached the West Indies were immediately sent back to Britain; either they were too young or were reluctantly rejected by commanders

²³⁹ Col. E.C. Young commanding First Illinois Volunteer Cavalry reported that "there were defecations through the woods" despite orders to use the company sinks (latrines). Young, *Dodge Commission Report*, vol. 4 (Testimony), 1574.

²⁴⁰ James Robertson, *Soldiers Blue and Grey* (Columbia, SC: University of South Carolina Press, 1988), 159.

²⁴¹ The existence of body lice was well known from soldier diaries and accounts. Interestingly, however, historical epidemiology has proven the existence of body lice and typhus in Vilnius during Napoleon's retreat from Moscow. See Didier Raoult et al., "Evidence for Louse-Transmitted Diseases in Soldiers of Napoleon's Grand Army in Vilnius," *The Journal of Infectious Diseases* 193 (Jan. 1, 2006): 112–20.

because of ‘extreme infirmities.’”²⁴² Napoleon lost up to a third of his initial force in his advance into Russia in 1812 due to illness and malnutrition. This was not uncommon; in fact, it could be beneficial in some ways, Adam Zamoyski pointed out in *Moscow 1812* that the long march weeded out the weak and unfit; leaving a leaner army that required fewer supplies but had as much effective combat power. However, Zamoyski also emphasized the negative collateral effects: “But before they died they had helped to slow down the operations of the army, to ravage the country through which they passed and to overload the supply machine to an extent from which neither recovered. And the sight of them dying in their thousands had an unsettling effect on those who remained.”²⁴³

Military forces of the eighteenth and nineteenth centuries had large numbers of young men recruited from farms and rural areas, particularly the popular revolutionary armies that emerged in the late 18th century. These men often lacked exposure to diseases in childhood that their urban counterparts had experienced; as a result they lacked any immunity that prior exposure may have provided. The result was often outbreaks of epidemics of childhood diseases in training camps and recruitment depots.²⁴⁴

Even healthy men could become liable to illness after a long voyage in overcrowded troop ships. In a report on the health of soldiers sent to the West Indies, Sir Andrew Halliday noted in 1839 that “However healthy they may have been when they embarked, it generally happens, if the voyage has been at all lengthened, that many land already labouring under acute dysentery or inflammation of the lungs, and that more are seized with these complaints immediately after their

²⁴² Buckley, *Slaves in Red Coats*, 4.

²⁴³ Zamoyski, *Moscow 1812*, 191.

²⁴⁴ See for example Greenwood, “Epidemics and Crowd-Diseases: Measles,” 492-499; Fetter and Kessler, “Scars from a Childhood Disease,” 593-611.

arrival, or with the colony fever to which the previous exhaustion has rendered them peculiarly obnoxious.”²⁴⁵

Some soldiers actually had acquired immunities based on previous exposure to the diseases of concern. Blacks born in Africa were typically immune to yellow fever based on childhood exposure; some were also partly immune to malaria based on recurrent infections while in Africa, or possessed the sickle cell trait which grants protection from the disease.²⁴⁶ As discussed previously, this led to the assumption that all blacks were immune based on race. The US Army also recruited whites with a previous exposure to yellow fever for their Immune Regiments during the Spanish-American War, although actual immunity was spotty given that many recruits lied about previous exposure in order to serve in the war and some may have had dengue fever (or even malaria) misdiagnosed as yellow fever.²⁴⁷ Although a lack of immunity to crowd diseases caused problems when new recruits were brought together in camps, once soldiers acquired the disease the survivors acquired immunity; for this reason crowd diseases were rarely a problem for veteran troops.²⁴⁸

In addition to natural acquired immunity, some recruits lacked the artificially acquired immunity to smallpox rendered by the smallpox vaccination (or inoculation). When large numbers of soldiers lacked immunization, the army could be vulnerable to a smallpox epidemic,

²⁴⁵ Scott, *A History of Tropical Medicine*, vol. I, 50.

²⁴⁶ Kiple and Kiple, “Black Yellow Fever Immunities,” 421; A.C. Allison, “Protection Afforded by Sickle Cell Trait Against Subtertian Malarial Infection,” *The British Medical Journal* 1, No. 4857 (Feb. 6, 1954): 290-294

²⁴⁷ R.A. Alger, *The Spanish-American War* (New York: Harper & Brothers Publishers, 1901), 272-273; Gibbons et al., “Dengue and US Military Operations,” 623.

²⁴⁸ “Experience has shown too, that, under like conditions, troops raised newly, in rural districts, will suffer from sickness twice as much as those taken from cities, and about four times as much as seasoned soldiers.” U.S. Army Surgeon General, *Report of the Surgeon General of the Army for Fiscal Year 1897* (Washington: GPO, 1898). 38.

such as happened to the Continental army outside of Quebec in 1775.²⁴⁹ Even during the Spanish-American War, the need to vaccinate troops could delay training.²⁵⁰

Overcrowding

Overcrowding, especially when combined with poor sanitation and hygiene, frequently led to the outbreak of disease. The most common disease associated with crowded conditions is typhus. This happened so often in hospitals that one term for typhus was “hospital fever” (also ship fever, jail fever, etc.). History is replete with typhus epidemics originating among military patients. Prinzing identifies typhus in military hospitals at the siege of Nantes (1791); after Austerlitz (1805); and in Vienna during the same year, all resulting from overcrowding. In the cities of Thorn, Bromberg, and Culm, the disease spread from military hospitals to the civilian population. In Vilna²⁵¹ and Oriel during Napoleon’s retreat from Moscow (1812), tens of thousands of French prisoners died after being abandoned in overcrowded hospitals run by their Russian captors; in fact almost all of the captured French prisoners in Russian captivity died from typhus fever.²⁵² Many other examples of typhus outbreaks in hospitals during this period exist; it was particularly bad during sieges.

Overcrowding could also easily contribute to the spread of diseases requiring direct contact, particularly those spread as aerosols. During the US Civil War, “Overcrowding of tents and quarters was a fruitful mischief. This was especially true during night and during bad weather.

The air of those places became quickly foul – loaded with organic emanations ...[with] a strong

²⁴⁹ Becker, “Smallpox in Washington’s Army,” 399-415.

²⁵⁰ Col. Greenleaf complained that in the training camps such as Camp Alger and Camp Thomas, “The largest number of sick is from the results of vaccination, the arms of the men being so sore as to prevent them temporarily from performing duty.” *Dodge Commission Report*, vol. 1 (Appendices), 613.

²⁵¹ Sometimes spelled Wilna or Vilnius.

²⁵² Prinzing, *Epidemics*, 96, 98, 101, 117-8.

‘animal odor,’ the more diffuse and powerful when the personal cleanliness of the men had been neglected.” Doctors of the time thought the smells were connected with disease-causing miasmas, so they emphasized odors, but there is no question that these close quarters contributed to the crowd diseases and respiratory illnesses.²⁵³

Multiple Diseases

Catching one disease does not make one immune from any other; it was not uncommon for soldiers to catch more than one disease. One of the difficulties in determining exactly what disease broke out among troops during any conflict during this period (largely before germ theory and reliable diagnostic tests for disease) is the fact that multiple diseases were described as various aspects of a single disease. Although the latter phenomenon is typically the result of patients each with different single diseases being lumped together under a single diagnosis, it is certain that some patients did in fact present with more than one disease. A classic example of this problem is “Walcheren fever” (discussed previously in Chapter 2); to this day, medical historians are uncertain about what diseases constituted this epidemic; almost all, however, appear sure that more than one disease is involved.²⁵⁴ “Typho-malaria” is another possible example of two diseases being present (typhoid and malaria), although as mentioned previously it is thought that most cases of this hypothesized nineteenth century disease were simply typhoid.

²⁵³ Flint, ed., *Causation and Prevention of Camp Diseases*, 10-11.

²⁵⁴ A separate but related problem is the fact that disease symptoms can change over time, and there are historical diseases that appear to have either died out or changed so significantly that they are unrecognizable in present form. For a discussion of Walcheren fever, see Howard, “Walcheren 1809,” 1642-5; Robert M. Feibel, “What Happened at Walcheren: The Primary Medical Sources,” *Bulletin of the History of Medicine* 42, No. 1 (Jan./Feb., 1968): 62-79.

It was also possible for soldiers to catch more than one disease, either concurrently or consecutively. Nelson mentions in *Twentieth Century Practice* that he had patients in malarial regions convalescing from yellow fever catching malaria while still recovering from the fever.²⁵⁵

²⁵⁵ Nelson, "Yellow Fever," 472.

Effects of Disease on Military Campaigns

Disease has affected military campaigns as long as there have been wars and disease. In cases where there were large numbers of casualties (sick and dead) during a specific battle, military historians have noted the effect when losses to one or both sides reduced combat effectiveness and hence influenced the combat outcome. However, histories of wars, campaigns, and battles²⁵⁶ have often omitted the effects of disease outside of direct losses at times of immediate conflict – and this overlooked significant effects of epidemic disease on the outcome of war. This section will discuss the various effects that disease can have on war, campaigns, and battles that have often been overlooked by military historians and do not appear to have been systematically studied. The section will begin with a summary, followed by a more detailed discussion of each primary effect. The case studies and the examination of the Spanish-American War will demonstrate how these effects caused changes in military outcomes for specific campaigns.

Where and When to Fight

A war may be fought in many fronts; one of the objectives of a warfighting strategy is to choose where to engage the enemy. This decision is typically available to the side starting an offensive campaign but even defenders, faced with an enemy offensive, can choose where to

²⁵⁶ The difference between wars, campaigns and battles appears obvious, yet they are often used interchangeably when in actuality they refer to significantly different activities. A battle occurs when military forces come into contact and fight; battles come in different flavors such as fixed battles in open terrain, retreats and pursuits, invasions, attack and defense of fixed field fortifications, sieges, etc. This level of warfare involves tactics (the procedures used to fight). A campaign is a military operation designed to achieve a specific purpose, such as the seizure of enemy territory or key cities. A campaign normally includes several battles before it either achieves its objectives or one or both forces quit. Campaigns are fought at the operational level of warfare. Wars are a series of one or (typically) more campaigns fought in order to achieve a political objective; strategy is used to conduct wars. An example of a war is the US Civil War; an example of a campaign within that war is Sherman's March to the Sea in the fall of 1864; the example of a battle is the battle of Shiloh.

hold and where to yield. The perception of epidemic disease has sometimes affected the choice of where to fight; these perceptions were typically grounded in the reality of previous experiences in territories where certain diseases were endemic. West Africa was a graveyard for would-be European adventurers in the nineteenth century; countries such as Britain and France both abandoned plans to build posts and military bases due to losses from diseases such as malaria, typhoid, and yellow fever.²⁵⁷

Sometimes the losses due to disease were too great, and the military campaign had to end. Countries avoided sending troops to these areas when the risk of loss of troops outweighed any advantages. For example, the British successfully seized West Indian islands from the French at the beginning of the War of the French Revolution (1793-98). However, the death rate due to disease among the occupying troops was so high that they were forced to abandon their conquests. A contemporary British account poetically states that the British and Spanish soldiers “dropped like the leaves of autumn.” So many Englishmen died that often the British could only maintain defensive positions.²⁵⁸ Another example is the withdrawal of the Walcheren Island expeditionary forces in 1810 due to losses from “Walcheren fever.”²⁵⁹

Mosquito-borne diseases such as malaria and yellow fever frequently have infection rates that vary by the season, depending upon the characteristics of the mosquitoes involved. This fact has been known for centuries, based on observation of the timing of disease outbreaks among military and civilian personnel stationed in tropical and other endemic disease regions. Military physician Robert Jackson (1750-1827), who served with the British Army in America and the West Indies, closely observed the health of soldiers serving in tropical areas, writing a book

²⁵⁷ Curtain, *Disease and Empire*, 3-5.

²⁵⁸ Ott, *The Haitian Revolution*, 81. Quote from Bryan Edwards, *An Historical Survey of the French Colony in the Island of San Domingo* (London: John Stockdale, 1797), 162.

²⁵⁹ Smallman-Raynor and Cliff, *War Epidemics*, 106.

specifically about the febrile diseases endemic to the West Indies, in particular Jamaica.²⁶⁰

Medical statistics began to be formalized in the nineteenth century. In 1826, the British government appointed a commission to study the reasons for the tremendous losses in Sierra Leone in 1825 and 1826 (86% of the garrison died in the first year and 73% the next). Their report painted the region as uniformly inhospitable; no region (other than possibly the higher, dryer ground in the interior) appeared to be healthy, and there appeared to be no problems with sanitation or the personal hygiene and actions of the individual soldiers.²⁶¹ Dr. Budin, a French military physician, published in 1846 *Statistics of the Sanitary Condition and Mortality of Forces, by Land and Sea, as influenced by Season, Localities, Age, Race and National Characters*, which compared the losses faced by armies between disease and enemy action; he concluded that the loss due to disease was significantly greater. Complicating the issue, however, was the fact that deaths due to disease varied significantly depending upon whether or not there was an epidemic outbreak: “In tropical regions the annual number of deaths ranges within very wide limits from one year to another so that the mortality of a single year cannot serve as a basis for estimating the mean mortality of these countries.”²⁶²

Later observers were more willing to assign expected mortality rates to particular areas. A suitably middle-named James Africanus Horton, MD reported in 1867 on his experiences in West Africa in *Physical and Medical Climate and meteorology of the West Coast of Africa, with Valuable Hints to Europeans for the Preservation of Health in the Tropics*.²⁶³ In addition to

²⁶⁰ Jackson, *A treatise on the fevers of Jamaica*, cited previously.

²⁶¹ Curtin, *Disease and Empire*, 15.

²⁶² Scott, *A History of Tropical Medicine*, vol. I, 43, 47; M. Budin, *Statistics of the Sanitary Condition and Mortality of Forces, by Land and Sea, as influenced by Season, Localities, Age, Race and National Characters* (Paris, 1846), 528. Budin was the Chief of Medicine at the Military Hospital at Versailles; his work won a prize in public hygiene in 1846.

²⁶³ James Africanus Horton, *Physical and Medical Climate and meteorology of the West Coast of Africa, with Valuable Hints to Europeans for the Preservation of Health in the Tropics* (London: John Churchill & Sons, 1877).

detailed descriptions of the weather, climate, and geography of West Africa, Horton followed the advice of Hippocrates, to whom he attributes the following wisdom: “Whoever would investigate medicine properly, and practise it successfully, should first consider the seasons of the year and their different effects; the winds common to all countries, and those peculiar to each locality; the aspect of towns and cities in relation to the winds and rising of the sun; whether the, ground be naked and deficient in water, or wooded and well watered; and whether situated in a hollow, confined locality, or on an elevated and cold site.” Horton uses his detailed studies of the weather, climate, and geography to advance various theories about the “disease climate” of West Africa, such as “the greater number of diseases, and especially those which belong to the class of neurosis, are occasioned by the exaggerated influence of general electricity, of which clouds, storms, and marshy regions are the most fruitful sources.”²⁶⁴ He makes a common error when considering natural correlations of factors and attributes a cause and effect to these correlations, concluding for example that “The quantity of ozone in the atmosphere has an indisputable effect on the influence of fever in malarious districts; when it exists in large quantities cases of fever are generally few, and when in small quantities, fever is more frequent and of longer duration,” which justifies the emphasis on electricity, which he says contributes to an increase in atmospheric ozone.²⁶⁵

Although the tropical regions were well-known to be death traps for European troops as early as the 18th century, military planners were slow to take disease into account in other areas despite previous experiences. For example, Walcheren Island “was known to be sickly, a fact noted by Sir John Pringle in his *Observations on the Diseases of the Army*, which clearly describes the

²⁶⁴ Ibid., 205, 212.

²⁶⁵ Ibid., 220.

fevers and their time of occurrence among British troops stationed there in 1747.”²⁶⁶ Despite that institutional knowledge, British commanders ignored the danger of disease when planning the expedition there in 1809. The tremendous losses due to disease in that expedition, however, led to changes in British Army medicine and military planning; generals in the British and other armies began to pay more attention to military doctors and reports of endemic illness.²⁶⁷

The scheduling of warfare around the “fever season” reached its height in the Third Anglo-Ashanti War (1873-74); General Sir Garnet [later Lord] Wolseley conducted a relatively fever-free campaign in West Africa by specifically scheduling the campaign to avoid months with historically high disease rates.²⁶⁸ This is discussed in more detail in the case study on the campaign found in Chapter 5.

Duration (Length of campaign)

One of the critical factors in whether or not a disease outbreak can change the outcome of a military campaign is time – the length of time soldiers remain in any one place or region where they are susceptible to becoming infected by disease. Both Lord Wolseley in the Third Anglo-Ashanti War and General William Shafter in the Spanish-American War planned a brief “smash and grab” campaign that would minimize the exposure of their troops to diseases endemic in

²⁶⁶ Feibel, “What Happened at Walcheren,” 63. Scott describes other experiences which should have been known to the British when they were planning the expedition: “Previous experience, when a Scottish regiment in the Dutch service had been known to lose their whole numbers in three years, was ignored; it was known that the French Army annually lost one-third of its complement there, and a Dutch corps, which on arrival in 1806 was 800 strong, by 1809 had become reduced to eighty-five.” (Scott, *A History of Tropical Medicine*, vol. I, 47).

²⁶⁷ Scott, *A History of Tropical Medicine*, vol. I, 43. For an example of this growing awareness in senior military circles as the 19th century progressed, a lecture at the Royal United Service Institution in 1874 was given entitled “Sanitary Precautions to be observed in the Moving and Camping of Troops in Tropical Regions.” *Royal United Service Institution Journal* 18 (1875): 114-135.

²⁶⁸ Byron Farwell, *Queen Victoria’s Little Wars* (New York: W. W. Norton & Company, Inc, 1985), 191.

their respective theaters of war.²⁶⁹ All diseases require some incubation time before symptoms manifest. For diseases that are transmitted through poor sanitation (e.g., cholera, dysentery, and typhoid), it also takes time for the campsites, siege locations, or defensive works to become contaminated with infected waste and for the disease to take hold. Typhus becomes epidemic when everyone has become lousy; other diseases require time for an outbreak to turn into an epidemic.

The presence of epidemic disease that could not be avoided created a race for time whenever vulnerable soldiers began a military campaign. Commanders hoped to achieve their military objective(s) – take the city, defeat the enemy army, etc. – quickly enough that epidemic disease never broke out or at least did so after the military objective had been attained. The examination of the Spanish-American War later in this dissertation will show this race for time during the Cuban campaign to capture or destroy the Spanish fleet and land forces located in Santiago de Cuba – a race the United States almost lost. Lord Wolseley declared victory and returned home to Britain when he started to lose the race during the Third Anglo-Ashanti War, despite the fact that the enemy forces had not been defeated and the original military objectives not attained (see case study on this conflict in Chapter 5).

Recruitment and Choice of Troops

The perceived lethality of fever regions caused officers and men to avoid service and inhibited recruitment. This made it difficult to raise and send experienced troops to tropical and

²⁶⁹ Woseley's comment is from the quote cited in the previous footnote (ibid). Shafter later testified that "I had made up my mind before we reached Cuba that whatever we did at that season had to be done very quickly. I had been in the yellow-fever country and knew that no matter what precautions were taken men would get it and other fevers, and it was only a question of the strength of the command which would decide how long they would last..." Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3200.

other regions with endemic disease. When the British sought to send soldiers to the West Indies for service, they too found it difficult to raise troops to send to this region. They were unwilling to send veteran troops to a region where high losses due to disease were expected. The same was true of Africa; the British African Squadron and West African posts were known to have the highest rate of disease among all naval and army posts across the globe. The word among sailors was to “Beware and take care of the Bight of Benin, There’s one comes out for forty goes in.” One example was found in Gambia in 1825; when the British attempted to locate a military post with 108 soldiers, just 21 remained alive four months later.²⁷⁰

The perceived lethality caused European countries to recruit black and native troops for service in these areas because of their perceived immunity to these tropical diseases.²⁷¹ As late as the Spanish-American War, the US Army established Negro volunteer regiments on the basis of their perceived “immunity from diseases incident to tropical climates,” as well as white regiments formed from white volunteers who had survived yellow fever (thus having acquired immunity); these units were known as the “Immune Regiments.”²⁷²

The British West Indian Regiments were originally raised in the West Indies during the Napoleonic Wars by recruiting from free and enslaved blacks on the islands. This was done out of necessity; mortality rates among European troops sent to the West Indies could be as high as

²⁷⁰ Christopher Lloyd, *Medicine and the Navy 1200- 1900*, vol. IV: 1815-1900 (Edinburgh: E. & S. Livingstone Ltd., 1963), 159, 156.

²⁷¹ Native troops from the area of operations were often immune to diseases that, when incurred in childhood, yield lifelong immunity – yellow fever was the most prominent of these diseases. Black and native troops imported from other areas were perceived to be immune but were usually not – for example, the death rate from yellow fever was just as high among black settlers brought from England to settle African posts as their white English neighbors. Nevertheless, this perceived immunity caused military commanders to choose black or native troops even when they were not as well trained, equipped, or prepared as their European counterparts.

²⁷² Fletcher, “The Black Volunteers in the Spanish-American War,” 49. Unfortunately the black volunteers came from the same disease environment as whites and thus were still susceptible to the disease, while many of the white volunteers lied about prior exposure in their fervor to enlist – so many of the “immunes” were in fact susceptible to yellow fever.

89%.²⁷³ Blacks were first recruited for colonial militias during times of peace and during earlier wars; when war first broke out between Revolutionary France and the First Allied Coalition (1792), the West Indian planters (both British and French) asked for regulars from Europe to protect the wealthy sugar islands. Slaves had been recruited into the British military structure (originally as servants to the regular soldiers) as early as 1662.²⁷⁴ The regular troops first sent by the British government were of little use, composed of undisciplined men that paid little attention to their health; furthermore, their barracks were located in marshy areas that led to endemic malaria and yellow fever. The British Army on the islands was poorly supported; the troops sweated in uniforms intended for temperate regions while being poisoned by “new rum” made in the islands with toxic lead levels. The men received little assistance from doctors recruited using a system “rife with abuses.”²⁷⁵

Blacks were assumed to be immune to yellow fever in particular; this perception became common by the 1790s. Robert Jackson had noted in his studies of disease in Jamaica that blacks born in Africa were immune to the disease. Although black racial immunity from yellow fever is controversial and possibly false, and the perception that blacks born in the West Indies retained the immunity due to racially-based biological differences between white and black people was false, yellow fever was endemic in many of the places in West Africa where slaves originated, so there was a substantial acquired immunity present in Africans recently arrived to the islands

²⁷³ This occurred among the British expeditionary force sent to Saint Domingue between 1794 and 1798. Scott notes that “the British force of 10,000 sent to San Domingo was reduced to 1100, a loss of 89 per cent., without a blow being struck or the enemy being sighted” (Scott, *A History of Tropical Medicine*, vol. I, 48).

²⁷⁴ “To conciliate the good will of the troops in Jamaica and to urge them to cultivate the soil, he [Charles II] presented 300 slaves as a royal gift to the officers to be divided among them; some years later James II followed his brother’s example” (Buckley, *Slaves in Red Coats*, 2).

²⁷⁵ Ibid.

regardless of any possible innate immunity.²⁷⁶ Troops were urgently needed in the islands due to losses due to disease and other causes among European troops, who were not replaced. They were also needed because “revolutionary ideals” originating in the French Revolutionary concept of equality spread like wildfire among the enslaved blacks in the West Indies, which caused local revolts that required permanent garrisons even in occupied islands.²⁷⁷ Existing West Indian regiments were at first augmented with blacks, who were used for fatigue duties as well as for garrison responsibilities. Finally, two black West Indian regiments (later six) were permanently established in 1797. European troops became increasingly unavailable for West Indian service as the war progressed, so the black regiments saw extensive service between 1803 and 1813, to include participation in the British assault in New Orleans.²⁷⁸

The use of Indian or sepoy troops in British India was another example of the use of native labor to meet military requirements. As early as 1803, the British government considered sending the black West Indian regiments to India for service there. West Indian troops were also sent to Africa partly due to their perceived immunity to disease starting in 1818. They were engaged in the numerous campaigns against the Ashanti in West Africa.²⁷⁹ The last use of black troops based on a perceived racial immunity occurred in the Philippine Insurrection just after the Spanish-American War; two of the volunteer regiments raised for that conflict (the 48th and 49th US Volunteer Infantry) recruited African-Americans for the enlisted ranks and company-grade

²⁷⁶ Ibid., 7-8. Statistical data from that period seem to support the relative immunity of black troops. “West Indies between 1796 and 1807—hence in wartime conditions—showed an annual average mortality of 244 per thousand effectives per annum among the Europeans and an annual average of only 59.2 per thousand among those of African descent. These statistics are weak, partly because it is only probable—not certain—that these African troops were recruited by purchase in Africa, rather than by purchase from among the West Indian slaves. Nevertheless, the ratio of differential mortality was 4.1 to one in favor of the Africans. Another survey of French troops serving on Martinique and Guadeloupe between 1802 and 1807 shows an annual average death rate of 302 per thousand.” Philip D. Curtin, “Epidemiology and the Slave Trade,” 206-7.

²⁷⁷ Buckley, *Slaves in Red Coats*, 49-50.

²⁷⁸ Ibid., pp. 94-95.

²⁷⁹ Curtin, *Disease and Empire*, 52; Buckley, *Slaves in Red Coats*, 6.

officers based on the perception that “black soldiers performed better than white troops in tropical climates.”²⁸⁰

Although tropical diseases affected recruitment by race due to prior immunities (real or perceived), all recruits were subject to the camp diseases (measles, mumps, etc.) and could be subject to diseases common to military service such as severe diarrhea, dysentery, and respiratory illnesses. These hazards made it more important to recruit only young, healthy men, those who would stand up to the rigors of military service. However, it was possible to be considered too young; Surgeon-General Sternberg criticized his superiors for allowing the recruitment of 18- to 21-year-olds into the Volunteer Army during the Spanish-American War, as he was certain they would “break down readily under the strain of war service.”²⁸¹

Medical Logistics

Disease could impose a tremendous burden on a military force entirely in addition to any loss of troops, temporarily or permanently, due to the illness. This burden was imposed from the need to care for and evacuate the sick. The logistical requirements associated with tending to the sick and wounded could be challenging, especially when conducting operations in difficult terrain far from ports, rivers, or other natural transportation routes. For example, after a typhoid epidemic broke out at Bloemfontein, South Africa during the Boer War, causing 10,000 to be hospitalized, there was a scandal over the large numbers and poor treatment of the sick troops. The problem was not caused by a lack of medical supplies, hospital sets, or food required by the sick men, it was the fact that the army was unable to transport the needed supplies to the troops. The men

²⁸⁰ Cunningham, “The Black “Immune” Regiments,” 7.

²⁸¹ *Report of the Surgeon-General, 1899*, 37

were stationed hundreds of miles from ports and supply depots, relying on a single-track railway subject to periodic attacks by Boer saboteurs. An investigating commission concurred.²⁸²

Furthermore, the requirement to use what transport that was available had deleterious effects on the campaign. The available transport became almost entirely dedicated to getting what supplies they could move to the seriously ill men; as a result the remaining armed forces were starved of supplies, significantly delaying a planned attack.²⁸³

The treatment of troops during the Boer War was poor by end of the century standards. However, that treatment was in stark contrast with soldiers' fates earlier in the century. In his retreat from Moscow, Napoleon left large numbers of sick and wounded behind in the city of Vilna. Russian soldiers reoccupying the city pillaged the hospitals in search of valuables and abused the men. Soldiers wasted away without food or water while their bodies were consumed by typhus. The Russians threw both the dead and dying out the windows of the hospitals, where they froze in the streets.²⁸⁴ The treatment of soldiers was particularly harsh during sieges. During the siege of Danzig (1813), Prinzing quotes a contemporary observer, Friccus, on conditions in the city: "As there were no hospitals, beds, or remedies, many died from lack of care, and at the same time infectious diseases broke out and made great havoc. A heap of dead men and horses was a common sight in the streets, and in a short time many thousands of the troops, as well as of the inhabitants, were carried away."²⁸⁵ During the Napoleonic Wars, there were no formal procedures for the removal of wounded from the battlefield other than a few regimental bandmen. Wounded soldiers could lie on the battlefield untended, without medical care, food,

²⁸² Stephen A. Pagaard, "Disease and the British Army in South Africa, 1899-1900," *Military Affairs* 50, No. 2 (April, 1986): 75.

²⁸³ Leigh Canney, "Typhoid, the Destroyer of Armies, and its Abolition," *Royal United Service Institution Journal* 45, Part 2 (July/Dec., 1901): 1455.

²⁸⁴ Zamoyski, *Moscow 1812*, 515. See also Napoleon's treatment of the sick during his retreat from Syria in the case study on the Napoleonic Wars in Europe.

²⁸⁵ Prinzing, *Epidemics*, 307.

water, or shelter, for hours or even days. Even when collected from the site of their wounding, the wounded were thrown into open carts for long trips to general hospitals far from the battlefield.²⁸⁶ Wounded and sick were often sent to the same hospitals, increasing the likelihood of nosocomial²⁸⁷ infections among the wounded soldiers.

Another major impact of epidemic disease was the requirement for personnel to care for the sick, preferably composed of individuals immune to the disease being treated. An entire regiment (24th Infantry) was diverted from combat to caring for the sick outside of Santiago during the Spanish-American War. This regiment was chosen because it was one of two Regular infantry regiments manned by African-Americans, who were assumed to be immune to yellow fever (and possibly also malaria) due to their race. Unfortunately, these soldiers born and raised in the temperate regions of North America were no more immune than their white counterparts; 95% of the regiment succumbed to illness.²⁸⁸

The increased burden that the sick and wounded posed for the enemy (as opposed to fatalities) was appreciated by soldiers; as early as the Revolutionary War, a British surgeon claimed that American troops deliberately aimed at soldiers' legs in order to wound rather than kill; he stated that this was done "to leave them as burdens on us, to exhaust our provisions and to engage our attention."²⁸⁹

²⁸⁶ Richard L. Blanco, "The Development of British Military Medicine, 1793-1814," *Military Affairs* 38, No. 1 (Feb., 1974): 5.

²⁸⁷ Disease incurred while hospitalized. Modern hospitals have infection control specialists that monitor the rate of nosocomial infections and lead programs to reduce the disease rate.

²⁸⁸ Nelson Miles, *Serving the Republic: Memoirs of the Civil and Military Life of Nelson A. Miles* (New York: Harper & Brothers, 1911), 93. Of 456 black soldiers in the 24th Infantry, only 24 escaped becoming sick. Edward M. Coffman, *The Regulars: The American Army, 1898-1941* (Cambridge, MA: The Belknap Press of Harvard Univ. Press, 2004). 11-12.

²⁸⁹ Cirillo, "Two Faces of Death," 125.

Morale

High rates of disease, especially when they occurred within a short period of time or when sickness appeared certain, had a significant negative impact on morale. British soldiers in Saint Domingue (1794-97) became so depressed at their prospects that they attempted to accelerate the progress of their disease in order to hasten their death, thereby minimizing their suffering.²⁹⁰ West African service was so feared that garrisons manning posts in Sierra Leone and the Cape Coast were formed largely of soldiers convicted of military crimes whose sentences were commuted for “volunteering” in what became called the “condemned corps.”²⁹¹ Soldiers warned each other about the places to avoid; British troops called Fort Charlotte, Nassau in the West Indies “The Abode of Death.”²⁹²

In tropical areas, deaths from disease were so frequent that some units discontinued holding funerals for the sick. George Pinckard noted in 1798 that “Among the soldiers of our own battalions, its [the military funeral] disuse has been found both wise and necessary, for were it to be employed on all occasions, in these climates, it might, not only too often call those in health to the performance of a distressful duty, but it would also become a sadly frequent memento to the sick, by reminding them that a comrade was journeying, whither it might soon be their fate to follow him—the effect of which, added to the common apprehension with respect to disease, might produce a degree of depression, which no means could remedy.”²⁹³ Funerals were also discontinued in Cuba during the Spanish-American War.²⁹⁴

²⁹⁰ Ott, *The Haitian Revolution*, 92. Quote from Lt. Howard, *Journal of the Army of Occupation in Haiti from Feb. 8, 1796 to Jan. 1798*, vol. 1. (Boston: Boston Public Library, 1798), 64.

²⁹¹ Peter Burroughs, “The Human Cost of Imperial Defence in the Early Victorian Age,” *Victorian Studies* 24, No. 1, Victorian Imperialism (Autumn, 1980): 11, 14.

²⁹² Scott, *A History of Tropical Medicine*, vol. I, 298.

²⁹³ George Pinckard, *Notes on the West Indies* vol. 3 (London: Longman, Hurst, Rees, and Orme, 1806), 232.

²⁹⁴ Maj. Philip Reade, report dated July 28, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 384.

Sometimes effective treatment of disease could reverse opinions and restore morale. Blanco credits the actions of the doctors accompanying the Continental Army in the Ticonderoga campaign of 1777 with “restoring the morale and the efficiency of the army.”²⁹⁵ Napoleon cheered up his troops and calmed their fears of the plague while at Jaffa; he visited the plague hospital and tended the sick soldiers in that institution.²⁹⁶ Mistreatment of sick soldiers had the opposite effect; when Napoleon ordered the remaining plague patients in Jaffa poisoned when he abandoned the city, the troops hated him and grew greatly discontented.²⁹⁷

Asymmetry

Asymmetry with respect to disease occurred when one force had a greater susceptibility to disease or a lesser occurrence of disease than its opponent; in these situations the military impact of disease was sharply increased. There were several common situations where these conditions would occur: sieges; bringing non-immune troops into endemic disease areas and fighting native (largely immune) troops; and with diseases such as smallpox where vaccinations were available within our period of interest (1750-1900) when one side was vaccinated and the other side was not. Almost any of the sieges of the Napoleonic era are examples of asymmetry in disease susceptibility; Prinzing singles out the sieges of Mantua (1796-97), in which half of the garrison of 80,000 men were hospitalized for dysentery or typhus and over 10,000 died; Danzig (1813), where only 16,532 men were left at the time of surrender out of a total of 35,000 men at the start of the siege, most dying of typhus; and Torgau (1813) where approximately 30,000 men died of

²⁹⁵ Richard L. Blanco, “Military Medicine in Northern New York,” 53. Blanco concluded the article by stating that “healthy troops were as essential as successful strategy and tactics for victory on the battlefields of the American revolution” (p. 58).

²⁹⁶ Herold, *Bonaparte in Egypt*, 279.

²⁹⁷ *Ibid.*, 309.

either “an acute attack of dysentery, which rarely lasted longer than two weeks and then terminated in either death or recovery, or else as a chronic, dysenteric diarrhea, which caused general weakness and finally death,” or else as typhus fever. Prinzing concludes by quoting a Prussian officer who witnessed the outcome, who stated that the military hospitals of Torgau “represented scenes of horror such as repel human nature, and such as one must actually witness in order to appreciate fully their dreadfulness.”²⁹⁸ All of these cases occurred when the besieged city was stricken with disease due to malnutrition and starvation, lack of hygiene and public sanitation, and overcrowding inside the city. The besieging army generally had plenty of supplies and food and it was usually possible to avoid overcrowding and unsanitary conditions, although not all commanders of besieging troops emphasized basic sanitary precautions.

The typical situation between the besiegers and besieged was reversed during the French and British investment of Sebastopol in the Crimean War. Cholera broke out in the British and French camps; it killed 8,284 in the French army and 1459 in the British army the first year.²⁹⁹ In the second winter of the war, typhus appeared and killed another 5689 troops, while 18,400 troops were hospitalized for cholera of which 11,000 died. Scurvy also broke out in the camp and caused over 23,000 cases with 639 deaths.³⁰⁰ In this example it was the besieging army that had poor supplies, overcrowded tents and shelters, and poor sanitation.

A classic case of asymmetry resulting from vaccinated versus non-vaccinated troops occurred during the American Revolution. The Continental Army did not require vaccinations for smallpox during the first two years of the war. This decision severely limited Washington’s options and threatened his army outside of Boston in 1775; the asymmetry in smallpox

²⁹⁸ Prinzing, *Epidemics*, 306, 311, 314-5; quote on p. 316.

²⁹⁹ Prinzing, *Epidemics*, 171.

³⁰⁰ Lloyd, *Medicine and the Navy*, 151.

susceptibility also resulted in the failure of the American invasion of Canada during the same year. British troops, on the other hand, were much more likely to have been exposed during childhood and if not had largely been inoculated upon joining the British army.³⁰¹

Asymmetry in susceptibility to yellow fever and malaria was common in West Africa between European and African soldiers during the European campaigns to conquer Africa in the late nineteenth century. African deaths from disease were about the same as European troops experienced whenever they were stationed at home, while fatality rates to Europeans during epidemics could exceed 50% of the entire force.³⁰² This was also true between European soldiers and the creole inhabitants of the Caribbean islands during the eighteenth and nineteenth centuries (see case study on the Caribbean, Chapter 5).

Mobilization and Demobilization

It has been noted by many authors that “war and pestilence went together.”³⁰³ Soldiers coming from relatively disease-free rural environments suffered from crowd diseases such as measles and mumps when brought together with other individuals exposed to these diseases. New recruits could also be the source of epidemic disease outbreaks when they bring an infection with them. After troops were mobilized for the Spanish-American War, a typhoid epidemic swept across training camps in the United States, causing over 20,000 men to become sick and killing 1,590 of them.³⁰⁴ An investigation after the war concluded that over 90% of the volunteer regiments had cases of typhoid fever within eight weeks of mobilization, which was

³⁰¹ Cirillo, “Two Faces of Death,” 125-6.

³⁰² Curtin, *Disease and Empire*, 10.

³⁰³ Evans, “Epidemics and Revolutions,” 133.

³⁰⁴ Cirillo, “Fever and Reform,” 363. See also the subsection *We Also Served – the War as Seen From the Training Camps in the United States* in Chapter 12.

typical of European military campaigns in the latter decades of the nineteenth century.³⁰⁵ Almost a quarter of the French troops came down with typhoid during the Tunisian campaign of 1881. The disease was traced back to troops mobilized in France as replacements for earlier losses during the campaign.³⁰⁶

Disease could also cause significant problems for demobilization. British troops discharged after the Crimean War brought epidemic typhus to Britain in 1856 and 1857.³⁰⁷ Yellow fever was assumed to be spread by fomites (materials contaminated with yellow fever germs) during the late 19th-century, and so the US government initially refused to evacuate severely ill soldiers from Cuba in 1898 because they feared that the shipping would be contaminated and also that the returning troops would cause a yellow fever outbreak upon return to the United States (for details, see *Treating the Survivors – Cuba and Camp Wikoff* in Chapter 12). Troop movements to and from camps to embarkation points and to and from the Caribbean were credited with causing an epidemic of dengue in Florida in 1898-99, while typhoid cases filled the hospitals of New York at the same time when supposedly well men who were actually carriers of the diseases were discharged from the army.³⁰⁸

Disease epidemics occur when the causative agent is brought into contact with large numbers of vulnerable individuals. The mobilization of troops brings large numbers of men together from disparate locations, where they are quickly quartered in close contact. This provides an opportunity for a few individuals to spread the disease to hundreds or even thousands of others. One exposed to disease during wartime service, soldiers may become carriers of disease. When

³⁰⁵ Reed et al., *Abstract of Typhoid Board Report*, 168, 175.

³⁰⁶ Curtin, *Disease and Empire*, 151-152.

³⁰⁷ Prinzing, *Epidemics*, 174. The French quarantined their returning troops and avoided the epidemics.

³⁰⁸ Ehrenkranz et al., “Pandemic dengue,” 1462. This also occurred in 1918 at the end of World War One, when troops deployed in the West Indies were demobilized in Galveston (ibid., 1462-1463). “SENT HOME WITH TYPHOID: Dr. Thompson Says Soldiers with the Dread Disease are Shipped from the Camps,” *New York Times*, Sep 6, 1898, 2.

demobilized and returned to their former homes, these men can spark epidemics of diseases previously unknown in their home towns.

Outcomes

The outcomes of military operations were frequently affected by disease during the Disease Era. The outbreak of disease has determined the outcome of single battles, of military campaigns, and even of wars. Examples of battle outcomes changed by disease include the sieges of Cairo (1801) and Torgau (1813).³⁰⁹ Examples of campaigns altered by epidemics include the Quebec campaign of 1775 cited previously and both the British and the French attempts to capture Saint Domingue after the slave rebellion during the French Revolutionary and Napoleonic Wars (see case study, Chapter 5).³¹⁰ As examples of cases where disease changed the course of wars, two quotes are offered: “In the American civil war, two thirds of the estimated 660 000 deaths of soldiers were caused by pneumonia, typhoid, dysentery, and malaria, and this death toll led to a 2-year extension of the war.”³¹¹ “It is hardly debatable that the power of Napoleon in Europe was broken by disease more effectively than by military opposition or even by Trafalgar.”³¹²

These outcomes are fairly obvious, as they only occurred after one side suffered massive losses from epidemic disease. The outcomes that are less apparent are those shaped by the presence or even fear of disease that simply avoided seizing opportunities or delaying combat.

³⁰⁹ Smallman-Raynor & Cliff, *War Epidemics*, 103; Prinzing, *Epidemics*, 316.

³¹⁰ Quebec campaign: Cirillo, “Two Faces of Death,” 125-6 and Smallman-Raynor & Cliff, *War Epidemics*, 119; British invasion of Saint Domingue: Scott, *A History of Tropical Medicine*, vol. I, 48 and Ott, *The Haitian Revolution*, 86; French attempt to recapture the colony: Bray, *Armies of Pestilence*, 110 and Peterson, “Insects, disease, and military history,” no page numbers.

³¹¹ Máire A Connolly and David L Heymann, “Deadly comrades: war and infectious diseases,” *The Lancet Supplement* 360 (Dec. 2002): s23.

³¹² Zinnser, *Rats, Lice and History*, 164.

One example is found in the US Civil War. During the Civil War, the dangers of the South's "sickly season" were well known to both sides. Northern commanders reacted by refusing to conduct operations in the malarious regions during the season. Southern commanders quickly realized that the North was curtailing activities in these regions; this enabled them to transfer soldiers from sickly regions to areas short of troops, reinforcing units in defensive positions and augmenting units assigned to conduct offensives in the North. This had the additional advantage of improving the health of the Southern soldiers reassigned from the pestilential zones. These decisions clearly had significant impacts on the course of the Civil War, yet the disease-driven influences on these decisions have been ignored by many Civil War historians.³¹³

Conclusion

This chapter has identified multiple ways that military operations, especially combat, increase the risk of epidemic disease outbreaks. It had also identified many different ways that epidemic disease might shape the planning and execution of military operations. Many examples from a variety of different conflicts and from a variety of primary and secondary sources were given to substantiate the validity of the various interactions between disease and warfare. Three case studies will be presented in the next chapter that illustrate how an understanding of the effects of epidemic disease on warfare can lead to failures or successes, shaping both the manner in which the campaign is fought and the outcomes that follow.

The case studies also had potential impacts on how the Spanish-American War was fought. The first case study, detailing the disastrous outcomes of various imperial ventures into the Caribbean during the 18th and 19th centuries, provided a set of lessons learned that were studied

³¹³ Bell, "'Gallinippers' and Glory," 380.

by the civilian and military leadership of that war, as well as a corpus of knowledge for the US Army Medical Department and other government medical systems (naval medical corps, US Marine Hospital Service). The second case study looks at the US Civil War, which as the last major war would form the basis for much of the planning for the next war, the war with Spain. The third case study is an extreme example of how a campaign could be fought using everything known to late nineteenth century medicine – along with significant costs and compromises of the strategic and military objectives. The Typhoid Board used British campaigns in Africa to illustrate the frequency and timing of typhoid epidemics during military campaigns, proof that US leaders (at least on the medical side) studied the lessons learned from British wars in Africa.³¹⁴ In addition, all of the Western powers freely exchanged military observers and liaisons; furthermore, all of the primary source literature on these campaigns (a wealth of printed books and magazine articles, to include the major medical journals) was easily available to these leaders. The analysis of the Spanish-American War later in this dissertation will in part examine how well the civil and military leadership of the United States used or ignored this important knowledge as the nation ventured into the world of empire building in tropical regions. The war of 1898 was fought using the military and medical knowledge of 1898 – but was that knowledge used to produce better military outcomes and to save lives? The material in Part Two: Disease and the Spanish-American War will answer this research question.

³¹⁴ Reed et al., *Abstract of Typhoid Board Report*, 211-214.

CHAPTER 4

19TH CENTURY MEDICINE AND THE DEVELOPMENT OF MILITARY MEDICINE

In order to understand the relationship between disease and military operations, it is necessary to trace the development of military medicine, which in turn was driven by advances across the civilian medical field, especially as scientific medicine became predominant late in the nineteenth century. The objective of this chapter is to lay the groundwork for understanding the role that disease and medical treatment had on one of the last major wars of the Disease Era, the Spanish-American War of 1898. In order to do so, it is necessary to step back a little further and examine how the quest for empire shaped the disease environment of the New World, and how military medicine coped with the outcomes when the microbes of the Old and New World met the product of their counterpart environments. This encounter was asymmetrical from the start; this asymmetry continued throughout the Era of Disease, although whom it favored shifted after the initial “Columbian Exchange” of the late 1400s and early 1500s.

Early Imperial Medicine, 1500 – 1850

While writing *The Rise of the West*, William H. McNeill asked himself how Cortez could have possibly captured the Aztec Empire with less than 600 men.³¹⁵ The fall of the Aztecs was only the beginning of European conquests of vast areas of the world; just a handful of Spanish warriors defeated the Inca Empire and went on to occupy vast areas of the New World. Other European powers joined in, taking over most of the American continents. There have been many explanations of how these conquests helped put the West at the top of the world order by 1900. One explanation is the “military superiority” thesis, which argues that European advances in military technology enabled Western dominance from 1500 – 1900.³¹⁶ Jared Diamond linked military superiority, the Industrial Revolution, and disease together as contributors to European success.³¹⁷ Alfred Crosby argued that the wealth of species introduced from the New World to the Old sparked an agricultural revolution that in turn created a population boom in Europe, creating a desire for new territories to populate and exploit while the disease carried from the Old to New World depopulated much of the Americas, leaving it open to conquest and settlement.³¹⁸

³¹⁵ McNeill discusses this in the Introduction to his book *Plagues and Peoples* (William H. McNeill, *Plagues and Peoples* (New York: Anchor Press/Doubleday, 1976), 1). His earlier text *The Rise of the West: A History of the Human Community* (Chicago: University of Chicago Press, 1963) was a best-selling winner of the 1964 National Book Award that sought to explain Western dominance of the world as a product of constant interaction between cultures dating back to the Neolithic Age.

³¹⁶ The major proponent of this hypothesis was Geoffrey Parker in *The Military Revolution: Military Innovation and the Rise of the West, 1500-1800* (Cambridge: Cambridge University Press, 1988). See also _____, “The “Military Revolution,” 1560-1660--a Myth?” *The Journal of Modern History* 48, No. 2 (June, 1976): 195-214; John U. Nef, “Wars and the Rise of Industrial Civilization, 1640-1740,” *The Canadian Journal of Economics and Political Science* 10, No. 1 (Feb., 1944): 36-78; William R. Thompson, “The Military Superiority Thesis and the Ascendancy of Western Eurasia in the World System,” *Journal of World History* 10, No. 1 (Spring, 1999): 143-178.

³¹⁷ Diamond, *Guns, Germs, and Steel*, previously cited.

³¹⁸ Crosby wrote that “The coming together of the continents was a prerequisite for the population explosion of the past two centuries, and certainly played an important role in the Industrial Revolution. The transfer across the ocean of the staple food crops of the Old and New Worlds made possible the former.” Alfred Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, 30th Anniv. Ed. (New York: Praeger, 2003), 166. This theme was later expanded in Alfred Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900 –*

In recent years anthropologists, historical demographers, geographers, and epidemiologists have joined historians in examining the outcome of the first interactions between Europeans and natives in the New World. There is no debate that this first contact resulted in waves of epidemic disease striking the Indian³¹⁹ population; however, the extent of this effect depends on the size of the pre-contact Indian population.³²⁰ At the time, there were two explanations for the rapid loss of Indians: the “Black Legend” of Spanish cruelty reported by Friar Bartolome de Las Casas and the “Divine Providence” theory that God removed the Indians to open the lands to European settlers.³²¹ Modern historians attribute the losses to Indian vulnerability to disease they previously had no exposure to and therefore no acquired immunity, initially largely smallpox. Later measles, whooping cough, influenza, and other “crowd” diseases began to take their toll.³²² Although there is a continuing debate on whether or not syphilis was transferred from the New

1900 (Cambridge: Cambridge Univ. Press, 1986). Africa also benefited greatly from the introduction of New World foods such as corn (maize) and the sweet potato.

³¹⁹ Although the term “Indian” is technically inaccurate when referring to the native peoples of the Americas, the more accurate term “Native American” is commonly associated with the North American tribes of indigenous people. The discussion here deals with the natives of North, Central, and South America, so the “Indian” appellation will be used to minimize confusion.

³²⁰ There is a considerable debate about the size of the pre-contact population; it varies between about 10 million and 80 million. See Henige, “Primary Source by Primary Source?” 293-312; Cary W. Meister, “Methods for Evaluating the Accuracy of Ethnohistorical Demographic Data on North American Indians: A Brief Assessment,” *Ethnohistory* 27, No. 2 (Spring, 1980): 153-168; Henry F. Dobyns, “More Methodological Perspectives on Historical Demography,” *Ethnohistory* 36, No. 3 (Summer, 1989): 285-299; David Henige, “On the Current Devaluation of the Notion of Evidence: A Rejoinder to Dobyns,” *Ethnohistory* 36, No. 3 (Summer, 1989): 304-307; Russell Thornton, Tim Miller, and Jonathan Warren, “American Indian Population Recovery Following Smallpox Epidemics,” *American Anthropologist*, New Series 93, No. 1 (March, 1991): 28-45.

³²¹ Noble David Cook, *Born to Die: Disease and the New World Conquest, 1492 – 1650* (Cambridge: Cambridge Univ. Press, 1998), 1-3. For a discussion on Puritan beliefs on Indian tribes, see David D. Hall, *Worlds of Wonder, Days of Judgment: Popular Religious Belief in Early New England* (Harvard University Press, 1990).

³²² Cook, *Born to Die*, 28-29; Francis J. Brooks, “Revising the Conquest of Mexico: Smallpox, Sources, and Populations,” *Journal of Interdisciplinary History* 24, No. 1 (Summer, 1993): 1-29. For a discussion on the effect of measles, whooping cough, and influenza see Eric R. Wolf, “Unforeseen Americas: The Making of New World Societies in Anthropological Perspective,” *Proceedings of the National Academy of Sciences of the United States of America* 93, No. 6 (Mar. 19, 1996): 2606.

World to the Old by Columbus' sailors,³²³ with that possible exception Europeans were clearly the beneficiaries of epidemic disease in the initial conquest of the Americas.³²⁴

Crosby provided another interpretation in 1991 of the impact of the demographic losses suffered by the native populations. The massive migration of people from Europe (mostly voluntary) and Africa (mostly involuntary) over the past 500 years occurred only because the land became relatively unoccupied after the early 1500s. The Spanish conquerors and other imperial powers would have been happy to rule over Indian subjects, taxing their products and using them for involuntary service. When most of the Indians were killed by infectious disease, it created a labor shortage for the cash crop plantations and open land for settlement in the temperate regions of North and South America. Crosby concluded that this outcome changed the entire development of the American continents: if "Columbus and the sixteenth-century European colonists had been able to do what they had originally planned, there might have been no greater a proportion of Europeans crossing the Atlantic after 1492 than Normans crossing the English Channel after 1066. But then came the epidemics, which changed the colonists' plans, all American societies, and Europe – indeed, the entire world."³²⁵

After the first few decades of contact between Europeans and natives, the tide shifted and disease began to affect Europeans adversely while leaving the natives alone – the natives were the survivors of previous attacks, often immune from that exposure, while Europeans were naïve to the emergent diseases of the tropics. At the time, disease was largely regarded as an environmental factor, in both the medical and military sense. Medically, tropical diseases were considered to be the product of poisonous air emanating from polluted soil. Militarily, disease

³²³ Nathan Nunn and Nancy Qian, "The Columbian Exchange: A History of Disease, Food, and Ideas," *The Journal of Economic Perspectives* 24, No. 2 (Spring 2010): 166-167.

³²⁴ McNeill, *Plagues and Peoples*, 218-220.

³²⁵ Crosby, "Infectious Disease and Demography," 119-133; quote pp. 122-3.

was a physical factor that could impede military operations, in the same way that tropical jungles impeded troop movements. The impact of disease on military operations could not be ignored – expedition after expedition failed due to the ravages of tropical disease. As early as 1753, the medical community examined the disease rate observed when the British Army was deployed overseas. Sir John Pringle, assigned as a physician-general to the armies deployed in the Low Countries, recorded when where and how disease occurred when the army was deployed, keeping track of “our embarkations, marches, encampments, cantonments, winter-quarters the seasons, the changes of the weather, and in a word, all the circumstances that seemed to me most likely to affect the health of an army.”³²⁶ In a very sensible way, Pringle distinguished between seasons and between encampment (during deployment) and in garrison.³²⁷ All of his work was intended to provide commanders with indications on when and where troops could be deployed without risk of disease (or at least with a lower sick rate), but his work had little practical effect on British military operations.

The Biblical proscriptions on unclean behavior were cited in a directive on cleanliness issued to troops during the American Revolution. Soldiers were asked to consider when reading the Bible “that they are reading the History of a great Army... They were obliged to wash their Hands two or three Times a Day, Foul Garments were counted abominable; every Thing that was polluted or dirty was absolutely forbidden; and such Persons as had Sores or Discharges in their Skin were turned out of the Camp...”³²⁸ Washington was well aware of the danger of disease to

³²⁶ Sir John Pringle, *Observations on the Diseases of the Army*, 2nd ed. (London: A. Miller, D. Wilson, and T. Durham, 1753).

³²⁷ Ibid., 72.

³²⁸ George Washington, “INSTRUCTIONS for SOLDIERS in the Service of the UNITED STATES, concerning the Means of preserving HEALTH: Of Cleanliness,” general orders for the Army issued at headquarters, Peaks-Kill (Fisk-kill: Samuel Loudon, 1777), reproduced in Bayne-Jones, *Evolution of Preventive Medicine*, 34.

his fledgling army; he explained his decision to inoculate the army against smallpox by noting that “we should have more to dread from it [smallpox], than the Sword of the Enemy.”³²⁹

Although the American Revolution was fought in North America, the war between Britain and France was fought in the Caribbean as well. In 1783, Dr. John Rollo noted that “Experience has sufficiently shewn [sic], that the diseases which appear in the West-Indies... are in general of a very dangerous nature, and are always of an uncertain and precarious termination.” He suggested various useful measures to reduce the effects of climate, some as simple as wearing a white rather than a black hat (black was the standard soldiers’ issue), some as complex as draining swampland. He notes that “All countries have their unhealthy places, and these observation [sic] has shewn to proceed from marshes, stagnating water, and woods.” He was very conscious of the soldier’s dilemma; i.e., knowing which areas to avoid does not mean freedom from having to enter these areas for military operations; knowing what seasons to avoid does not necessarily alter the scheduling of battle.³³⁰

British experiences with the peculiar hazards of operations in the tropics began to be recognized by military physicians. Robert Jackson (1750—1827), who practiced with the British army in Jamaica, wrote two books on tropical disease: *A Treatise on the Fevers of Jamaica* (1791) and *A Sketch of the History and Cure of Febrile Diseases* (1817).³³¹ Jackson strongly disagreed with Pringle, whom he accused of having opinions “pernicious to the health of thousands.” Pringle attributed the fevers to “exhalations from swampy and moist grounds” while Jackson noted that although the fevers were clearly related to such waterlogged areas, there were

³²⁹ Washington to Dr. William Shippen, Jan. 6, 1777, Bayne-Jones, *Evolution of Preventive Medicine*, 52.

³³⁰ John Rollo, *Observations on the Means of Preserving and Restoring Health in the West Indies* (London: C. Dilly, 1783), 1; 29. The quotation uses the original spelling.

³³¹ Robert Jackson, *A Treatise on the Fevers of Jamaica* (London: J. Murray, 1791); ____, *A Sketch of the History and Cure of Febrile Diseases* (London: T. and H. Eeles, 1817). Jackson noted that “The climate of the West Indies has been fatal to the European constitution, ever since the first discovery by Columbus. To the armies and navies of England it has been particularly destructive” Jackson, *Treatise on the Fevers of Jamaica*, 391.

other factors present. In particular, Jackson disagreed with Pringle's recommendations that troops encamp near the banks of rivers, citing cases where regiments encamped in such places were quickly stricken with disease.³³² One of the difficulties of diagnosis facing these doctors was the presence of several febrile diseases in these regions, in particular both malaria and yellow fever. Jackson discussed these "fevers" (most likely malaria) separately from yellow fever.³³³ Rather than focusing on where troops should be located, Jackson emphasized the vulnerability of Europeans relative to the observed immunity of blacks recently arriving from Africa and thus recommended using only seasoned troops instead of the current practice of sending newly-raised regiments to service in the Indies.³³⁴

Benjamin Moseley was another physician assigned to the British Army in the West Indies. He published a book in 1792 specifically directed the use of troops in the Caribbean, *A Treatise on Tropical Diseases on Military Operations*.³³⁵ Although he also recommended sending troops first to Bermuda, which was relatively healthy, for a year's seasoning before being stationed in Jamaica,³³⁶ he was the first to explicitly point out the relationship between the seasons and tropical disease and apply that to military operations: "in military operations, where the choice of time and season is within the will of the directors of the enterprise, it is wonderful that they should ever be so chosen, as to defeat the very intentions of the undertaking."³³⁷ A 1780

³³² Jackson, *Treatise on the Fevers of Jamaica*, 77-8.; 82-85. Dr. John Davy also focused on location, reporting on a notoriously unhealthy post called Brimstone Hill on St. Kitts: "The barracks of this fortress are a striking example of defective construction in a sanitary point of view: the worst of them have undrained and unventilated ground floors, the flooring of boards, pervious to exhalations from beneath and to all liquid impurities from above..." Cited in Buckley, *Slaves in Red Coats*, 100.

³³³ However, Jackson also noted a febrile disease in Jamaica appeared to be different than that observed in North America as it was untreatable with "Peruvian bark" (quinine) rather than malaria which is treatable using quinine. Jackson, *Treatise on the Fevers of Jamaica*, 6, 213.

³³⁴ Ibid, 249-50, 393-4. It is interesting to note that Jackson observed that blacks and Creoles arriving from North America had been known to contract the disease (249).

³³⁵ Benjamin Moseley, *A Treatise on Tropical Diseases on Military Operations* (London: T. Cadell, 1792).

³³⁶ Ibid., 60.

³³⁷ Ibid., 134. "Wonderful" here takes on the meaning of "full of wonder," not as something great.

expedition against Spanish territories in the Caribbean failed because it was delayed by a multitude of causes and did not arrive off the coast of Nicaragua until August, when it should have arrived in January. Once the force arrived, the operations were conducted in marshy areas with “copious collections of foul vapours” during a rainy season when “the air is poisoned by noxious chilling dews.” The troops “were attacked with fluxes and intermittants [fevers]”; they “languished in the extreme misery, and gradually mouldered away, until there was not sufficient strength alive to attend the sick, nor to bury the dead.” Moseley used this expedition as an example of “the ill effects of exposing men to the rigour of the wet seasons in hot climates.”³³⁸

James Lind wrote *An Essay on Diseases Incidental to Europeans in Hot Climates* in 1811, which commented on disease climates across the world, appropriate for the British armed forces engaged in a world-wide war against Napoleon and his allies. He noted that “most of the countries beyond the limits of Europe, unfortunately prove very unhealthy to them [European troops].” In particular, “nineteen in twenty [Europeans] have been cut off by fevers and fluxes.” In his book, he classified fevers found in these regions into various types. One “contagious fever” renders the skin yellow (yellow fever), while intermittent fevers (quotidian or tertian) are clearly symptoms of malaria. He noted that Havana (Cuba) and Carthegena (Columbia) was particularly hazardous based on the 1741 and 1762 attacks on these cities.³³⁹ Reece’s 1814 *Medical Guide for Tropical Climates Particularly the British Settlements in the East and West Indies and the Coast of Africa* was sponsored by the East India Company and also had world-wide observations. Although the Philippines receive only brief mention, Reece noted that “though in general a healthy and agreeable residence, has its sickly season in June and July. At this time the heat of the sun is intense, and the humidity of the air great, which occasions noxious

³³⁸ Ibid., 140-146, 149. Intermittent fever is a hallmark of malaria.

³³⁹ James Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates* (Philadelphia: William Duane, 1811), 2, 6, 9. He provides detailed descriptions of yellow fever in Chapter 4.

exhalations, producing fevers and fluxes, and carrying off annually a great number of the inhabitants.” The West Indies are more variable in climate, and “the general healthiness or unhealthiness depends much on the situation of the different islands.” Reece identified three kinds of West Indian fevers: typhoid (rather confusingly, he uses the term typhus as well), “the ship, jail, or putrid fever” (modern typhus), and yellow fever. He did discuss “remittent fever” (malaria) but only with regard to India.³⁴⁰

We can see from these examples that the dangers of malaria and yellow fever in the tropics were well known by the early nineteenth century. In particular, the links between these diseases and geography and season were well established. Tropical regions had sickly seasons (generally the rainy season) and healthy seasons; in locations with sharp elevation differences it was noted that higher elevations were generally healthier than low elevations. Wet and marshy lowlands were known to be rife with deadly fevers, attributed to the foul air (miasma) given off by the decomposition (fermentation) of organic matter. The advice given by medical practitioners of the era was clear: Avoid sending troops to fight during the sickly seasons, and avoid fighting or stationing troops in miasmatic regions. The case study on the Caribbean (Chapter 5) details the perils inherent in ignoring this advice; the case study on Africa later in the chapter shows the benefits of following it.

These precautions held for migration to the tropics as well as campaigning. Dr. Jackson noted in 1817 that soldiers were particularly subject to higher incidences of disease when moved from Europe to the tropics: “migration from the native to a foreign soil ordinarily acts on the existing condition of health, either by deterioration or improvement. The unfavourable change is noticeable in persons who migrate from Europe, particularly those who migrate from Great

³⁴⁰ Richard Reece, *Medical Guide for Tropical Climates Particularly the British Settlements in the East and West Indies and the Coast of Africa* (London: Longman, Hurst, Rees, Orme and Brown, 1814), 16, 149, 151

Britain and Ireland to the islands of the West-Indies; and it is especially conspicuous during war, when armies, fortuitously collected and thrown together in masses by the exigencies of service, are exposed to all the chances and influences of climate without care or precaution on the score of health.” He also detailed how location and season affect the likelihood of disease; the wet season in the late summer and early fall months being the most dangerous. The newly arrived soldier had the greatest risk: “The robust and newly transplanted European, quartered in crowded barracks and attacked suddenly by fever of violent and open action, or action obscured and as it were oppressed by quantity, dies for the most part within the fifth day; his barrack comrade who has been some years in the country experiences no inconvenience, or experiences disease of a comparatively slight and tractable kind terminating by crisis at a regular critical period.”³⁴¹

Another issue confronting European powers in the Caribbean was the continued occupation of colonial possessions by garrison soldiers. Moseley noted that the garrisons suffered similar fates: “the complement of troops allotted for the defence of each place, is generally cut off by death every three years.”³⁴² Jackson agreed: “In native subjects, and those who have been long resident within the tropics, the forms of the endemic are comparatively regular, the symptoms mild, the fatality not much higher than the ordinary fatality of fevers in Europe. In strangers, persons recently arrived from Europe or the higher latitudes of North-America, the symptoms are ordinarily violent,—the mortality high, not lower than one in three, often not lower than one in two, sometimes not lower than one half, even more than one half”³⁴³ Despite his observations, however, Jackson was much more optimistic about the ability of the medical service to keep troops alive in the tropics: “There is sufficient evidence, in the history of military service, that European troops may be so stationed in the greater number of the islands in the West-Indies as to

³⁴¹ Jackson, *History and Cure of Febrile Diseases*, 1-2, 9-10, 12. This is an early mention of “relocation cost.”

³⁴² Moseley, *A Treatise on Tropical Diseases*, 149; 151

³⁴³ Jackson, *History and Cure of Febrile Diseases*, 12.

suffer little from sickness; and there is also evidence, in the history of hospitals, that the medical art is an art of value and may be so applied as to reduce mortality from sickness, when it does occur, to comparative insignificance.”³⁴⁴ In 1822, Colin Chisholm noted in his *Manual of Climate and Diseases of Tropical Countries* that “allowing for ‘pestilence and endemic causes of disease,’ the chances are 2 to 1 that an artillery officer will live in the West Indies for four years; taking endemic causes alone he has a 3 to 1 chance.”³⁴⁵

Between sanguine assumptions and military necessity, Britain and other European powers continued to assign regiment after regiment of white soldiers to duties in the Caribbean. The major counter against the loss of European troops continued to be “seasoning,” but the continued losses of troops assigned to the West Indies, along with losses suffered in West Africa, alarmed the British government sufficiently to initiate a statistical survey in 1835. Major Alexander Tulloch was assigned to collect data based on the medical transactions of the British Army (begun in 1816). The result was surprising; rather than validating the hypothesis, Tulloch discovered that the data failed to support the seasoning hypothesis. The death rates actually increased over time; in one area deaths increased from 77 to 93 per thousand per year over a four year period.³⁴⁶ British troops stationed at home had an average mortality rate of 1.7% annually, compared to 7.85% in the Windward and Leeward Islands, 10.3% in British Honduras, 10.7% in the Bahamas, and 14.3% in Jamaica.³⁴⁷

By 1837, Dr. W.J. Evans claimed that doctors were in agreement about the causes of fevers in the West Indies even if they could not agree on a classification into specific named diseases:

³⁴⁴ Ibid., 392.

³⁴⁵ Scott, *A History of Tropical Medicine*, vol. I, 3.

³⁴⁶ “One sample moved from 77 deaths per thousand per annum in the first year, to 87 in the second and third years, and then to 93 per thousand from the fourth year onward.” Philip D. Curtin, “Epidemiology and the Slave Trade,” 211.

³⁴⁷ Richard L. Blanco, “Henry Marshall (1775-1851) and the Health of the British Army,” *Medical History* 14 No. 3 (July, 1970): 268.

“The generally-acknowledged causes of the West India fever are those I have just mentioned—malaria from swamps and other sources, solar heat, and contagion.” “Malaria” here refers to the Latin *mal aria* (bad air), not the disease. He explained: “This name [malaria] is given at the present day to a peculiar principle, with the nature of which we are as yet unacquainted, but to the effects of which the febrile endemics, particularly those of an intermittent or remittent type, that at different periods have been seen to obtain in certain parts of the world, have been and still are almost universally attributed. By the bulk of physicians it is supposed to arise from animal or vegetable matters, or both united, in certain states and stages of decomposition.”³⁴⁸ Early in the century *contagionists* who viewed the exciting cause of disease as an agent generated by the sick that could be transmitted to the healthy were dominant. However, there was also considerable support for an opposing view held by *anticontagionists*, who believed that sickness was spread through some poisonous emanation from the atmosphere. This was the *miasmatic* viewpoint of disease, which would become part of the anticontagionist set of beliefs; this view gained currency as time progressed.³⁴⁹

The mid to late nineteenth century has long been regarded as a period when sanitarians introduced significant changes to reduce the prevalence of filth diseases through measures such as obtaining water from pure sources and eliminating cesspools using sewage systems. Even before the introduction of sanitation as a public health measure, Dr. Joseph Lovell, the first Surgeon-General of the War Department, established regulations for a model hospital in Burlington, Vermont that included “cleanliness, ventilation, isolation of febrile patients, and the location of the hospital on high grounds...” In early 1814 there were only 75 deaths among 2,412 admissions, a very low mortality rate for the period. This showed that deaths from infectious

³⁴⁸ W. Evans, *A Clinical Treatise on the Endemic Fevers of the West Indies* (London: John Churchill, 1837), 4, 8.

³⁴⁹ Peter Vinten-Johansen et al., *Cholera, Chloroform, and the Science of Medicine* (Oxford: Oxford Univ. Press, 2003), 166.

diseases could be reduced using good sanitation even without any knowledge of germ theory or disease etiology.

J.J. Cosgrove defined the history of sanitation as “a story of the world's struggle for an adequate supply of wholesome water, and its efforts to dispose of the resultant sewage without menace to health nor offence to the sense of sight or smell.”³⁵⁰ Most trace the beginning of modern sanitation to London in the 1830s and 1840s, a center of the conflict between contagionists and anticontagionists.³⁵¹ Repeated cholera epidemics challenged the views of the pure contagionists who required the sick to have come in direct contact with a cholera victim or his/her fomites in order to contract the disease, following the model of smallpox contagion. This was to become a leading view of the spread of yellow fever later in the century. A variant of the contagion theory presumed that cholera victims exuded a contagious “virus” which could be inhaled; others presumed that the cholera virus was ingested. Anticontagionists blamed variation in meteorological conditions for the spread of cholera, although some (local miasmatists) presumed that some local phenomena associated with organic decomposition (miasma) was to blame. Miasmatists in general assumed that putrefaction was the cause of the miasma underlying epidemic disease in general.³⁵² Sanitarians followed the atmospheric model for epidemics; variations between who got sick and who did not could be explained by the “internal

³⁵⁰ J.J. Cosgrove, *History of Sanitation* (Pittsburgh: Standard Sanitary Mfg. Co., 1908), 1.

³⁵¹ Cosgrove refers to the cholera epidemics of 1832, 1848, 1849, 1853, and 1854 as the cause of a “sanitary awakening” (Ibid., 91). Sanna-Leena Rautanen, Antero Luonsi, Henry Nygård, Heikki Vuorinen and Riikka P. Rajala have a similar view in “Sanitation, Water and Health,” *Environment and History* 16, No. 2 (May, 2010): 173-194. Bayne-Jones credits the “Great Sanitary Awakening” term to Winslow, but thinks that the process began during the last quarter of the 18th century through the efforts of Johann Peter Frank in Europe and John Howard in Britain (Bayne-Jones, *Evolution of Preventive Medicine*, 93).

³⁵² Vinten-Johansen et al., *Cholera, Chloroform, and the Science of Medicine*, 166-167.

constitution” of each individual; unbalanced humors led to sickness when exposed to disease miasma.³⁵³

A major contributor to the sanitation movement was Edwin Chadwick's Poor Law Commissioners' *Report on the Sanitary Conditions of the Labouring Population* (1842), which blamed the poor health of the working classes in the city on “atmospheric impurities produced by decomposing animal and vegetable substances, by damp and filth, and close and overcrowded dwellings...”³⁵⁴ The sanitary movement was convinced that “closed drainage and sewage systems, supplemented by garbage collection, public baths, and housing, were the remedies that would disperse miasma, reduce mortality and morbidity (as indeed they did), and dispel the poverty of the new urban poor (as indeed they did not).”³⁵⁵ Another milestone was John Snow's *On the Mode of Communication of Cholera* (1855), linking the cholera epidemic to polluted water: “the morbid material producing cholera must be introduced into the alimentary canal must, in fact, be swallowed accidentally, for persons would not take it intentionally; and the increase of the morbid material, or cholera poison, must take place in the interior of the stomach and bowels,” resulting from the fact that “the hands of persons waiting on the patient become soiled without their knowing it; and unless these persons are scrupulously cleanly in their habits, and wash their hands before taking food, they must accidentally swallow some of the excretion,

³⁵³ Ibid., 172. Southwood Smith stated in his *A Treatise on Fever* (1830) that “Vegetable and animal matter, during the process of putrefaction, give off a principle, or give origin to a new compound, which, when applied to the human body, produces the phenomena constituting fever.” Smith cites Pringle's observations of a 1742 British campaign in Flanders (among others) to support his hypothesis. In addition, he believed that “the living body, even when in sound health, much more when in disease, and above all, when that disease is fever, [is able] to produce a poison capable of generating fever,” which he is sure “no one disputes.” The remote cause of the fever are “the circumstances which bring the body into a condition capable of being affected by the immediate or the exciting cause.” Southwood Smith, *A Treatise on Fever*, 349-352, 365, 369.

³⁵⁴ Edwin Chadwick, *Report by Her Majesty's Principal Secretary of State for the Home Department from the Poor Law Commissioners on an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain* (London: W. Clowes and Sons, 1842), 369.

³⁵⁵ Mervyn Susser and Ezra Susser, “Choosing a future for epidemiology: 1. Eras and paradigms,” *American Journal of Public Health* 5 (1996): 669.

and leave some on the food they handle or prepare, which has to be eaten by the rest of the family...”³⁵⁶ Snow used statistical analysis to trace the origin of the polluted water to the Broad Street pump, in what was to become a famous bit of medical detective work.³⁵⁷ Epidemiologists were the medical heroes of the day, promising major medical advances from their studies relating filth to disease; clean up the filth and you eliminate the miasma and prevent (rather than cure) epidemic disease. These promises could not withstand the new paradigm of contagion brought about by microbiology and the identification of living organisms – the *contagium vivum* – that were shown to be the cause of disease.³⁵⁸ Transmission was then a matter of how these organisms (germs) were transported from victim to new host. Although doctors were still willing to assume that miasma was the source of malaria, the discovery of malaria plasmodia in the mosquito led to Ross’ proof in 1898 that birds could contract disease from mosquitoes, paving the way for the proof of the transmittal of human malaria as a simple matter of extending the principle. This finally led to an end of the miasmatic hypothesis.³⁵⁹

In the 1850s, the miasmatic view of epidemic disease still linked bad smells to the occurrence of outbreaks, so London’s “Great Stink” of 1858-59 greatly advanced public support for better water treatment.³⁶⁰ Army officers objecting to the fetid smell associated with military camps began to get more attention after the excesses of the Crimean War, where cholera killed between

³⁵⁶ Snow, *On the Mode of Communication of Cholera*, no page numbers.

³⁵⁷ Many books detail the process through which Snow reached his conclusions; one is Cosgrove, 93-104.

³⁵⁸ Susser and Susser, “Choosing a future for epidemiology,” 669.

³⁵⁹ The Nobel Prize committee certainly thought so. The 1902 Prize for medicine went only to Ross and not the scientist that proved humans contracted malaria via the mosquito, Battista Grassi. Vincent J. Cirillo, “‘Wonders Unconceived’: reflections on the birth of medical entomology,” *Perspectives in Biology and Medicine* 54, No. 3 (Summer, 2011): 393.

³⁶⁰ “With the popular views as to the connection between epidemic disease and putrescent gases, this state of things [the great stink] naturally gave rise to the worst forebodings... five million pounds in money were cheerfully voted by a heavily-taxed community to provide the means for its abatement” (Cosgrove, *History of Sanitation*, 105).

7,000 and 8,300 French troops and hospitalized a like number of British troops in 1854 alone.³⁶¹

The sanitation movement in the Royal Medical Corps led to the widespread use of filters, cleanliness, and quinine that cut the mortality rates of French and British soldiers serving in Africa between 50% and 75% from the 1840s to the 1860s.³⁶²

Sanitation problems occurred in the American Army of the 1840s and 1850s as well. In the Mexican War, disease (primarily dysentery) came close to wiping out the American invasion forces, accounting for 88% of the war's 12,535 deaths. Poor sanitation was the primary cause, largely because line officers tended to believe that filthy camps and high disease rates were an inevitable part of military service.³⁶³ Unlike the Crimean War in Britain, the Mexican War failed to spark reforms in the Army Medical Department. At the beginning of the Civil War, the Department was "a fossilized relic of the Mexican War," ignorant of the etiology of camp and campaign diseases and neglectful of sanitation and military hygiene.³⁶⁴ One success of the Mexican War was due to Winfield Scott, who closely studied when and where yellow fever occurred in Mexico before mounting the 1847 invasion. The coastal region around Vera Cruz was home to endemic yellow fever beginning in April. However, the higher regions of the interior were free from the disease, so he knew that if he could take Vera Cruz during the winter, then march the army inland to the Sierra Madres mountains before the yellow fever season, his troops would be spared the scourge of yellow fever. Delays by the Army in mounting the amphibious assault on the city almost upended the plan, and Scott prepared for a costly assault

³⁶¹ Bray, *Armies of Pestilence*, 173 has 7,000 French dead and 7,000 British hospitalized. Prinzing (*Epidemics*, 171) has slightly different numbers; attributing 8,284 deaths in the French army and 1,459 deaths in the British army to the cholera epidemic. Rautanen links the Army actions to the Crimean War and the Thames smell (Rautanen et al., "Sanitation, Water and Health," 162).

³⁶² Curtin, *Disease and Empire*, 31. The Royal Commission of 1857 gave British medical officers the responsibility for advising line commanders "on all matters pertaining to the health of troops." Bayne-Jones, *Evolution of Preventive Medicine*, 91.

³⁶³ Vincent Cirillo, "'More Fatal than Powder and Shot'," 400–413. Later chapters will show that this attitude lasted among many officers throughout the nineteenth century.

³⁶⁴ Bayne-Jones, *Evolution of Preventive Medicine*, 97.

on the fortifications of the city when the campaign lagged into late March. Fortunately, his continuous bombardment of the city demoralized the defenders and they surrendered the city without an assault on March 29th. Scott immediately invested the city and moved his forces along the National Highway toward the Sierra Madres. He succeeded in reaching the mountains in mid-April after defeating the Mexican Army at Cerro Gordo.³⁶⁵ This use of timing and location successfully used nineteenth century knowledge about the occurrence of yellow fever to avoid costly epidemics without needing any knowledge about the cause or means of transmission of the disease. Scott did not need to know the mosquito breeding season or the altitudes in which mosquitoes thrived to avoid the fever; a careful use of local information provided the times and places of safety without any knowledge of the mosquitoes' role. This planning presaged similar planning by the British in the Third-Anglo Ashanti War (1874-5), discussed in the African case study in the next chapter. The results of Scott's careful planning and scheduling were also a useful example to the planners of the Cuban campaign of 1898; it's too bad they chose not to follow that example.

The American Civil War produced a great deal of lessons learned with regard to military medicine, both with respect to the treatment of wounds and the reduction of disease. The latter was split between concerns about post-surgical infections (primarily gangrene) and the prevention and treatment of infectious disease affecting otherwise healthy men. Two major primary sources were produced after the war detailing these lessons learned. The first major source was produced by the Army Surgeon General, *The Medical and Surgical History of the War of the Rebellion* (1861-65) (abbreviated as *MSHWR*). Of particular interest are the three

³⁶⁵ David W. Tschanz, "Yellow Fever and the Strategy of the Mexican-American War," University of Montana, <http://entomology.montana.edu/historybug/mexwar/mexwar.htm>, accessed 19 Aug. 2009. See also Bayne-Jones, *Evolution of Preventive Medicine*, 85.

medical volumes, published as Medical and Surgical History Volume I, Parts 1, 2, and 3.³⁶⁶ The first part is a statistical summary of sickness and deaths from both enemy action and disease broken out in many different ways (to include race, location, time period, etc.) along with copies of the reports of division and corps medical directors. The second part deals with the “alvine fluxes” (primarily diarrhea and dysentery), the leading cause of death from disease, while Part 3 deals with fevers including malaria and yellow fever, as well as other “miasmatic and non-miasmatic diseases.”³⁶⁷ The second major source was produced by the US Sanitary Commission, *Contributions Relating to the Causation and Prevention of Camp Diseases* (1867), part of the Sanitary Memoirs of the War of the Rebellion series.³⁶⁸ Also of interest is *Military Medical and Surgical Essays Prepared for the United States Sanitary Commission* (1864).³⁶⁹

The classification of diseases during the war gives insight into the etiology of the diseases in the 1860s. Table 2 shows the classification system used during the war.

The system was officially defined as follows:

The class Zymotic diseases is intended to embrace epidemic, endemic, or contagious affections, supposed to be induced by some specific body, or by anomalies in the quantity or quality of the food. The order Miasmatic diseases includes affections believed to be due to

³⁶⁶ Volume 2 of the Medical and Surgical History consists of the surgical history in various parts.

³⁶⁷ US Army Surgeon General, *The Medical and Surgical History of the War of the Rebellion* (1861-65), Volume I, Part I (Washington: Government Printing Office, 1870), abbreviated as *MSHWR*; _____, *MSHWR*, Volume I, Part II (Washington: GPO, 1879); _____, *MSHWR*, Volume I, Part III (Washington: GPO, 1888). Miasmatic disease included malaria and “continued fevers” such as typhoid and (at the time) typho-malaria. Non-miasmatic diseases included respiratory diseases including pneumonia, consumption (TB), and others such as rheumatism, ophthalmia, and cardiac disease. “Other diseases” included “nostalgia” (depression), alcoholism, VD, and miscellaneous deaths such as poisonings.

³⁶⁸ Austin Flint, ed., *Contributions Relating to the Causation and Prevention of Camp Diseases*, US Sanitary Commission (New York: Hurd and Houghton, 1867). Volume 2 of the Sanitary Memoirs series was by Benjamin Apthorp Gould, *Investigations in the military and anthropological statistics of American soldiers* (New York: Hurd and Houghton, 1869), not of direct interest to this dissertation. The Sanitary Commission also released multiple volumes of Surgical Memoirs, not to be confused with the surgical volumes of the Medical and Surgical History.

³⁶⁹ US Sanitary Commission, *Military Medical and Surgical Essays Prepared for the United States Sanitary Commission* (Washington: US Sanitary Commission, 1864).

various atmospheric influences, such as the products of vegetable and animal decomposition, specific emanations from the human body in a state of disease, and the so-called marsh miasms. The order Enthetic diseases includes those disorders which are transmitted by the inoculation of morbid matters. The order Dietic diseases includes those which are caused by errors in the quantity and quality of the food.

The class Constitutional diseases includes sporadic affection often hereditary and generally involving several organs, in which morbid products or new formations frequently make their appearance in the parts involved. From the general mass of these diseases which are embraced in Order 1 under the designation Diathetic diseases, the Tubercular diseases, such as Scrofula and Consumption, are separated in Order 2.

The use of medical statistics permitted the identifications of correlations between the occurrence of disease and the circumstances of its appearance. Statistics were also gathered

Table 2: Disease Classification Used in Official Reports, US Civil War

Order	Class				
	I - Zymotic	II - Constitutional	III - Parasitic	IV - Local	V - Wounds, Accidents, Injuries
1	Miasmatic	Diathetic	Parasitic	Of the Nervous System.	Wounds, Accidents, and Injuries.
2	Enthetic	Tubercular		Of the Eye.	Homicide.
3	Dietic			Of the Ear.	Suicide.
4				Of the Organs of Circulation.	Execution of Sentence.
5				Of the Respiratory Organs.	
6				Of the Digestive Organs.	
7				Of the Urinary and Genital Organs.	
8				Of the Bones and Joints.	
9				Of the Integumentary System.	

(Source: *Medical and Surgical History of the War of the Rebellion*, Vol. I, Part I, xviii)

from peacetime years before and after the Civil War, as well as from other conflicts such as the Crimean War and the Franco-Prussian War, permitting direct comparisons of our wartime experiences against peacetime experience and the experience of European armies in battle.³⁷⁰

The problem that a nineteenth century doctor faced was the overwhelming number of possible correlations between weather, climate and disease; correlations which were mistakenly conflated with causation. In addition to the multiplicity of causative influences, observers made specific observations that contradicted many of the generalizations reached by others, making it difficult to separate truth from falsehood. Without an understanding of the cause or the transmission of each disease, doctors were unable to separate wheat from chaff when trying to recommend specific measures to avoid diseases for which neither an effective treatment nor cure were available. The use of statistics in medicine in America can be traced back to Cotton Mather (1721), but the age-old problem of mixing correlation and causation plagued medical researchers before the physiological processes of disease were understood.³⁷¹

On the other hand, some of the correlations were useful. For example, during the war it was observed “in the Departments of Virginia and North Carolina ... the sickness increased progressively during the three years on account of continued exposures in malarious regions.”³⁷² Similarly, it was concluded that malaria was hindered by “improved hygiene. The hygienic improvements consist in the careful selection and drainage of camp sites, the use of prophylactics, as quinine, coffee, etc., suitable regulation of the hours of labor and drill, and

³⁷⁰ *MSHWR*, vol. I, part I, xix.

³⁷¹ Mather reported survival statistics on the 1721 Boston smallpox epidemic to the Royal Society. Bayne-Jones, *Evolution of Preventive Medicine*, 19.

³⁷² *MSHWR*, vol. I, part III, 20.

sufficiency in quantity, quality, and excellence of the food.”³⁷³ Here we see anti-mosquito measures (not recognized as such) such as selecting well drained campsites, pharmaceutical measures such as quinine, and improvements in general health through the diet – all of which help protect the body from succumbing to disease or reduce the presence of the mosquito vector coming from the use of statistical correlations.

One of the other innovations coming from the Civil War was the creation of the US Sanitary Commission, modeled on the British Sanitary Commission of the Crimean War. A civilian organization, it was greatly resented by the Army Medical Corps but it served a valuable role as an adjunct to the Medical Department, focusing on preventive medicine while the Department focused more on treatment, especially of wounded soldiers. By the latter part of the war, Army Surgeon General Hammond could conclude that “good relations” existed between the Army Medical Department and the Sanitary Commission.³⁷⁴

By 1860, a better understanding of “the external causes of disease” combined with the sanitation movement reduced to some extent the physical hazards encountered by Europeans in tropical climates. In the second edition of *Influence of Tropical Climates in Producing the Acute Endemic Diseases of Europeans*, Sir James Martin observed that “To know the cause of a disease is sometimes to be able to cure, often to be able to prevent it.”³⁷⁵ Martin painstakingly reviewed all sources of weather and climate in order to identify the correlations between climatic factor and epidemic disease. He noted that “plague in Egypt, yellow fever in the West, and marsh remittent in the East and West, have never been known to ascend to any considerable height”³⁷⁶;

³⁷³ Flint, ed., *Causation and Prevention of Camp Diseases*, 121

³⁷⁴ Bayne-Jones, *Evolution of Preventive Medicine*, 102-103.

³⁷⁵ Sir James Martin, *Influence of Tropical Climates in Producing the Acute Endemic Diseases of Europeans*, 2nd ed. (London: John Churchill, 1861), 3. The quote is attributed to a Dr. Watson (real, not fictional).

³⁷⁶ *Ibid.*, 10.

therefore he recommended avoiding low-lying areas as a preventative measure – thereby unknowingly placing troops outside the flying range of mosquitoes carrying malaria, dengue, or yellow fever. Martin used a variety of reports to conclude that the nature of the soil affects climate, yet their effects vary by season. This caused some observers to claim that, for example, “decomposition by the iron, together with the magnetic phenomena elicited by heat and other agents, [might] be productive of disease, and of fever especially, in certain climates and localities” while others asserted that “The varying states of the earth's magnetism cannot fail of exercising powerful influences on human health.”³⁷⁷ Another possible effect cited was the composition of the atmosphere; for example, “By some authorities it is deemed probable that... sulphur is the agent which, by its affinities, adds most to the intensity, and virulence of malarious exhalations along the west coast of Africa.”³⁷⁸ Even electricity was linked to disease: “the greater number of diseases, and especially those which belong to the class of neuroses, are occasioned by the exaggerated influence of general electricity.”³⁷⁹

Despite these false causation links, Martin was also able to make some useful correlations from his data. Malaria is greatly affected by the manner in which it is cultivated, which alters the capability of various species of disease vectors (mosquitoes) to thrive.³⁸⁰ This outcome had been observed, but the causation was attributed to purity of the air rather than vector reservoirs: “By cultivation the husbandman eradicates noxious elements from the earth, and thereby warms, dries, and purifies the atmosphere he breathes; while by his neglect of tillage he renders the soil and air impure and unwholesome.”³⁸¹ The timing of disease epidemics (seasonality) was well understood; it was clear when the sickly season began and ended in the areas with the highest

³⁷⁷ Ibid., 20, 22.

³⁷⁸ Ibid., 24.

³⁷⁹ Ibid., 38.

³⁸⁰ Packard, *The Making of a Tropical Disease*, 69.

³⁸¹ Martin, *Influence of Tropical Climates*, 25.

risk of disease outbreaks. Martin referred to this as the “medical climate.” “It has been well observed,” Martin noted, “that the most poisonous gases, mephitic emanations, malarious, miasmatic, and paludal exhalations, the products of putrefactive changes of organic and vegetable origin, are extricated by heat, and dissolved and retained in the atmosphere by moisture.”³⁸²

The significant improvement of Martin’s observations in 1861 over his colleagues of earlier eras comes from the use of medical statistics. He used data collected by British doctors over time over the globe to refute the idea of acclimatization – the idea that “a man who suffers from illness in his first year of residence in an unnatural climate recovers his health by remaining there, and that he thus becomes a strong, hale man.” Instead, “man possesses faculties of acclimation [that are] essentially limited, though varying notably according to race.”³⁸³ The latter refers to the well known vulnerability of Europeans in tropical climates relative to the natives of such areas. One of the conclusions Martin could make from the mortality statistics gathered from foreign stations was that deaths from disease were fairly constant from the late 18th century through the early 19th, but declined in the 1840s and 1850s due to improvements in the sanitation and local climates where the troops were stationed; unhealthy areas such as Berhampore in Bengal (India) remained as deadly as they were during the Napoleonic era.³⁸⁴

Mervyn and Ezra Susser identified three paradigmatic eras in epidemiology in 1994. The first era was the era of sanitary statistics, with the paradigm of miasma.³⁸⁵ The medical volumes of the *Medical and Surgical History of the War of the Rebellion* in the United States, and *Influence of Tropical Climates in Producing the Acute Endemic Diseases of Europeans* in Great Britain

³⁸² Ibid., 40.

³⁸³ Ibid., 97.

³⁸⁴ Ibid., 99 – 111.

³⁸⁵ Susser and Susser, “Choosing a future for epidemiology,” 668–673.

marked the apogee of the use of medical statistics to infer disease. Analyzing medical statistics could take one only so far; the next advances in understanding the causes of disease were to come from the laboratory.

Nineteenth Century Scientific Medicine and the US Military

The second epidemiological era identified by the Sussers is the era of infectious disease epidemiology with its paradigm, the germ theory.³⁸⁶ In the latter half of the nineteenth century the introduction of the germ theory began a revolution in the understanding of the etiology of disease. The work of Semmelweis and Lister on antiseptics greatly reduced the occurrence of septic illnesses such as “childbirth fever” (puerperal fever) and pyemia. But what was the antiseptic attacking? Semmelweis’ successor in obstetrics in Vienna, Carl Braun, introduced the concept of a microscopic parasite (based on earlier work by Jakob Henle) that travelled through the air to land on the open wounds of the maternity patients, a modification of the miasmatic explanation of an airborne poison. In 1862, Carl Mayrhofer began to examine the vaginal discharges of puerperal fever victims for signs of the airborne particle (germ) under a microscope. He found a multitude of minute organisms he called “vibrions.” Mayrhofer concluded that “puerperal fever was a ‘fermentation disease’ in which tissues decomposed under the influence of the living vibrions.”³⁸⁷

In 1867 Joseph Lister published his seminal work on post-surgical infections, describing a case where he used carbolic acid when reducing a compound fracture, seeking to prevent the “decomposition of the contents” of an abscess, fearing that “the irritation of the fetid pus might cause very serious consequences...”³⁸⁸ Sepsis was a well understood phenomenon, but the cause of the pus exuding from most wounds was not. A serious consequence of sepsis was pyemia,

³⁸⁶ Ibid. The last era identified in the paper is “the era of chronic disease epidemiology with its paradigm, *the black box*.” The first era lasted until the middle of the 19th century, the second from the middle of the 19th to the middle of the 20th centuries, and the third from the mid 20th century until today (ibid).

³⁸⁷ K Codell Carter, “Ignaz Semmelweis, Carl Mayrhofer, and the rise of germ theory,” *Medical History* 29, No. 01 (January, 1985): 35-39.

³⁸⁸ Joseph Lister, “On a New Method of Treating Compound Fracture, Abscess, etc., with Observations on the Conditions of Suppuration,” *Lancet* (March 30, 1867): 388

“the fever which is caused by the entrance of septic material into the circulation, where it multiplies and gives rise to embolic abscesses.”³⁸⁹ By 1886, the use of a carbolic acid spray or other antiseptic techniques reduced the mortality of compound fractures from 40 – 80% down to less than 1% of cases.³⁹⁰ Lister antiseptic techniques were introduced into US Army Medical Corps procedures in 1876.³⁹¹ The controversy of “Listerism” that ensued after surgeons began routinely using carbolic acid or other antiseptics was not over the treatment (even surgeons who disregarded the germ theory used “antiseptic irrigation with a lotion of carbolic acid, 1 to 20”), but over the mechanism by which the sepsis occurred. “Listerism” in its broad sense was the recognition of the germ as “the greatest enemy to suppress in surgery”, having “an important part ...in all decomposition of organic matter.”³⁹² Lister’s methods were “predicated on preventing the entry into the wound of airborne germs of putrefaction.”³⁹³ Other surgeons disagreed. Following “traditional thinking” of the 1860s and 1870s, prominent English surgeon George Callender described the immediate cause of pyemia as “an animal or septic poison introduced into the system” of unknown origin rather than a living germ. He then used an analogy to link the poison to “the viruses of smallpox, syphilis and other affections propagated by inoculation.”³⁹⁴

Lister’s work was directed at a “germ theory of putrefaction” rather than a germ theory of disease, although he later recast his work to support germ theory after Koch’s groundbreaking

³⁸⁹ Samuel Gross, *A System of Surgery: Pathological, Diagnostic, Therapeutic, and Operative*, vol. 1, 6th edition (Philadelphia: Henry C. Lea’s Son & Co., 1882), 139.

³⁹⁰ *Ibid.*, 259

³⁹¹ Bayne-Jones, *Evolution of Preventive Medicine*, 116.

³⁹² Douglas Morton, “Listerism Severely Tested” in D.W. Yandell and H.A. Cottell, *The American Practitioner and News, Volumes I and II – 1886* (Louisville, KY: John P. Morton and Co., 1886), 260, 258.

³⁹³ Peter J. Kernahan, “Causation and Cleanliness: George Callender, Wounds, and the Debates over Listerism,” *Journal of the History of Medicine and Allied Sciences* 64, No. 1 (January, 2009): 20

³⁹⁴ *Ibid.*, 14.

work in the late 1870s. It was during the period between 1870 and 1885 that “germ theory” began to have its modern context as the cause of infectious disease.³⁹⁵

There were many alternatives to the germ theory of disease, each of which would have to be disproven (or at least shown to be less likely) for germ theory to become accepted. Different theories also abounded about what a “germ” was and where it came from. The most prominent alternative to a living organism (*contagium vivum*) was that the atmosphere contained poisonous materials or particles, or the soil contained these poisons or particles that could be propagated by contact with persons or inanimate materials (fomites). Southwood Smith wrote in 1830 that “the immediate, or the exciting cause of fever is a poison formed by the corruption or the decomposition of organic matter. Vegetable and animal matter, during the process of putrefaction, give off a principle, or give origin to a new compound, which, when applied to the human body, produced the phenomenon constituting fever.” What the poison was, or how it was formed, was unknown. Smith cites Pringle’s *Observations on the Diseases of the Army* as proof of the concept, as troops stationed near marshes and on low ground (near the foggy and smelly marshes full of decomposing organic materials) had significantly higher rates of epidemic disease than did their neighbors on higher ground.³⁹⁶ He also suggested that contagion may occur via fomites, in the same manner as seen with the transmission of smallpox. He suggested a scientific approach to resolving the issue, suggesting experiments that “might ascertain the point with sufficient clearness and certainty, to satisfy not only the present age, but future generations.”³⁹⁷

³⁹⁵ Nancy J. Tomes, “American Attitudes toward the Germ Theory of Disease: Phyllis Allen Richmond Revisited,” *Journal of the History of Medicine and Allied Sciences* 52, No. 1 (1997): 23.

³⁹⁶ Southwood Smith, *A Treatise on Fever*, 348-349, 351-354.

³⁹⁷ Smith asked “is the febrile poison, whether of vegetable or animal origin, or whether composed of both, capable of adhering to clothes, apparel, and other substances, in such a manner as truly to infect them, so that when applied to the bodies of the healthy, at any distance of place, and at some distance in time, the specific effects of the poison are produced? That such substances may be imbued with the poison of smallpox, all admit...” Ibid., 366-367.

Edwin Chadwick made this a part of official policy for reducing disease among the poor in his *Report on the Sanitary Condition of the Labouring Population of Great Britain*. The cause of the diseases the poor suffered, whether “epidemic, endemic, and other disease” was “caused, or aggravated, or propagated chiefly amongst the labouring classes by atmospheric impurities produced by decomposing animal and vegetable substances, by damp and filth, and close and overcrowded dwellings...”³⁹⁸

An alternative means of propagation of poison was through the water. John Snow’s discovery of cholera transmission through water sources contaminated by fecal matter drew attention to water as a cause of epidemic disease.³⁹⁹ William Farr attributed cholera to an organic material he called cholerine, a zyme or ferment that would catalyze changes in the blood within the human body and cause the disease. This early version of the zymotic theory linked every disease to a causal zyme; for example “smallpox is by hypothesis the transformation of varioline, and certain unknown concomitant chemical changes in the blood and skin; manifesting the important symptoms which fall under direct observation.”⁴⁰⁰ Later zymoticists assumed that the zyme reproduced itself in the human body, thus acting as a living organism and thus a manifestation of the *contagium vivum* theory.⁴⁰¹

The atmospheric, chemical, and miasmatic theories continued to dominate American thought in the 1870s. Phyllis Allen Richmond argued in *American Attitudes Toward the Germ Theory of Disease (1860-1880)* that American doctors in particular lagged behind their European counterparts during this same period (1870s and 1880s), although acceptance of the germ theory

³⁹⁸ Chadwick, *Report on the Sanitary Condition of the Labouring Population*, 369.

³⁹⁹ Stephen Halliday, “Death and miasma in Victorian London: an obstinate belief,” *British Medical Journal* 323, No. 22 (December 29, 2001): 1469-1471.

⁴⁰⁰ United Kingdom, Registrar-General, *Report on the mortality of cholera in England 1848-49* (London, 1852): lxx (written by William Farr).

⁴⁰¹ Richmond, “Some Variant Theories in Opposition to the Germ Theory,” 295.

began to pick up in the late 1880s.⁴⁰² Richmond's work was the accepted view on the topic for decades, although more recent work has emphasized American advances in bacteriology during the late nineteenth century.⁴⁰³ However, as Columbia College President Frederick Barnard pointed out in 1873, "If we accept the chemical theory of contagion as exclusively the true one, we can hardly avoid admitting the possibility that contagious disease may originate in a healthy individual without communication with a person already diseased. The causes, whatever they may be, will be found in surrounding conditions. . . . If, on the other hand, infectious disease is propagated by living germs alone, what we have to aim at is to devise measures for promptly extirpating these germs the moment the disease appears. But as the necessary measures of precaution or of extirpation will be substantially the same, whatever may be the theoretic views entertained as to the nature and the origin of the evil to be met, our legislation in any case is likely to be practically the same, however in its motive it may be logically different."⁴⁰⁴ In other words, the prevention or treatment measures are likely to be the same with respect to avoiding the conditions of exposure or treating exposure with the current medical procedures and medicine. However, ignorance of the means of transmission for mosquito-borne diseases such as malaria and yellow fever significantly retarded efforts to prevent exposure. Malaria was still presumed to be spread through miasma, even if the means for transmitting the *Plasmodium malariae*⁴⁰⁵ through the atmosphere was a mystery. The prevailing view on yellow fever

⁴⁰² Richmond, "American Attitudes Toward the Germ Theory of Disease," 432-441. Richmond's thesis has recently been questioned; Tomes argues that debates in the 1870s laid the groundwork for the acceptance in the 1880s. Tomes, "Phyllis Allen Richmond Revisited," 17-50.

⁴⁰³ Tomes, "Phyllis Allen Richmond Revisited," 17-50. Tomes states that "Rarely has one short work had so great an impact on the historiography of our field. For more than forty years, Richmond's thesis has rarely been challenged, a record that surely has few precedents in the field" (ibid., 17).

⁴⁰⁴ F. A. P. Barnard, 'The Germ Theory of Disease and Its Relations to Hygiene,' *Public Health Philadelphia* 1 (1873), 86-87, as cited in Barbara Gutmann Rosenkrantz, "Cart before Horse: Theory, Practice and Professional Image in American Public Health, 1870-1920," *Journal of the History of Medicine* (Jan., 1974): 59.

⁴⁰⁵ At the time, there was only one strain of malaria known to exist, given the name *Plasmodium malariae*. The malarial agent was initially termed *Bacillus malariae* by Laveran and others, but a paper by Marchiafava and Celli

transmission was through contact with *fomites* - objects that were supposedly infected with yellow fever germs. Contagion occurred when unexposed personnel came in contact with these fomites. This theory will be discussed in more detail below, as it was applied to measures taken to avoid the spread of disease during the Spanish-American War.⁴⁰⁶

Advocates of living organisms (germs) as the causative agent of disease were given a powerful new weapon to discover the living agents of disease: the microscope. Although microscopes were in use as early as the 1600s, the discovery of specific disease-producing bacteria required more powerful microscopes which came into use in the mid nineteenth century.⁴⁰⁷ The increased use of the microscope led to a new science: bacteriology. One of the foremost practitioners of this new science was to become a dominant member of the medical community during the Spanish-American War: George Sternberg, who was later to become the Surgeon-General of the Army in the 1890s. Sternberg's life story in many ways parallels the development of scientific medicine in America; a recent biographer called him "the personification of the new medical science and professionalism of the emerging Progressive Era."⁴⁰⁸ When Sternberg was a captain and Assistant Surgeon assigned to Pensacola in 1869 he contracted and survived yellow fever, giving him both immunity and a lifelong interest in yellow fever. He taught himself microscopy and photomicrography and was an early proponent of disinfection.⁴⁰⁹ As a major in 1874, he published his views on yellow fever, which he regarded as

first suggested the name *Plasmodium malariae* in 1885. Dale C. Smith and Lorraine B. Sanford, "Laveran's Germ: The Reception and Use of a Medical Discovery," *The American Journal of Tropical Medicine and Hygiene* 34, No. 1 (1985): 2-20.

⁴⁰⁶ Until the mosquito hypothesis was proven, the prevailing view within medical science on the cause of malaria was indeed *mal aria* – bad air or miasma. Jeanne Guillemin, "Choosing Scientific Patrimony: Sir Ronald Ross, Alphonse Laveran, and the Mosquito-Vector Hypothesis for Malaria," *Journal of the History of Medicine and Allied Sciences* 57, No. 4 (October, 2002): 385-409.

⁴⁰⁷ Bynum, *Science and the Practice of Medicine*, 99-100.

⁴⁰⁸ Craig, *In the Interest of Truth*, xi. Stanhope Bayne-Jones called him the "pioneer bacteriologist of North America" (Bayne-Jones, *Evolution of Preventive Medicine*, 118).

⁴⁰⁹ Craig, *In the Interest of Truth*, xi.

being caused by a living organism (germ) and not “generated by atmospheric or telluric influences” or by “an emanation from the persons of those sick with the disease.” He did, however, believe that the disease “is portable in ships, goods, clothing, etc.” – i.e., fomites.⁴¹⁰

In 1878, an epidemic of yellow fever broke out in New Orleans, causing a massive exodus from the city. This migration spread the disease up the Mississippi valley, causing an epidemic with over 120,000 casualties that eventually took over 20,000 lives.⁴¹¹ The source was identified as the ship *Emily B. Souder* from Havana. The *Souder* had disembarked passengers without going through quarantine; two passengers had carried the disease from Cuba. However, the cause of the outbreak was still assumed to be the “acknowledged filth of the Southern cities visited in this [1878] and other years by yellow fever.”⁴¹² One of the difficulties modern readers have in understanding epidemics of yellow fever is that in the age of antibiotics, vaccines, and cures it is hard for us to understand the fear and panic that a yellow fever outbreak; panic that caused the disease to spread as frantic crowds fled the disease stricken city. However, we can capture some of this dread by reading Molly Crosby’s vivid description of a scene occurring in one of many houses during the epidemic: “

No one can really imagine those final days in the fever-ridden house. The fever attacked each person in the Angevine family, one after the other, until none were well enough to help the others. It hit suddenly in the form of piercing headache and painful sensitivity to light, like looking into a white sun. At that point, the patient could still hope that it was not yellow fever, maybe just a headache from the heat. But the pain worsened, crippling movement and

⁴¹⁰ George Sternberg, “An Inquiry into the Nature of the Yellow Fever Poison,” *The American Journal of the Medical Sciences* (April 1873): 398.

⁴¹¹ National Board of Health, “Appendix B: Report of the Havana Yellow Fever Commission,” *Annual Report of the National Board of Health, 1880* (Washington: GPO, 1881), 73.

⁴¹² “THE LATE YELLOW FEVER EPIDEMIC,” *New York Times*, Nov 30, 1878, 8. See also Sternberg, *Report on the Etiology and Prevention of Yellow Fever*, 48.

burning the skin. The fever rose to 104, maybe 105 degrees, and bones felt as though they had been cracked. The kidneys stopped functioning, poisoning the body. Abdominal cramps began in the final days of illness as the patient vomited black blood brought on by internal hemorrhaging. The victim became a palette of hideous color: Red blood ran from-the gums, eyes and nose. The tongue swelled, turning purple. Black vomit roiled. And the skin grew a deep gold, the whites of the eyes turning brilliant yellow.⁴¹³

People could die from yellow fever in a single day, compounding the fear created by the dread disease.

One outcome of the 1878 epidemic was the formation of the National Board of Health, which in turn established the 1879 Havana Yellow Fever Commission, of which Sternberg was a member. Another member of the Commission was Cuban physician Juan Guiteras, who would work with Sternberg over the years and become an expert on Cuban tropical diseases for the US Army before and during the Spanish-American War.⁴¹⁴ The purpose of the board was to investigate the “so-called endemicity of yellow fever in Cuba, and the conditions which may be supposed to determine such endemicity” along with the sanitary conditions in the various ports in Cuba to determine “what can and should be done to prevent the introduction of the cause of yellow fever into the shipping of these ports.” Increasing existing knowledge on yellow fever was only the second point on their agenda. The National Board of Health that commissioned the

⁴¹³ Molly Crosby, *The American Plague: The Untold Story of Yellow Fever, the Epidemic that Shaped our History* (New York: Berkeley Books, 2006), 2. The only survivor from the family later became a nurse during and after the war, serving under Walter Reed.

⁴¹⁴ Guiteras worked for the US Marine Hospital Service and taught at several US medical schools before serving with the US Army during the war. He also conducted yellow fever experiments in Cuba at the same time as Walter Reed. “Juan Guiteras,” *The American Journal of Public Health* 16, No. 2 (February, 1926): 159-160. He wrote the standard operating procedures (general orders) on sanitation and hygiene for the Fifth Corps troops. General Orders No. 2, Fifth Army Corps, June 2, 1898. *Report of the Surgeon General, 1898*, 203; reprinted as item #6, Appendix B (Correspondence).

study also asked them to “ascertain some means of recognizing the presence of the immediate cause of yellow fever other than the production of the disease in man.”⁴¹⁵

One of the early conclusions of the commission was that “Cuba, as its prosperity and commerce increased, has become the greatest nursery and camping ground of one of man's most ruthless destroyers. Itself most sorely afflicted, it annually disseminates to other lands, as from a central hell, disease and death.” Recently, Mariola Espinosa has advanced the theory that the Spanish-American War was driven not by sympathy for the plight of the Cuban populace, or in revenge for the sinking of the *USS Maine*, but rather in order to annex or control the island and establish rigorous sanitation policies that would, once and for all, eliminate the threat of epidemic disease from the American South.⁴¹⁶ The outbreak of a second epidemic of yellow fever in 1897, just before the war, advances this hypothesis.

The authors of the report also argued that the concept of “endemic disease” needed to be shifted from identifying localities as a source of the disease (such as the spontaneous origin theory which hypothesizes that the disease originates in the soil or filth within a region) to regarding the locality as an area whose local conditions favor the spread of the disease. Many regions in Cuba were found to be places where yellow fever is endemic in the more modern sense of the word. In areas where yellow fever is endemic, the native population acquires immunity; the commission noted that “Residents, whether foreign born or natives, of the mountains and of other secluded rural portions of Cuba suffer with yellow fever on visiting infected places. This evidence, that they have not acquired immunity from the disease, proves

⁴¹⁵ National Board of Health, “Report of the Havana Yellow Fever Commission,” 67.

⁴¹⁶ Mariola Espinosa, *Epidemic Invasions: Yellow Fever and the Limits of Cuban Independence, 1878-1930* (Chicago: University of Chicago Press, 2009). See also Mariola Espinosa, “The Threat from Havana: Southern Public Health, Yellow Fever, and the U.S. Intervention in the Cuban Struggle for Independence, 1878-1898,” *The Journal of Southern History* 72, No. 3 (Aug., 2006): 541-568.

that they have not been habitually subjected to the poison, and, therefore, that their places of residence are not the habitats of the poison.” This finding also calls into question the climactic theory; for example, the town of Holguin near Santiago had no yellow fever epidemics until 1851, when it was apparently introduced by soldiers.⁴¹⁷ The commission also noted that there was no strong correlation between the availability of pure water for bathing and drinking and the occurrences of yellow fever epidemics – implying that the disease does not come from contaminated water in a manner similar to cholera or typhoid. As to the cause, the report stated that “The causation or propagation of yellow fever has been repeatedly attributed to upturning of the earth.” Many of the streets of Havana and other yellow fever cities “serve admirably as permanent receptacles for much decomposing animal and vegetable matter.” In addition, “nothing more stinking, nasty, and unwholesome than the privy system of Havana and of Cuba can be conceived.”⁴¹⁸ All of these factors supported linking yellow fever to the unsanitary conditions of Havana and other Cuban cities. As one Cuban doctor noted, low areas of the city were filled in by dumping garbage and refuse, the harbor is filled with “marsh vegetation and organic detritus,” the gutters are full of waste, “exposing to the energetic action of our ardent sun their disgusting contents” while streets “which collect rain water in stagnant pools, and, impassable to vehicles, are covered with dark green mold.” He concluded that “Aggregated in vast number upon a very limited site, we have been desolated by epidemics of cholera, smallpox, dysentery, croup, and almost every known epidemic disease; we have annually to combat intermittent, bilious, and pernicious fevers. We have yellow fever constituted an endemic among us; and we suffer from all those baneful insanitary evils which have been denounced again and again, but which must be constantly declaimed against as long as they exist. These fatal

⁴¹⁷ National Board of Health, “Report of the Havana Yellow Fever Commission,” 93.

⁴¹⁸ Ibid., 98-99.

conditions so surround us that we constitute, as the wise Humboldt well expressed it, ‘a society of convalescents;’ in fine, ‘we do not live, we die here.’”⁴¹⁹

Some of the conclusions drawn by the Yellow Fever Commission actually did serve to reduce the likelihood of infection. To avoid exposure to fomites, they recommended that shipping be anchored upwind in the harbor distant from shore, with as little contact with the shore as possible. This had worked in the past; “Experience in the French Antilles has tended to prove that a vessel anchored from 40 to 65 feet to the windward of an infected vessel is comparatively safe.”⁴²⁰ The focus was still on fomites; the report discussed French policies on what fomites are considered to be most dangerous.⁴²¹

Unfortunately, the most important task given the Commission, to determine the causative agent of yellow fever and its means of transmission, was not successful. Sternberg assumed that yellow fever was caused by a bacillus, and assumed that the procedures used by Koch in 1878 to identify the causative bacteria for six diseases.⁴²² Sternberg and Guiteras were assigned to study the histological pathology of yellow fever “through the microscope” in order to “disclose the ultimate cause or germ of the disease.”⁴²³ They assumed that the task was simply a matter of identifying the bacillus from the blood and tissues of yellow fever victims. Unfortunately the microscopy of the 1870s was insufficient to the task; as noted in the report, “the future must depend on the progress of science to furnish the microscopy, chemistry, and diagnostics” to yield

⁴¹⁹ Ibid., 103.

⁴²⁰ The report also states that “The ballast, especially at Havana, Matanzas, and Cardenas, should, in our ignorance of the subject of fomites, be regarded with suspicion, as a probable mode of introducing into shipping the cause of yellow fever.” Ibid., 108. Note that offshore and upwind means that mosquitoes will not fly from shore to ship.

⁴²¹ “First class—most dangerous: ‘Clothing of all kinds and effects in use, rags of all kinds, skins, feathers, hair, and generally the debris of animals, linen and silk materials.’ Second class—much less dangerous: ‘Cotton, flax, and hemp.’ Third class—so little dangerous that no special precautions are required: ‘All objects not included in the above classes.’” Ibid., 110.

⁴²² King, “Germ Theory,” 796. See also Cirillo, *Bullets and Bacilli*, 64-65.

⁴²³ Ibid., 74.

the etiology of the disease.⁴²⁴ After completing his work for the Commission, Sternberg furthered his expertise in bacteriology by translating the standard text of bacteriology, Magnin's *Bacteria*, published in the US in 1880.⁴²⁵

Sternberg was sent back to Cuba to study yellow fever by the President in 1888; he published his findings in 1890 as the *Report on the Etiology and Prevention of Yellow Fever*. Despite extensive research into the cause and propagation of the disease, he failed to definitively establish either cause or transmission. He did, however, contribute to the understanding of the disease by ruling out classes of microorganisms previously identified as the yellow fever germ. This outcome did not shake his faith in the existence of such a germ.⁴²⁶ The problem, of course, remained his underlying assumption: as one of the premier bacteriologists of his time, he assumed that the disease was caused by a bacillus that could be seen under his microscope, one similar to that linked to typhoid.⁴²⁷ He also assumed that "the yellow fever germ invades the system by the respiratory tract, by the alimentary canal, or from the general surface of the body, and it should be found in the blood and tissues, or in the alimentary canal, or upon the surface." Once in the body he assumed that the microorganism replicates itself and causes the disease.⁴²⁸

Despite Sternberg's certainty that a yellow fever germ existed, he admitted that the spontaneous generation theory so prevalent in the early nineteenth century still had some proponents. He cited Cornillac, who in 1886 stated that "In the zone which is habitual to it, yellow fever may develop at it given moment without apparent cause. It is born spontaneously at

⁴²⁴ Ibid, 77.

⁴²⁵ Antoine Magnin, *Bacteria* trans. George Sternberg, 2nd edition (New York: William Wood and Co., 1884).

⁴²⁶ "My faith in a living infectious agent as the specific cause of this disease is by no means diminished by my failure thus far to demonstrate the exact form and nature of this hypothetical "germ." The present state of knowledge with reference to the etiology of infectious diseases in general and well known facts relating to the origin and spread of yellow-fever epidemics fully justify such a belief." Sternberg, *Report on the Etiology and Prevention of Yellow Fever*, 13.

⁴²⁷ Yellow fever is caused by a virus, part of the *flavovirus* family. See Chapter 2 for more detail on the disease.

⁴²⁸ Sternberg, *Report on the Etiology and Prevention of Yellow Fever*, 17.

a point of this zone, or at several at a time, and neither the temperature, moisture, barometric pressure, electricity, nor finally effluvia given off from the soil can explain this sudden invasion.” Nevertheless, these scientists were in the minority; Sternberg claimed that “today scarcely anyone questions the fact that the disease, notwithstanding its frequent prevalence, was due to importation, and that it is nowhere endemic within the boundaries of the United States.”⁴²⁹ Other theories abounded. An account of the yellow fever epidemic of 1878 also listed some of the then current theories on the etiology of the disease. Some thought it was suspended in the air as dust, with cold weather suppressing it and warm weather the opposite, or as an inflammable substance that caused the disease when swallowed or inhaled. Most, however, believed in the fomite theory.⁴³⁰

Sternberg agreed that Europeans and Northern Americans were more susceptible to yellow fever than the inhabitants of tropical regions, including the inhabitants of Southern cities where disease epidemics periodically appeared. To demonstrate this, he cited a study of the deaths from a yellow fever epidemic in New Orleans in 1853: the mortality rate among native creoles was 3.58 per thousand, among US inhabitants from Northern Middle Western, and Western states between about 30 and 45 per thousand, while Northern Europeans died at rates anywhere from 48.13 to 328.94 per thousand.⁴³¹ He did note that individuals could acquire immunity from the disease by surviving a yellow fever attack or through acclimatization in areas where yellow fever is endemic. Epidemics occurred in these regions when enough unacclimatized visitors appeared

⁴²⁹ Ibid., 36; 49.

⁴³⁰ Kelley, *Walter Reed and Yellow Fever*, 92-93.

⁴³¹ The highest death rates were found in people from Scandinavia, Austria, Switzerland, and the Netherlands. It is likely that some of these extreme values can be attributed to a relatively much smaller sample size. Sternberg rejected the idea that Negroes have a genetic immunity to yellow fever, although he did conclude that “The susceptibility of the negro is, however, much less than that of the white race, and among those attacked the mortality, as a rule, is small” based on comparing white and black troops in the British West Indies. As discussed in Chapter 3, many of the black troops were African natives, and they would have had some acquired immunity from childhood. Sternberg, *Report on the Etiology and Prevention of Yellow Fever*, 50-51.

to provide a breeding ground for the contagion to spread. Sternberg correctly deduced that creoles have immunity not from a genetic inheritance from the parents “but to individual acclimatization, and not infrequently, to say the least, to a mild, unrecognized attack of yellow fever.”⁴³² All of the conclusions Sternberg made from his study of the disease in the 1870s through 1890s would be applied to his recommendations regarding the disease during the Spanish-American War.

The 1880s and 1890s offered some of the clues so desperately sought by Sternberg and his American contemporaries, but these clues were either ignored or were disseminated too late to be of help in America before the turn of the century. The source of malaria began to emerge during this period. Two scientists discovered a bacterium they called *Bacillus malariae*, from soil in Italy and reported that that it caused malaria when injected in rabbits. Although this experiment lost credibility when it could not be reproduced, miasma and other climatic conditions remained a leading explanation. Alphonse Laveran discovered the parasitic nature of malaria in 1881, but his theory was disputed over the next several decades. Sternberg himself defined malaria as “An unknown poison, of telluric origin, the cause of the periodic fevers” in 1884.⁴³³ However, Sternberg became a convert to Laveran’s view of the bacillus as a parasite after a visit to Rome in 1886. Upon his return to the United States, he independently found Laveran’s germ in an American patient suffering from malaria. The verification of a bacterium causing malarial symptoms with the fever cycle corresponding to the infection and destruction of red blood corpuscles helped to reinforce germ theory in the late 1870s and 1880s.⁴³⁴ The mosquito was hypothesized as the carrier by Patrick Manson in 1894; however, it remained a “mosquito hypothesis” rather than a known fact through the decade. It was not until July 1898 that Surgeon-

⁴³² Ibid., 54.

⁴³³ George Sternberg, *Malaria and Malarial Diseases* (New York: William Wood & Co., 1884), 29.

⁴³⁴ Smith and Sanford, ““Laveran’s Germ,” 12-14.

Major Ronald Ross finally demonstrated that the mosquito transmitted malaria through its salivary glands, too late to influence the Spanish-American War.⁴³⁵ In the late 1890s US Army officers were advised that “Parasitic micro-organisms found in the blood (hamocytozoa) are so closely associated with the disease as to be regarded its cause. But they have not yet been isolated outside of the body and their origin is unknown.” However, because the source of the microorganisms was unknown, officers were still advised to leave soil unturned “lest the disturbance of the soil induce malaria” and leave trees and brush along camp sites untouched, as it “probably impedes malaria.”⁴³⁶

More was known about typhoid fever after the pioneering work of William Budd. Budd published *Typhoid Fever: Its Nature, Mode of Spreading, and Prevention* in 1873, along with a paper published in *The American Journal of Public Health*. He defined typhoid contagion as the fatal growth of a disease process in the living body: “*The living human body, therefore, is the soil in which this specific poison breeds and multiplies; and that most specific of processes which constitutes the fever itself is the process by which the multiplication is effected*” (italics in original). The disease comes from the feces of infected patients; if disinfected, he stated that “the intestinal discharges may be entirely deprived of their contagious powers.” He identified three means by which the disease was spread: “the tainted hands of those who wait on the sick ... porous fabrics, tainted with fever” and “infect[ion of] the ground.” The disease entered the bodies of the uninfected “through the drinking water, or by emanations borne upon the air.”⁴³⁷ Although not all of the conclusions in his book were correct, Budd’s work provided a basis upon which to prevent the spread of the disease by preventing contact with fecal contamination.

⁴³⁵ Guillemin, “Choosing Scientific Patrimony,” 385-409.

⁴³⁶ Woodhull, *Notes on Military Hygiene* (1898), 77-78.

⁴³⁷ William Budd, *Typhoid Fever: Its Nature, Mode of Spreading, and Prevention* (New York: Literary Licensing, LLC, 2013; orig. published 1873). _____, “Typhoid Fever: Its Nature, Mode of Spreading, and Prevention,” *The American Journal of Public Health* (1873): 610-613. All quotes are from the latter journal.

However, the emphasis on drinking water as the primary means of transmitting the disease caused US Army doctors to overlook other means of transmission (flies, dust) during the Spanish-American War.⁴³⁸

The same pattern held true for yellow fever. Carlos Finlay had identified the mosquito as the carrier for yellow fever even earlier, presenting his hypothesis at the International Conference on Public Health in 1881. Unfortunately, his presentation was ignored; he did not get even a single question from the audience. His report to the Academy of Medical Science in Havana received a similar reception.⁴³⁹ It was not until after the Spanish-American War, when modern sanitation efforts finally applied to the pestilential areas such as Havana failed to suppress yellow fever that the fomite theory was seriously questioned and Reed's experiments finally proved Finlay correct.⁴⁴⁰

With the mosquito disregarded by all of the yellow fever investigators save Finlay, the search for a yellow fever bacillus in the blood or organs of yellow fever victims continued into the 1890s. In 1896 Sanarelli discovered the "*bacillus icteroides*." Like previously discovered bacilli, it only appeared in a percentage of yellow fever cases, but Sanarelli claimed that "in laboratory experiments *icteroides* are quickly overrun and killed by the common pus organisms, the colon bacillus, and other bacterial inhabitants of the intestines." He was able to produce a disease through injection a disease resembling yellow fever, but a Marine Hospital Service report concluded that "the analogy is hardly strong enough, nor do the symptoms and pathological changes differ sufficiently from those produced by other organisms, ... to warrant the conclusion

⁴³⁸ Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613; Reed et al., *Abstract of Typhoid Board Report*, 178-186.

⁴³⁹ John Tone, "How the Mosquito (Man) Liberated Cuba," *History and Technology* 18, No. 4 (2002): 294. Finlay did get his hypothesis published in 1886 but it was also widely ignored. Charles Finlay, "Yellow Fever: Its Transmission by Means of the Culex Mosquito," *The American Journal of the Medical Sciences* (Oct., 1886): 395.

⁴⁴⁰ Wood, "The Military Government of Cuba," 1-30.

that the disease actually has been produced.”⁴⁴¹ The cause and means of transmission of yellow fever would remain unknown at the outbreak of war.⁴⁴²

Table 3 provides an overview of the state of knowledge of the major epidemic diseases at the start of the Spanish-American War in 1898. The “date discovered” column indicates the date that the microorganism causing the disease was identified (in the case of viruses, the date when bacteria were ruled out in favor of a virus).⁴⁴³ The table shows that the diseases caused by bacteria were identified by 1898, but the cause of viral diseases was unknown. The first human

Table 3: Medical Knowledge of Major Diseases

Disease	Source			Transmission	
	Actual	Assumed 1898	Date discovered	Assumed 1898	Current
Cholera	Bacillus	Bacillus	1884	Drink	Drink, food
Dengue	Virus	?	1907	Fomites	Mosquito
Dysentery ⁴⁴⁴	Bacillus	Bacillus	1897	Drink, food	Drink, food
Malaria	Plasmodia	Plasmodia	1880	Miasma	Mosquito
Plague	Bacillus	Bacillus	1894	Contact, fomites	flea (rat)
Smallpox	Virus	?	1906	Crowding, Fomites	Contact
Typhoid	Bacillus	Bacillus	1880	Drink, dust, flies ⁴⁴⁵	Drink, dust, flies, contact
Typhus	Rickettsia	?	1916	Crowding, air	flea (rat)
Yellow Fever	Virus	?	1901	Fomites, Filth	Mosquito

(Sources: Berenson, *Control of Communicable Diseases*; Stedman, *Twentieth Century Practice*)⁴⁴⁶

⁴⁴¹ E. K. Sprague, “Present Status of the Bacteriology of Yellow Fever,” *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898* (Washington, GPO, 1899), 430.

⁴⁴² Aristides Agramonte, “The Scourge of Yellow Fever: Its Past and Present,” *The Scientific Monthly* 31, No. 6 (Dec., 1930): 524-530. See also “Introduction: Yellow fever before 1900,” *Military Medicine* 166, Supplement 1 (Sept., 2001), 3-4.

⁴⁴³ Viruses were too small to see with optical microscopes. However, through the use of filtration it was possible to demonstrate if the infectious agent passed through filters small enough to filter out any bacterium. If it did pass through the filter, it was classified as a virus. Specific identification of the physical characteristics of a virus would depend on the development of electron microscopes.

⁴⁴⁴ Dysentery is caused by either the *Shigella* bacillus or an amoeba. The amoebic form was discovered in 1874, while the bacillus was discovered in 1897. Both forms have similar transmission characteristics.

⁴⁴⁵ The common assumption was that only water contamination was a significant risk for the transmission of typhoid despite multiple sources indicating that flies and dust were also a risk factor. A major finding of the Typhoid Board was that the typhoid epidemics during the war were not caused by water contamination. Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613; Reed et al., *Abstract of Typhoid Board Report*, 178-186.

Table 3 (cont'd)

Disease	Treatment	
	19th century	Current
Cholera	Hydration	IV Hydration
Dengue	None	None
Dysentery	None	Antibiotics, amoebicides
Malaria	Quinine	Quinine & related drugs
Plague	None	Antibiotics
Smallpox	None (vaccination)	None (vaccination) ⁴⁴⁷
Typhoid	None	Antibiotics
Typhus	None	None
Yellow Fever	None (Quarantine)	None

disease virus identified was the yellow fever virus, confirmed to be a submicroscopic virus in 1901 by Walter Reed.⁴⁴⁸ This and other virus discoveries occurred too late for the knowledge to be useful for the military medical planners of the Spanish-American War. The “Assumed 1898” column under “Transmission” indicates that medical knowledge was lacking in many cases even for diseases such as typhoid and malaria for which the infectious organisms were known. The two tropical diseases encountered in Cuba that were transmitted via mosquito (malaria and yellow fever) were assumed to be spread by miasma and fomites respectively. Although medical sources of the time indicated that typhoid could be spread by flies or dried fecal dust, medical planners such as Col. Greenleaf, Chief Surgeon for all of the Army forces in the field were focused only on water transmission. It was not until the Typhoid Board investigation that the agency of flies and dust was revealed as the principal means of transmission in the training

⁴⁴⁶ Current source, transmission, and treatment: Benenson, *Control of Communicable Diseases in Man*. Historical information as of 1898: Stedman, *Twentieth Century Practice*.

⁴⁴⁷ No treatment, but prevention through vaccination until 1979, when smallpox was eradicated.

⁴⁴⁸ There is some disagreement about where the credit lies. Reed and his team demonstrated that the cause was a living organism that was “ultramicroscopic.” However, Hideyo Noguchi and Adrian Stokes did research on the virus in 1927 that met Koch’s postulates for the discovery of an infectious organism. Charles S. Bryan, “Discovery of the Yellow Fever Virus,” *International Journal of Infectious Diseases* 2, No. 1 (July, 1997): 52-54.

camps.⁴⁴⁹ The result of these mistaken assumptions led military medical planners to take steps to minimize or eliminate the perceived transmission paths rather than the actual paths, such as burning the buildings at Siboney to disinfect yellow fever fomites rather than controlling mosquitoes and mosquito bites to minimize infection.

The mistaken assumptions were a particular issue with the most fatal tropical disease, yellow fever. By the end of the nineteenth century, yellow fever was considered a ship-borne disease that carried germs from “filthy ...poison centers” such as Cuba to the United States. At the time, the only protection was quarantine, which was maintained by the Marine Hospital Service.⁴⁵⁰ The disease was described as “an acute infectious disease of the tropics, properly so called; an infection due to the presence in the bodies of its victims of a specific germ or microorganism” which “within the human body produce certain toxic principles of great virulence.” It was caused by “Human filth and crowding amid such heat and moisture, such rapid vegetable growth, and a corresponding decay necessarily engendered poisons that caused disease and death.” Havana was assumed to be endemic with yellow fever because the narrow streets prevented sunlight from disinfecting yellow fever contamination: “no sunlight, no oxidation, no drying, hence the constant exhalation from the contaminated soil below.”⁴⁵¹ Medical science was convinced that yellow fever was transmitted from contact with contaminated objects, buildings, and soil; this belief would significantly affect the preparations made by medical authorities and army

⁴⁴⁹ Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613; Reed et al., *Abstract of Typhoid Board Report*, 178-186.

⁴⁵⁰ Nelson, “Yellow Fever,” 398. The primary purpose of the US quarantine regulations was to “prevent the introduction of this disease [yellow fever] into the United States is the establishment at the principal ports of the country of completely equipped quarantine stations for the inspection and treatment of vessels, their passengers, crews, and cargoes.” If the ship has come from a port where yellow fever has broken out, the contents were disinfected by steam or formaldehyde gas to destroy yellow fever fomites. Clothing, bedding, etc. could also be disinfected using ammonia. Preston H. Bailhache, “A Precis of the United States Quarantine Regulations for Domestic Ports With Reference to Preventing the Introduction of Yellow Fever Into the United States,” *Report of the Marine-Hospital Service 1898*, 415-420.

⁴⁵¹ Nelson, “Yellow Fever,” 400-401; 404. Although published in 1900, the descriptions of yellow fever and its causes match those of the late 1890s.

commanders during the war, and would also guide the reactions to the epidemic of yellow fever that appeared among the troops fighting in Cuba during the war. Preventive measures against the disease are shown in Figure 3 in the next section; these were limited to avoiding yellow fever regions when the disease was prevalent (during rainy seasons) and isolating yellow fever patients when outbreaks occurred. The methods used to block the presumed means of transmission, avoiding or cleaning up and disinfecting filth along with burning or disinfecting fomites to include the destruction of buildings formerly occupied by yellow fever victims were the preferred method for dealing with the disease, which unfortunately did little to restrict its transmission via the *Aedes aegypti* mosquito. The consequences of this late nineteenth century understanding of yellow fever will be demonstrated in part 2 of this dissertation, which examines the outbreak of (suspected) yellow fever in Cuba during the siege of Santiago.⁴⁵²

⁴⁵² Whether yellow fever actually occurred or if the outbreak consisted of misdiagnosed malaria cases was controversial at the time and cannot be resolved today. Recent Army Medical Department histories all refer to a yellow fever epidemic in 1898. Bayne-Jones, *Evolution of Preventive Medicine*, 124; the more recent *The Army Medical Department, 1865-1917* estimated the yellow fever infection rate at 10% (Mary Gillett, *The Army Medical Department, 1865-1917* (Washington: Center for Military History, 1995), 149).

Disease and Military Medicine

As discussed previously, by the end of the nineteenth century germ theory was generally accepted and the causative agent (germ) of many bacterial diseases had been identified under the microscope. Pasteur's identification of a living organism as the cause of a silkworm epidemic was released in 1865, while Koch's 1882 link of a mycobacterium to tuberculosis brought the epidemiological era of infectious disease epidemiology to full fruition. Koch had identified the cholera bacillus in 1882, adding to the work John Snow had made on the transmission of the disease. William Budd had linked typhoid to contaminated water in 1873, while the typhoid bacillus was found by Eberth in 1880. Alphonse Laveran had identified the plasmodium protozoa that cause malaria in 1881, while Donald Ross had advanced the hypothesis that it was transmitted via mosquitoes in 1898.⁴⁵³

However, even by 1898 there were serious gaps in understanding epidemic disease, especially tropical diseases. The cause and means of transmission of yellow fever was completely unknown, but was assumed to be carried by fomites infected with yellow fever germs. The means of transmission of malaria was still not understood, but was assumed to be carried by miasma associated with low marshy areas. Typhoid was assumed to be transmitted only by contaminated water, with the assumption that if the water supplies were properly protected from contamination the disease could not occur in epidemic proportions.⁴⁵⁴ There was no treatment for these diseases other than quinine for malaria and antipyretics for typhoid. The

⁴⁵³ Michael Worboys, "Was there a Bacteriological Revolution in late nineteenth-century medicine?" *Studies in History and Philosophy of Biological and Biomedical Sciences* 38 (2007): 20–42. Ross' discovery was announced right in the middle of the Spanish-American War, too late to impact events of the war.

⁴⁵⁴ Woodhull's 1898 *Notes on Military Hygiene* states that "It is by the soakage of such [fecal] discharges into wells, or by their contamination of the larger streams or reservoirs, that such epidemics generally occur. It has not been demonstrated that typhoid fever may originate from sewage not specifically poisoned; but it is certain that both it and cholera are caused by their specific excreta." Woodhull, *Notes on Military Hygiene* (1898), 131.

only procedure a nineteenth century doctor could follow to prevent the occurrence of these diseases was to prevent initial infection and to block the transmission of disease from the infected to otherwise healthy companions. This was the scientific basis used by the US Army Medical Corps (as well as civilian doctors) in order to prevent the occurrence of disease epidemics among troops mobilized and/or deployed for combat. The state of knowledge about the diseases of interest was essentially the same for Army doctors and their civilian colleagues. However, it was military medicine that was faced with the task of preventing disease under combat conditions; a task much more difficult than treating disease in some town in the United States.

This concept may best be understood in context of the classic epidemiological triangle (Figure 1). The three vertices of the triangle are: (1) the *host*, an individual or organism that carries the disease, (2) the *agent*, a microbe (germ) that causes the disease, and (3) the *environment*, external factors that cause or facilitate disease transmission. All three elements of the triangle must be present for a disease to be spread from person to person (or in some cases from a nonhuman host to a human host; rabies for example becomes a concern for a person when transmitted from rabid animal to human). If any of the edges of the triangle are broken or the vertices removed, the disease cannot be spread.⁴⁵⁵

Nineteenth century medicine lacked ways to block the agent through treatment (with the exception of quinine for malaria), so the only effective measures (other than palliative treatment of symptoms) was to either isolate the host through quarantine, or to block the environmental effects that facilitate the spread of disease, to include transmission through vectors or

⁴⁵⁵ Centers for Disease Control and Prevention, *Principles of Epidemiology in Public Health Practice: An Introduction to Applied Epidemiology and Biostatistics*, 3rd ed. (Atlanta, GA: U.S. Department of Health and Human Services, Oct., 2006), 1-52–1-53.

contaminated materials (water, food, fomites). Of course, in order to block environmental effects it is necessary to know what to block – which requires some understanding of how the disease agent is transmitted from host to host. In some cases this was known – for cholera, the agent is a bacillus found in the fecal discharges of a cholera victim, which is transferred from the victim to another person through ingestion of the agent from food or water contaminated by fecal matter. John Snow stopped cholera transmission in London in 1854 by removing the handle of the Broad Street pump, thereby eliminating the contaminated water supply that was carrying the agent from a leaky cesspool to persons drinking water from the pump. In other cases, the environmental

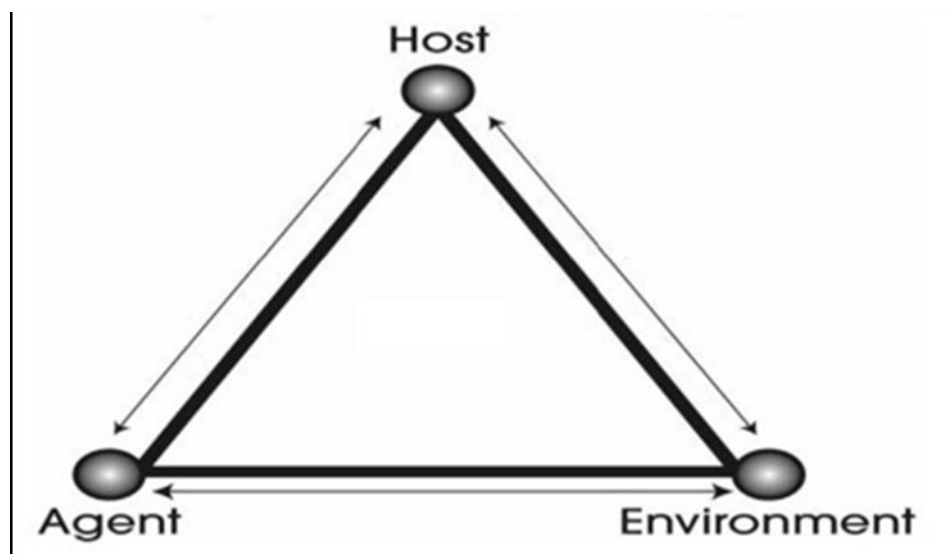


Figure 1: The Epidemiological Triangle
(Source: CDC, “Infectious Disease Epidemiology”)⁴⁵⁶

effects were either known imperfectly, known incorrectly, or not known at all. For typhoid, the route of transmission via contaminated water was known but flies as transmission agents were only suspected – so efforts to ensure a clean water supply, although helpful by themselves, could

⁴⁵⁶ Centers for Disease Control and Prevention, “Infectious Disease Epidemiology,” https://www.cdc.gov/bam/teachers/documents/epi_1_triangle.pdf, accessed 12 Jan. 2016.

not block transmission of typhoid from uncovered sinks (latrines) containing feces with *S. typhi* to food via the agency of the flies swarming around the sinks and kitchens.

In the tropics, the two diseases of greatest concern were malaria and yellow fever (diarrhea and dysentery were problems for military forces operating in any region, but these were known to be passed person-to-person in crowded military camps). Malaria was known to be caused by a bacterium, but the yellow fever germ was as yet unknown in 1898. At that time malaria was assumed to be passed via miasma from low, marshy ground,⁴⁵⁷ and yellow fever was assumed to be transferred via direct contact with fomites contaminated with the unknown yellow fever germ. It was assumed that the yellow fever germ was found in filth.⁴⁵⁸

Although malaria could be treated with quinine, it was still a debilitating disease that could easily become chronic and was to be avoided.⁴⁵⁹ Yellow fever was particularly dreaded as there was no treatment and fatalities could reach over 50% of those infected.⁴⁶⁰ The only solution that nineteenth century doctors could offer was to attempt to block elements of the epidemiological triangle in order to avoid infection. Unfortunately this could be an ineffective strategy if an incorrect agent or effect were blocked. It was a particularly difficult task for military medicine because the most obvious strategy for avoidance of these two diseases – do not travel to regions where the disease are present – would be overridden by military necessity. If European or American countries wanted to wage wars of imperial conquest in the tropics, soldiers would succumb to these diseases and some would die.

⁴⁵⁷ As discussed previously, Manson and Ross' mosquito hypothesis as a malaria vector was unknown to many doctors and considered a theory by virtually all of the rest. Guillemin, "Choosing Scientific Patrimony," 385-409.

⁴⁵⁸ Nelson stated in *Yellow Fever* that "Human filth and crowding amid such heat and moisture, such rapid vegetable growth, and a corresponding decay necessarily engendered poisons that caused disease and death" (Nelson, "Yellow Fever," 404).

⁴⁵⁹ It was not known that different strains of the malaria plasmodium could cause either an acute attack that could be fatal, or a chronic infection.

⁴⁶⁰ Patterson, "Yellow Fever Epidemics and Mortality," 855.

Nineteenth century strategies for blocking one or more perceived edges or vertices of the triangle are shown in Figures 2 (Malaria) and 3 (Yellow Fever), created for this dissertation. Each diagram shows influences and transmission paths for each disease. The actual influences and paths are drawn using solid arrows, while perceived (as of 1898) influences and paths are drawn using dashed arrows.

Figure 2 shows that the malarial agent (plasmodium) is transmitted from host (a soldier on a stretcher) to a new host (soldier marching) via mosquitoes; transmission paths are shown using

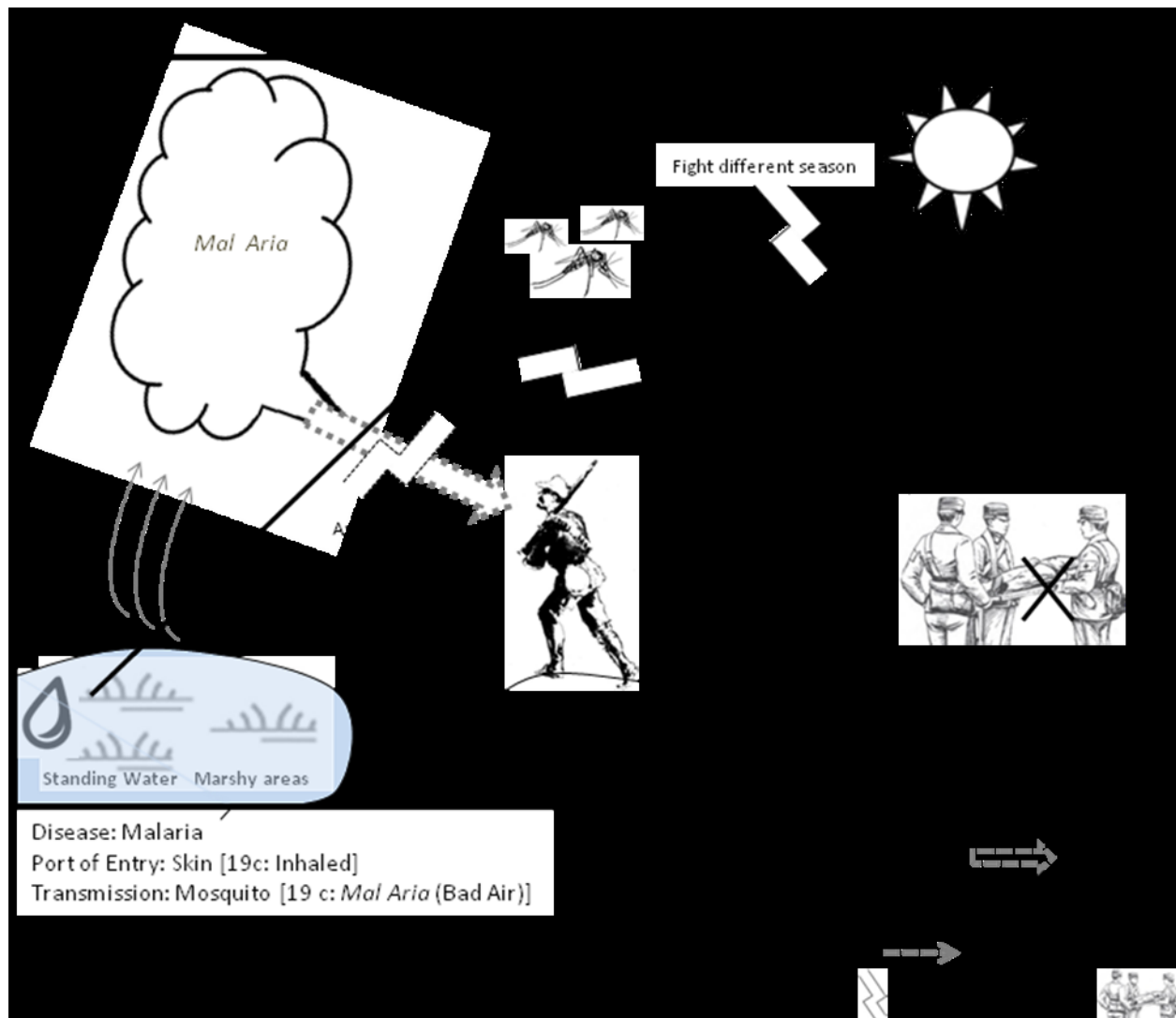


Figure 2: 19th Century Disease Mitigation Techniques: Malaria

double arrows. However, the nineteenth century perceived transmission path is from bad air (in Latin, *mal aria*) rising from a marshy area with standing water (raindrop), shown using dashed double arrows. The mitigation technique is to break the path before it reaches the soldier by avoiding the malarious area. In this case the nineteenth century soldier is lucky; even though the agent is actually transmitted by mosquito, the *Anopheles* mosquito has a short flight path, so avoiding low, marshy areas (which are smelly and have mosquitoes during the warm and rainy seasons) actually succeeds in blocking transmission despite the mistaken transmission path. Blocking measures are shown as a jagged break in the figure.

Influences are shown in Figure 2 using single arrows. Mosquitoes are only present where there is standing water (left arrow from water at the bottom) and warm temperatures (right arrow from the sun at top). Fighting during a different season (a dry season, or winter in non-tropical areas) when mosquitoes are not present is another successful mitigation technique in 1898. Again, it succeeds in spite of the wrong reason; although the nineteenth century doctor did not realize that malaria is not present during dry, cold seasons because the mosquitoes are dormant, he did realize that malaria did not occur during the season based on previous historical experience (possibly derived using medical statistics).

One final means was available to the nineteenth century doctor to help avoid malaria outbreaks: the use of quinine to directly block the agent in the host (shown as an “X” in the figure). The use of quinine prophylaxis was pioneered in the United States during the Civil War; although it did not eliminate malaria outbreaks, it did reduce their severity.⁴⁶¹

The dangers from malaria were underestimated during the Spanish-American War, despite the fact that there was a 270% sickness rate among white troops during the Civil War (indicating

⁴⁶¹ US Army Surgeon General, *MSHWR*, vol. 1, part 3 (third medical volume), 166-174.

that on average every soldier had almost 3 attacks of malaria during the war) with a white death rate of 1.8% (3.9% for blacks), representing over 6% of disease deaths during the war.⁴⁶²

19th Century Disease Mitigation Techniques: Yellow Fever

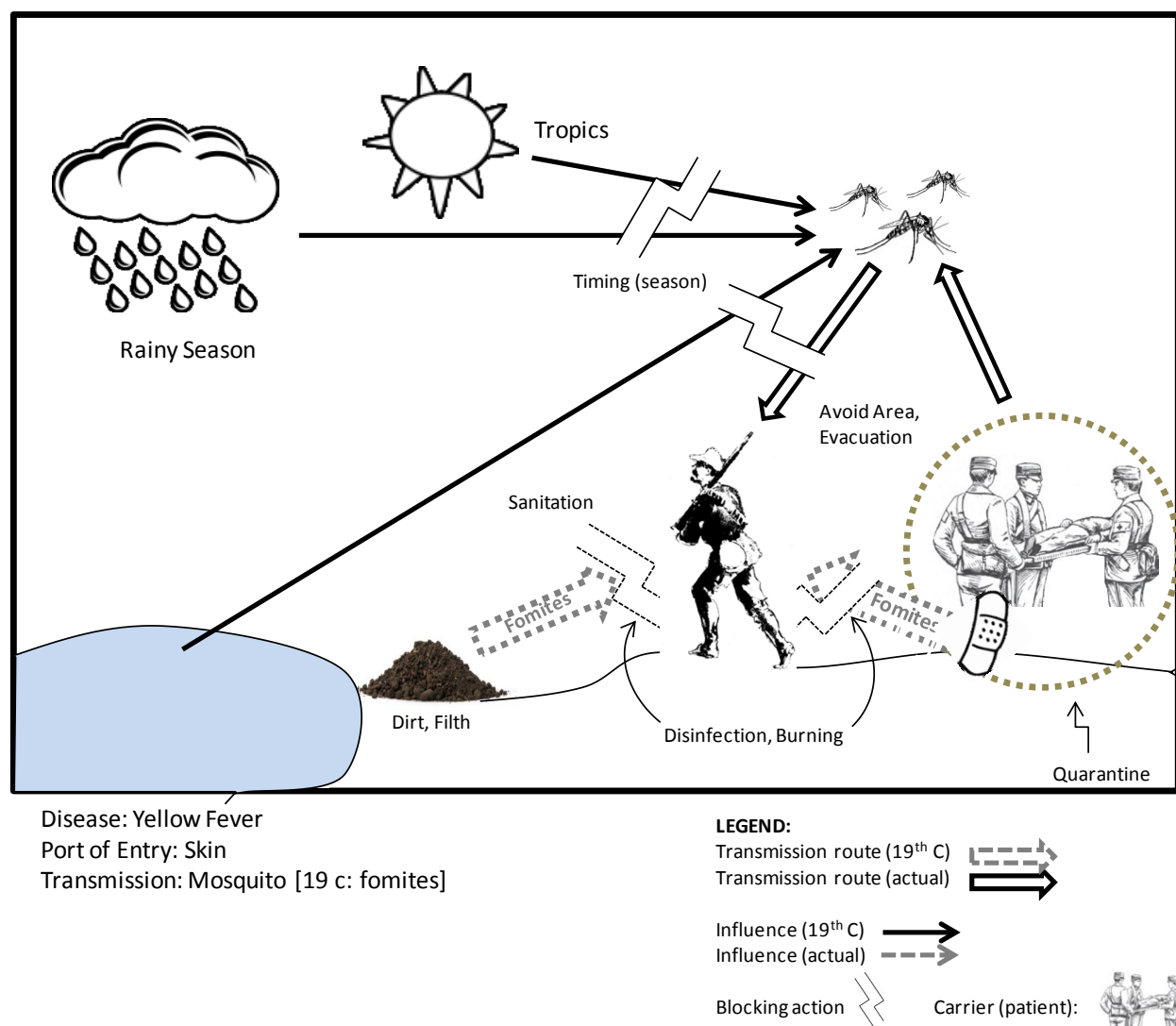


Figure 3: 19th Century Disease Mitigation Techniques: Yellow Fever

Yellow fever was the other major disease feared by soldiers sent to fight in the tropics.

Yellow fever had no treatment, so it was even more important to the nineteenth century doctor to

⁴⁶² The figures are split between white and colored troops; the sick rate for blacks was just under 250%. The death rates are also for white troops only; malaria killed about 7% of black soldiers dying from disease. Ibid., 11. Secretary of War Alger testified that the sickness in Santiago was “much greater” than expected. *Dodge Commission Report*, vol. 7 (Testimony), 3771.

block its effects through some type(s) of mitigation techniques. Figure 3 shows the influences, transmission paths, and mitigation techniques for yellow fever. Yellow fever was known to occur in tropical regions during a warm, rainy season, hence the influence lines from the warm sun (denoting a warm tropical region) and from the rainclouds. Unknown to nineteenth century medical practitioners was an influence connection to low marshy ground and standing water, which was necessary for the *Aedes* mosquito to breed. The actual path from host to new host is by mosquito similar to malaria, but the assumed path was by contact with filth or other materials (fomites) assumed to be contaminated with yellow fever germs (dashed arrow from dirt pile) or from bandages, clothing, or other items contaminated from contact with a yellow fever victim (fomites; dashed arrow from bandaid)..

The most effective nineteenth century mitigation technique was to time the campaign for the dry season or other period when the disease was not present (when the mosquitoes were dormant, unbeknownst to them), to avoid the area all together, or to evacuate when the sickly (rainy) season began. Those are shown as jagged breaks in the influence or transmission arrows. Another blocking technique was to clean up or destroy the presumed fomites through sanitation measures (reducing or eliminating filth) or by disinfecting or burning the fomites. Unfortunately, this was not an effective technique as it left the actual patient → mosquito → new host transmission path intact. The last nineteenth century mitigation technique was to isolate the agent through quarantine, shown as a dashed bubble around the patient. If yellow fever had been transmitted by direct contact with bandages, bedding, etc. this may have been effective, but the quarantine did not keep mosquitoes away from infected soldiers, so this procedure was also

ineffective unless the quarantine area was so isolated that no mosquitoes could fly from the quarantine area to uninfected persons nearby.⁴⁶³

Yellow fever was the disease most feared during the Spanish-American War. Surgeon-General Sternberg focused on the outbreaks of this disease in Cuba in his March 25, 1898 memorandum on medical risks to the President and Secretary of War (reproduced in Appendix B, item 1), rather than on malaria, typhoid, dysentery, or other diseases that could be expected to occur during any campaigns in Cuba during the war. Commanding General Miles correctly stated in a communication to Secretary Alger on April 18th that the memorandum implicitly recommended against sending troops to Cuba during the rainy or sickly season by emphasizing the dangers inherent in such a move. Miles also used the authority of Juan Guiteras, who he characterized as “a well-known authority on yellow fever, and others” to reinforce his opinion that “it is extremely hazardous, and I think it would be injudicious, to put an army on that island at this season of the year, as it would undoubtedly be decimated by the deadly disease, to say nothing of having to cope with some 80,000 troops, the remnant of 214,000, that have become acclimated...”⁴⁶⁴ Sternberg and Miles have identified several of the effects of yellow fever on a possible military campaign in Cuba: Location and timing of the operation (in low-lying areas of Cuba known to have endemic and epidemic yellow fever, during the unhealthy rainy season),

⁴⁶³ An effective quarantine would also need to prevent spread by ensuring that no one near the patient could acquire the infection. In theory all persons near a quarantined yellow fever hospital were immune, but in practice only the doctors and possibly nurses were actually immune; hospital corpsmen, guards, support personnel sweeping the floors and doing laundry, etc. were not all immune – so the infection could still spread. The peacetime quarantines instituted by the Army and the USMHS involved either a quarantine site established in a remote area such as an offshore island, or by quarantining a military post or town. These quarantines were often effective because the area of quarantine was much larger than the flight path of the *Aedes* mosquito (typically less than 200 meters). The quarantines established during military campaigns might not establish such large separation distances. “*Aedes aegypti*,” European Centre for Disease Prevention and Control, <http://ecdc.europa.eu/en/healthtopics/vectors/mosquitoes/Pages/aedes-aegypti.aspx>, accessed 1 July 2016. The *Aedes albopictus* carrier of dengue has a similar range. “Dengue and the *Aedes albopictus* mosquito,” Centers for Disease Control, <http://www.cdc.gov/dengue/resources/30jan2012/albopictusfactsheet.pdf>, accessed 1 July 2016.

⁴⁶⁴ Incorrectly identified as “James Guiteras” by Miles in the source document. Miles to Alger April 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 8.

prior immunities (most American troops had none), and asymmetry (the Spanish forces are the survivors of several years of exposure to yellow fever, which rendered most immune against the American forces with little if any immunity).

The most applicable nineteenth century preventive measure applicable to a possible Cuban operation is the one recommended by Miles – do not send in troops during the rainy season. If it is necessary to send troops in at all, Miles recommended that they be mobilized and placed in “healthy camps” in the United States until after the sickly season when “they can be used on the island of Cuba with safety.”⁴⁶⁵ In the end, President McKinley and Secretary Alger overrode Miles and sent the Fifth Army Corps to Cuba in July and August, at the height of the sickly season. The outcome was predictable – epidemics of yellow fever, malaria, typhoid, and dysentery. The two that were most debilitating were yellow fever and malaria. Given the difficulty in distinguishing between the two diseases in 1898, we cannot be sure to what extent yellow fever occurred during the Cuban campaign; some doctors at the time swore that the disease was present in a mild form, others that it was all misdiagnosed malaria. It is certain that malaria was present.⁴⁶⁶

⁴⁶⁵ Miles to Alger, April 18, 1898, *Correspondence Relating to the War With Spain and Conditions Growing Out of the Same, including the Insurrection in the Philippine Islands and the China Relief Expedition, Between the Adjutant-General of the Army and Military Commanders in the United States, Cuba, Porto Rico, China, and the Philippine Islands, From April 15, 1898 to July 30, 1902*, vol. 1 (Washington: GPO, 1902), 8-9; also Appendix B, item 2.

⁴⁶⁶ Maj. Reade of the Inspector-General’s staff reported that it was “both affirmed and denied by medical men that yellow fever exists in this division.” Reade, *Dodge Commission Report*, vol. 1 (Appendices), 405. When Major (Dr.) Seaman was asked if there were any cases of yellow fever in Cuba, he replied “there were twelve suspected cases.... the clinical records of the case are diametrically opposed to yellow fever, but the pathological diagnosis was rather favorable; it stimulated yellow fever.” Maj. Louis Livingston Seaman, *Dodge Commission Report*, vol. 3 (Testimony), 301. Surgeon-General Sternberg discussed the “The malarial fever, which so generally affected the troops in front of Santiago and produced such intense debility and prolonged ill health...” in his official report to the Dodge Commission (*Dodge Commission Report*, vol. 1 (Appendices), 177).

The US Army Medical Corps

At the end of the Civil War, the US Army Medical Corps had an impressive record for managing mass casualties, innovative surgeries, and had amassed vast amounts of medical histories and statistics that would be used after the war to attempt to determine conditions that caused or exacerbated disease outbreaks and treatments that appeared to alleviate them.⁴⁶⁷ However, treatment remained the same for both civilian and military doctors. The war offered little useful information for diseases that could not be prevented.⁴⁶⁸ The seeming helplessness of doctors in epidemic outbreaks undermined their authority with line commanders, who were inclined to ignore their recommendations for preventive health measures on the various frontier posts scattered across the American West.⁴⁶⁹

The postwar period was a period of drawdown, retrenchment, and meager opportunities for advancement for the Army Medical Corps. In January, 1865 the US Army medical corps had 201 general hospitals and four hospital ships equipped for 5,000 patients as well as hospital riverboats, hospital railroad trains, and other facilities. During the Civil War 2,109 regimental surgeons and 3,882 assistant surgeons had been appointed, with an additional 5,617 contract surgeons or assistant surgeons serving the Army. As usual in the history of the United States, at the end of the war Congress eliminated almost all of the capability developed during the war in order to save money. A medical bill enacted in 1866 severely reduced the scope of the corps for the peacetime army; it would have 60 surgeons and 150 assistant surgeons to serve a peacetime force of approximately 25,000 officers and men. An 1867 bill gave surgeons and assistants the

⁴⁶⁷ These were documented in the multiple volumes of the *Medical and Surgical History of the War of the Rebellion*.

⁴⁶⁸ Gillett, *The Army Medical Department*, 4.

⁴⁶⁹ Ibid.

rank of captain in the Army.⁴⁷⁰ Unfortunately, many of these positions lay vacant during the late 1860s and early 1870s, leaving some posts and garrisons without professional military medical assistance; in these cases contract surgeons were used. Promotions were slow and the number of senior officers (Lieutenant Colonel and Colonel) was small relative to other Army staff departments (1 colonel out of 102 officers versus 1 in 13 for the Commissary and Quartermaster departments). In 1877 Congress further reduced both regular and contract physicians in a flurry of budget cutting.⁴⁷¹ Aggravating the chronic shortage of doctors was a severe limitation on the number of surgeons that could be retired on disability; instead, the disabled remained on the active list – further reducing the number actually fit for duty. It was not until 1891 that Congress shifted all doctors over 64 years of age on the disability retired list to the permanent retired list. An additional problem for the Army Medical Department was the use of soldiers as hospital stewards; typically commanders gave these positions to soldiers unfit for normal duties. By 1886, good stewards were so much in demand that the Surgeon General restricted their ability to take military leave. Congress finally acted later that year, creating the Hospital Corps within the Army. Unfortunately, the Army had difficulty enlisting and retaining men for the Hospital Corps just as they had difficulty retaining doctors in the Medical Corps.⁴⁷² As late as 1900, Army doctors remained at a disadvantage in both pay and promotion relative to their line counterparts – and line officers were hardly lying in a bed of roses.⁴⁷³ Female nurses were also unavailable; it

⁴⁷⁰ US Army Office of Medical History, *The Medical Department of the United States Army from 1775 to 1873*, <http://history.amedd.army.mil/booksdocs/medicaldepartment/partfive.html>, accessed 10 Oct. 2012.

⁴⁷¹ Gillett, *The Army Medical Department*, 16.

⁴⁷² *Ibid.*, 16-21.

⁴⁷³ Jonathan Dine Wirtschafter. "The Genesis and Impact of the Medical Lobby: 1898-1906," *Journal of the History of Medicine* (Jan., 1958): 22.

was not until the Spanish-American War that the usefulness of female nurses was proved to the misogynic Medical Corps.⁴⁷⁴

The situation at the top was turbulent after the retirement of Brig. Gen Joseph Barnes, the Army Surgeon-General from 1864 to 1882. The Army's Surgeon-General's office was filled by six different officers between 1882 and 1893, each serving for only a few years due to death in office or reaching the mandatory retirement age of 64. These officers, all Civil War veterans, were also veterans of the era before germ theory. They were unable to grasp the significance of the rapid advances in scientific medicine, relying on the tried and true methods of an earlier time. It was not until 1893 that a medical scientist was offered the post of Surgeon-General: George Sternberg.⁴⁷⁵ This reliance on seniority and lack of consistent leadership prevented the Army Medical Corps from fully participating in the trend toward scientific medicine during the 1870s and 1880s. Although the Army Medical Museum (filled with anatomical specimens from the Civil War) also became a research laboratory and a center for research into the science of pathology, the Medical Department, like its civilian counterparts, resisted change. The publication of the *Medical and Surgical History of the War of the Rebellion* occupied much of the resources of the Surgeon-General's office, but the authors used deductive logic to try to ascertain the causes and effective treatments of disease rather than using a scientific approach. Joseph Woodward, the museum's photomicroscopist and author of the second medical volume of the history (focused on dysentery), made an effort to determine the cause of the dysentery that was the leading cause of death from disease during the war, but his effort was deductive rather

⁴⁷⁴ The Dodge Commission concluded that one of the faults of the Army Medical Department was the fact that "the nursing force during the months of May, June, and July was neither ample nor efficient, reasons for which may be found in the lack of a proper volunteer hospital corps, due to the failure of Congress to authorize its establishment, and to the nonrecognition in the beginning of the value of women nurses and the extent to which their services could be secured." *Dodge Commission Report*, vol. 1 (Appendices), 188-9.

⁴⁷⁵ Gillett, *The Army Medical Department*, 7.

than experimental. Woodward even attacked those who advanced the idea that bacteria or any other living organism could cause disease as late as 1879.⁴⁷⁶ The Department was slow to accept Lister's research on antiseptics and the germ theory, and the use of microscopes was discouraged during the 1870s and 1880s. Sternberg was an exception to this rule, but he had to purchase his own equipment for his pioneering research in bacteriology.⁴⁷⁷ The publication of the *Medical and Surgical History* was the last gasp of a period where medical statistics were at the forefront of the determination of the causes of disease. The new era would be dominated by laboratory research; after the 1860s the use of medical statistics was in eclipse.⁴⁷⁸

Despite the lack of disease research, in the 1880s and especially the 1890s, the Army Medical Department slowly became a center for medical knowledge through the buildup of the Surgeon General's library (later to become the National Library of Medicine). By 1895, the library had more than twice the holdings than the next two largest medical libraries in the U.S. combined. However, it was not until Sternberg became Surgeon-General of the Army in 1893 that the Department became a center for scientific medicine.⁴⁷⁹

Sternberg insisted on professional development for the Army Medical Corps; his first action as surgeon-general was the creation of a postgraduate Army Medical School. In addition to courses in military medicine, hygiene, and surgery, he added courses in "microscopy, sanitary and clinical; pathological histology, bacteriology, and urinology."⁴⁸⁰ A series of lectures on "military hygiene" was given to line officers at the US Infantry and Cavalry School at Fort

⁴⁷⁶ Ibid., 29; 28.

⁴⁷⁷ Ibid., 27-30.

⁴⁷⁸ James Cassedy, *American Medicine and Statistical Thinking, 1800-1860* (Cambridge, MA: Harvard University Press, 1984), 238 as cited in Gillett, *The Army Medical Department*, 30.

⁴⁷⁹ Gillett, *The Army Medical Department*, 7. Sternberg was 11th in seniority but was well known as a modern medical scientist. This appointment changed the focus of the Department from traditional nineteenth century medicine to the newer "scientific" medicine. For the difference between the two, see Bynum, *Science and the Practice of Medicine*. For seniority, see Craig, *In the Interest of Truth*, 196.

⁴⁸⁰ US Army Surgeon-General, *Manual for the Medical Department* (Washington: GPO, 1898), 9. Walter Reed was Professor of Clinical and Sanitary Microscopy at the school. (Craig, *In the Interest of Truth*, 199).

Leavenworth, Kansas, progenitor of the current US Army Command and General Staff College. These lectures went into great detail on the applied principles of sanitation, to include how to construct buildings with adequate air supplies, building latrines and disposing of waste, disinfection, etc.⁴⁸¹ Unfortunately, the School was an optional program that only the best line officers attended. It was not until after the war that military hygiene was added to the curriculum at West Point; this outcome was driven by the widespread deficiencies in camp sanitation identified during the war.⁴⁸²

Sternberg had greater success in improving the sanitation and healthfulness of the Army's many posts and facilities. The Department supplied water filters that were capable of filtering out over 98% of bacteria in the water, although they required care and frequent cleaning. Efforts were also made to develop nutritious travel and emergency rations.⁴⁸³ Efforts such as these institutionalized procedures for preventive medicine in the Army even before the bacteriological revolution of the 1870s through 1890s; Sternberg built on the earlier work of Surgeon-General Hammond, whose *Treatise on Hygiene With Special Reference to the Military Services* (1863) established sanitary standards for the troops.⁴⁸⁴ Woodhull's *Notes on Military Hygiene for Officers of the Line* reflected Sternberg's views on sanitary practice for the more modern Army of 1898.⁴⁸⁵

Under Army regulations, the responsibility for sanitation and the health of soldiers was split between the Medical Corps doctors and unit commanders, following the lead of the British Army reforms of the late 1850s discussed previously. In peacetime, a system of mandatory sanitary

⁴⁸¹ Woodhull, *Notes on Military Hygiene* (1898). Woodhull was also on the faculty of the Army Medical School.

⁴⁸² Cirillo, *Bullets and Bacilli*, 130-131.

⁴⁸³ Gillett, *The Army Medical Department*, 102-106.

⁴⁸⁴ William Hammond, *Treatise on Hygiene With Special Reference to the Military Services* (Philadelphia: J.B. Lippincott & Co., 1863).

⁴⁸⁵ Woodhull, *Notes on Military Hygiene* (1898), cited previously.

reports was instituted in Army regulations in the 1870s, which brought command attention to issues in the scattered posts of the post-war army.⁴⁸⁶ The Manual for the Medical Department specifies that “The regimental surgeon is, in sanitary matters, the adviser of the regimental commander. On the march and in camp he should examine the sick with a view to their proper treatment and disposition.” Corps, division, and brigade surgeons had a similar advisory capacity to the commander. The actual creation, imposition, and enforcement of sanitary regulations and procedures were the responsibility of the commander. Even if a doctor caught a soldier defecating in the woods it was up to a line officer to discipline the soldier. Many commanders in the Spanish-American War failed to take these responsibilities seriously, especially in the volunteer units. Some of the older Civil War veterans regarded filthy campsites as just a normal part of field conditions.⁴⁸⁷ The result was an epidemic of typhoid that swept across all of the training camps in the United States, infecting every regiment mobilized in the Army with the exception of the troops sent to the Philippines.⁴⁸⁸

During the late nineteenth century, the only effective weapon against disease was preventive medicine. Army recruits were routinely vaccinated against smallpox, unlike their civilian counterparts. The greatest disease hazards to troops during the years between the Civil War and the Spanish-American War were epidemics of cholera and yellow fever. Both diseases were classified as “filth diseases” resulting from “dirt and unclean habits.” Most soldiers were recruited from northern cities where the climate is too cold to accommodate the *Aedes aegypti* mosquito that spreads yellow fever, so they lacked any acquired immunity to the disease. When

⁴⁸⁶ Bayne-Jones, *Evolution of Preventive Medicine*, 111.

⁴⁸⁷ U.S. Army Surgeon General, *Manual for the Medical Department*, 13-16. Brig. Gen Boynton denied that the conditions at Camp Thomas were worse than normal, explaining that “Everyone here is a veteran, and everyone knows that in the assembling of a great army, in the getting up of supplies, in the breaking out of sickness and establishing the camp, everything can not be carried on as in a church fair or a church picnic.” *Dodge Commission Report*, vol. 3 (Testimony), 76.

⁴⁸⁸ Reed et al., *Abstract of Typhoid Board Report*, 167.

assigned to southern port cities during periodic yellow fever epidemics, the death rates could be significant. The impact this had on the Medical Corps must be emphasized. First, there was increasingly little experience gained in treating malaria; by the time of the Spanish-American War, almost all of the doctors familiar with the treatment of malaria had retired.⁴⁸⁹ Second, it made cholera and yellow fever the *bête noire* of the Army Medical Corps, rather than malaria or typhoid. Planning for the Spanish-American War would be more concerned about preventing these two diseases than other more likely threats. Even after epidemic malaria had broken out among the American soldiers in Cuba during the war, the commander was more worried about the disease increasing the yellow fever risk for his soldiers than he was about the malaria itself.⁴⁹⁰

One of the defects of Army medicine was the fact that many of the doctors serving in the field during the war were not part of the Army Medical Corps but were part of a state National Guard. The quality of doctors serving in the Guard was also noticeably lower. Regular Army doctors had to pass stringent examinations to receive a commission in the Medical Corps. Guard doctors needed merely a medical degree, which did not necessarily signify competence in an era where medical colleges were unregulated and often suspect. Although a few doctors such as Nicholas Senn made an effort to gain instruction from Regular Army doctors on both military medicine and management, most Guard doctors lacked any experience in dealing with hospital setup and administration, Army requisition systems, the Army Hospital Corps, or a myriad of other duties required of medical officers during the war. There was significant friction during the

⁴⁸⁹ The only possible exception was Surgeon-General Sternberg himself, but his career had focused on yellow fever, not malaria. *Dodge Commission Report*, vol. 6 (Testimony), 3048

⁴⁹⁰ After the war, senior officers testified that they considered yellow fever the most likely threat. *Dodge Commission Report*, vol. 3 (Testimony), 49. Shafter, commander of the Fifth Army Corps in Cuba, wired Washington in August stating that “more than 75 per cent of [the corps] which have been ill with a very weakening malarial fever, lasting from four to six days, and which leaves every man too much broken down to be of any service and in no condition to withstand an epidemic of yellow fever...” Shafter to Corbin, August 8, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 213.

war between Regular and volunteer doctors, just as there was friction between Regular and volunteer officers.⁴⁹¹

By the time it was mobilized in 1898, the US Army Medical Department was scientifically advanced with a core of Army doctors that were well trained in both wound treatment and the treatment of disease – but they were limited to the extent of medical knowledge at the time. In addition, the remainder of the military medical service during the war – the doctors of the Volunteer Army and the contract physicians – were not necessarily as well trained.⁴⁹² Despite the best (but limited⁴⁹³) efforts of the professionals of the Medical Department, the annals of the war are filled with horror stories about men lying in the open for hours before and after treatment, outbreaks of epidemics so bad that they entirely debilitated the entire Fifth Army Corps and killed thousands of young men that never even left their mobilization centers within the United States, and critical shortages of doctors, nurses, hospital corpsmen, supplies, medicines, and even food for the soldiers unfortunate enough to be wounded from enemy action or stricken by disease. The causes of these failures are many, and are discussed in detail in Part 2 of this dissertation. In early 1898 the Army Medical Department, like the American Army as a whole, was confined to a small peacetime force with parsimonious budgets and cumbersome regulations until it was suddenly required to expand in size by hundreds of percent, provide supplies and transportation that could not be bought in the few months available for mobilization and

⁴⁹¹ Gillett, *The Army Medical Department*, 120. Nicholas Senn served in Cuba and was the author of *War Correspondence (Hispano-American War): Letters from Dr. Nicholas Senn*, cited in this dissertation.

⁴⁹² Sternberg noted that even the competent doctors lacked knowledge of sanitation and hygiene. *Report of the Surgeon General 1899*, 208. See also Cirillo, *Bullets and Bacilli*, 28-29.

⁴⁹³ The efforts were in most cases the best that doctors could do; the Dodge Commission concluded that “The testimony shows that, as a rule having few exceptions, the medical officers of the Army were faithful, earnest workers, and to their unremitting efforts to properly and skillfully care for the sick and wounded, often in the midst of adverse conditions, is in large measure due the unusually low mortality rate indicated in the returns.” *Dodge Commission Report*, vol. 1 (Report to the President), 66. Unfortunately, the best effort treatment occurred after they failed to take adequate measures to prevent the disease, focusing instead on measures such as burning buildings at Siboney.

deployment, and field an overseas force far larger than ever expected in a region known for disastrous epidemics that have destroyed armies in the past. In this chapter, along with the case studies in the next chapter, aspects of medical and military history relating to disease have been identified. This history was readily available to the professional medical and military officer of 1898, and represented an essential part of his corpus of professional expertise. Part 2 will examine the decisions made by these officers before and during the Spanish-American War, and evaluate the wisdom of these decisions given this knowledge base of nineteenth century medical and military experience.

Quarantine and the US Marine Hospital Service

The United States Marine Hospital Service (USMHS) was the direct progenitor of the US Public Health Service. It was originally established in 1798 as a public means of providing for sick and injured seamen, paid for by a tax of twenty cents per month per seaman. Hospitals were erected in the major port cities, to include New Orleans in 1800 before it was part of the United States. It was intended to be a source for immediate treatment only; no chronic or incurable diseases were handled and seamen were limited to a four month stay.⁴⁹⁴ Interestingly, the Marine Hospital Service was administered by the Treasury Department, likely because it originated with taxation applied at ports, similar to the tariff revenue that formed most of the government income in the eighteenth and nineteenth centuries.

The great Mississippi Valley yellow fever epidemic of 1878 brought national attention to the need for an effective quarantine service, both to quarantine incoming ships that may have been exposed to the disease, and to quarantine cities if the disease broke out (it was the spread of the disease from New Orleans that led to all of the deaths up and down the great river valley).⁴⁹⁵ In 1898, the following rules applied to interstate quarantine of yellow fever. It was the responsibility of local physicians to report suspect cases to their state or local public health officers who in turn would notify the USMHS. The patient should be isolated and, in line with the prevalent fomite theory of contagion, it was necessary to “disinfect all textiles, etc., which may have been infected by the sick.” The house should be quarantined; if a neighborhood becomes a locus of infection, either the sick are removed from the area and taken to a quarantine

⁴⁹⁴ Alfred C. Reed, “United States Public Health Service,” *Popular Science Monthly* LXXXII (April, 1913): 354-355.

⁴⁹⁵ “Congressional Inquiry on the Necessity of a National Quarantine for the Atlantic and Gulf Coasts,” *Annual Report of the National Board of Health 1880* (Washington: GPO, 1881), 10-13.

zone or the local population is evacuated. “When it is found that we have several cases in a town and the source is not definitely known, it is, I believe, advisable to quarantine with an impassable cordon the whole town, but only until inspection, house to house, shows exactly what section of the town is infected; then release the remainder and cordon that section until it can be depopulated into a camp...” Noninfected people can leave the area only if they proceed to Northern location (e.g., Chicago), but “all parties, save immunes, going to places inside such lines, i.e., into infectible territory, should go into the detention camps...” If the number of cases becomes too large to treat in this manner, an entire town or city can be quarantined.⁴⁹⁶ A detailed set of regulations regarding rail travel was worked out, with “inside men” and “outside men” working on either side of a quarantine zone boundary. The goal of these rules was to “facilitate in all proper ways the escape from infected places into noninfectible territory of those who desire to go; second, to supervise the movement from place to place in infectible, but clean territory, of those whose necessities compel them to travel; and, finally, to do what we can toward keeping open the channels of trade.” The key to removal is that people coming from yellow fever areas must travel outside of “infectible” territory. We know now that infectible territory is the region where the *Aedes* mosquito can live and the noninfectible territories are regions where the mosquito cannot thrive. In 1898, the delineation was based on past experience; regions where yellow fever did and did not break out. There was a concern that people would use the trains to bypass the quarantine and spread the infection to “infectible” areas along the train lines. “Trains bearing refugees should run through without making any stops except for coal and water. ... If the place is of considerable size, so that the train has to reduce speed very much in running through it, there is always a danger of tramps and others boarding the train while in motion;

⁴⁹⁶ J. H. White, “Synopsis of the Interstate Quarantine Regulations of the Treasury Department,” *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898*, Treasury Doc. 1419 (Washington: GPO, 1899), 412-414.

consequently, in such cases, we must have the train stopped at designated points on either side of the town while a search is made for such intruders.” There is also a concern about freight trains; these have crews “less subject to control than passenger crews”; even more troubling “the freight train is the “route of election” chosen by tramps proper and other irregular travelers; of these latter the most dangerous class are the railroad men out of a job, who are smuggled along by their mates in cabooses or box cars...”⁴⁹⁷

Maritime quarantine regulations were the first line of defense. They required any vessel coming from a foreign port, a domestic port where yellow fever was prevalent, or any vessel with sickness on board to stop for a quarantine inspection. The only exception were cases where a ship was made from iron and was clean, moored in the open harbor away from the shore, and all passengers and crew were certified as yellow fever immunes. The interesting aspect to these regulations is that despite being based on an improper theory about the means of transmission of the disease, by dint of experience the rules were reasonably effective in preventing mosquito borne transmission. Furthermore, the fomite disinfection process using caustic gases effectively killed any mosquitoes breeding in ships coming from areas where they carry the active agents of disease. Where the disinfection rules broke down was when infected persons not exhibiting any signs of the disease were allowed to proceed onward; these persons could later be bit by mosquitoes and thus could transmit the disease onward. However, if any person onboard did show active signs of infection, all persons were quarantined long enough to either develop active

⁴⁹⁷ G. B. Young, “Train-Inspection Service,” *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898*, Treasury Doc. 1419 (Washington: GPO, 1899), 389-411.

symptoms (and thus be isolated and treated, to be released if they survive) or demonstrate that they were not infected at all.⁴⁹⁸

The US Marine Hospital Service was public health arm of the US government medical system; it was closely allied with the military portion of that system. The USMHS was analogous to the medical defense of the nation as the Endicott system of coastal defenses was to the military defense of the nation. Both protected the homeland from attacks from abroad; the first from epidemics originating overseas, especially the waves of yellow fever emanating from the pestholes of Cuba, the second from naval and amphibious forces of foreign nations, such as the nascent threat that could have arisen from Cervera's squadron. The USMHS also had the responsibility for maintaining quarantine for troops possibly exposed to yellow fever during the war; the War Department worked closely with the service in establishing inspection points and quarantine facilities for all of the soldiers returned from Cuba.⁴⁹⁹

⁴⁹⁸ In theory a low grade infection could be missed but yellow fever produces visible signs of infection even when mild, as might occur in a person who has previously been infected. Bailhache, "A Precis of the United States Quarantine Regulations," 415-420.

⁴⁹⁹ "Quarantine Safeguards Enforced in Connection with 30,000 Troops Returning from Cuba and Porto Rico," in *USMHS Report 1898*, 620-643.

The State of Medical Knowledge in 1898

In 1898 the United States fielded a medical service trained in the modern realities of germ theory and sanitation, led by one of the world's premier bacteriologists. It sent modern hospital ships equipped for the first time with X-ray machines to the front; no longer would surgeons probe blindly for bullets and shrapnel inside men wounded in action. Yet during the Spanish-American War, the ratio of disease deaths to deaths from enemy action was over 7 to 1. Its faults lay in the faults it shared with the Army as a whole; it too lacked enough trained personnel, supplies, medical equipment and even medicines, and it relied on transportation services themselves crippled with shortages of wagons, personnel, and even pack mules. Those faults are fully exposed in the horror stories related about the treatment received by the many soldiers wounded in the brief battles of the Cuban campaign, but its strengths lie in the exceedingly low mortality rates experienced by the men who made it alive to those treatment centers.⁵⁰⁰ The major losses were still due to epidemic disease; the "Boys of 98" had the misfortune to serve in one of the last major wars of the disease era. The reasons for the gap between potential and reality for the Army Medical Department are fully explored in the remainder of this dissertation, but the essence is fairly simple: the "modern reality" of 1898 was still deficient in several critical areas, the greatest being an ignorance of the role of the mosquito in the transmission of malaria and yellow fever. In theory the mosquito's place in the transmission of malaria was known by 1898, the key being Ronald Ross' conclusion that "Malaria is conveyed from a diseased person or bird to a healthy one by the proper species of mosquito, & is inoculated by its bite." However, that result was reached on July 6, 1898 – after the battles of El Caney and San Juan Heights, and

⁵⁰⁰ "A soldier in the war with Spain had a 4.3-fold greater chance of surviving a serious battle injury than did his Yankee counterpart." Cirillo, *Bullets and Bacilli*, 37.

after the start of the malaria epidemic amongst the men of the Fifth Army Corps.⁵⁰¹ Even if the doctors of the Army Medical Corps had miraculously known about the discovery, and even more importantly, believed it to be true, it was too late to affect the course of the war. The lack of knowledge about the cause of malaria not only impeded efforts to reduce exposure to the disease, it also adversely affected treatment of the disease. The symptoms of malaria (fever, chills, rapid heartbeat) were so easily confused with other febrile diseases that effective treatment was sometimes withheld in the mistaken impression that the victim was suffering from a different disease. Likewise patients suffering from typhoid or yellow fever were sometimes given massive doses of quinine which had a similar nugatory effect.⁵⁰²

The field of medicine was on the cusp of yet another transition at the end of the nineteenth century. The “Bacteriological Revolution” driven by the germ theory and accompanying microscopic and pathological studies was incomplete. Nature had not yet yielded all her secrets; but once the miasma paradigm was discredited, the Sanitary Era came to an end.⁵⁰³ However, germ theory had little practical value for the practitioners of nineteenth century military medicine. In 1898, the military physician had few diseases he could treat with anything other than palliative measures; thus, his focus must be on the prevention of disease wherever possible. Civil War Surgeon General William Hammond fixed the responsibility for this on the Army Medical Department in 1863: “In the military service, more than any other, a knowledge of the

⁵⁰¹ Letter 02/160, Ronald Ross Archives, London School of Hygiene and Tropical Medicine, London, UK as cited in Guillemin, “Choosing Scientific Patrimony,” 389.

⁵⁰² Raymond E. Dumett, “The Campaign against Malaria and the Expansion of Scientific Medical and Sanitary Services in British West Africa, 1898-1910,” *African Historical Studies* 1, No. 2 (1968): 157.

⁵⁰³ Susser and Susser, “Choosing a future for epidemiology,” 669. Michael Worboys argues against the use of the term “bacteriological revolution,” finding it ill-defined and not supported by evidence: “historians have read into the 1880s changes that occurred over a much longer period, and that while there were significant shifts in ideas and practices over the decade, the balance of continuities and changes was quite uneven across medicine.” Worboys, “Was there a Bacteriological Revolution,” 20.

means of preventing disease and of facilitating recovery by methods other than the mere administration of drugs is necessary.”⁵⁰⁴ This was as true in 1898 as much as it was in 1863.

At the start of the Spanish-American War, Surgeon General Sternberg and the physicians of the Army Medical Corps had two sets of knowledge to draw upon. The first set was that of nineteenth century medicine, drawing from civilian sources as well as from years of experience serving the frontier army. The second set was that of the nineteenth century military professional, drawing upon the many lessons learned from the deployment of forces across the globe. This chapter has elaborated on the first knowledge set as well as medical knowledge derived from previous military operations. The next chapter will present three case studies of lessons learned that the military medical professional could use to prepare for the next campaign – the experiences of armies fighting in the tropics, both in the Caribbean and in West Africa, and the institutional knowledge derived from the Army’s most recent major conflict: the American Civil War. What, then, were some of the facts and assumptions that these sets of knowledge provide about the likely disease effects on the upcoming war?

The first and overriding fact was that disease would kill more men than enemy action. This had been true for centuries, and there was no reason to expect anything different in the conflict with Spain. This fact alone made the wise use of lessons learned from scientific medicine and prior military operations essential to prevent unnecessary sickness and death. The Army was faced with fighting in the most hazardous disease environment known: the tropics, both in the Caribbean and in the Philippine Islands. The American Army, both Regulars and volunteers, were going to be largely formed of men who grew up in the temperate regions of North America, naïve to diseases such as yellow fever. Some men, however, would be immune to yellow fever

⁵⁰⁴ Hammond, *Treatise on Hygiene*, viii.

by virtue of prior exposure or (it was assumed) by racial inheritance. The proper use of these valuable individuals would be essential; a scarce resource must be carefully allocated to the places where they would be most needed.

What diseases could be expected? Smallpox could be easily avoided; any man not previously vaccinated could receive a vaccination as part of their initial processing. However, other crowd diseases could be expected, as many raw recruits would come from rural areas and likely not been exposed as a child. This would require a “seasoning” period during initial training where those crowd diseases could be treated and the survivors could be placed back in the training pipeline.

Many diseases should be anticipated but were without treatment. Diarrhea and dysentery must be expected, and by 1898 the microorganism causing dysentery was known (although only one type was assumed to exist, called *amœba dysenteræ*) as well as the means of transmission through contaminated water and food. Preventing dysentery would require the presence and more importantly the enforcement of strict sanitary regulations about the disposal of waste and the handling of food and water.⁵⁰⁵ Typhoid could also be expected, requiring the same sanitation. Its causative agent was also known to be a bacillus; at the time contaminated water was assumed to be the major route of transmission of the disease.⁵⁰⁶ Both of these diseases could occur in training camps as well as during active campaigns, although (presumably) it would be easier to ensure a good water supply and the proper disposal of waste in fixed training camps rather than temporary encampments established in hostile territory. In the case of typhoid, limited knowledge or “practical knowledge” could be as dangerous as no knowledge. Although medical texts such as *Twentieth Century Practice* indicated that typhoid could be spread by flies or dried

⁵⁰⁵ Stedman, ed., *Twentieth Century Practice*, vol. 13, 357; Woodhull, *Notes on Military Hygiene* (1898), 130-131.

⁵⁰⁶ Stedman, ed., *Twentieth Century Practice*, vol. 13, 302; Woodhull, *Notes on Military Hygiene* (1898), 130-131.

fecal dust, military campaigns throughout the late nineteenth centuries focused on ensuring safe water supplies as the primary means of controlling typhoid.⁵⁰⁷ This led military doctors such as the very senior Colonel Greenleaf to emphasize water transmission in his preparations to avoid typhoid outbreaks in the training camps.⁵⁰⁸ The Typhoid Board investigation later revealed what a mistake this fixation on the most likely means of transmission was – as thousands died from massive typhoid outbreaks across the country.⁵⁰⁹

Prior military experience was a good guide to the expected tropical diseases; in addition the Public Health Service issued regular reports on the occurrence of infectious disease in Spanish territory; in particular there was a variety of information sources on endemic and epidemic diseases in Cuba and Puerto Rico. The experience of the Spanish Army was particularly instructive; the April 29, 1898 Public Health Report provided the morbidity and mortality figures for the Spanish army for the previous year (1897). The Spanish army, like the American Army, recruited primarily from temperate regions. Their experience with tropical diseases in Cuba the first year should be similar to what the American army would experience after arrival in theater. The 1897 figures might actually understate the risk to Americans, as these statistics reflected the disease rate among veterans, the survivors of two years of tropical disease exposure.⁵¹⁰

These current reports could also be combined with the historical experience of British and French armies fighting in the Caribbean a hundred or more years prior. Although the malaria parasite had been identified, in other respects the threat from the two major tropical diseases – malaria and yellow fever – remained unchanged between the 1740s and the 1890s. Malaria was

⁵⁰⁷ The British and French used advanced Pasteur-Chamberland porcelain filters starting in the 1890s to reduce typhoid in Africa. Rates dropped as much as 96% by 1913 (around twenty years after introduction). Curtin, *Disease and Empire*, 143-145.

⁵⁰⁸ Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613.

⁵⁰⁹ Reed et al., *Abstract of Typhoid Board Report*, 178-186.

⁵¹⁰ W. F. Brunner, "Morbidity and mortality in the Spanish army in Cuba during the calendar year 1897," *Public Health Reports* 13, No. 17 (April 29, 1898): 409-412.

treatable with quinine, although that would not cure the disease nor would its use as a prophylactic prevent its occurrence; however, the Civil War experience proved that quinine prophylaxis would reduce its affect on a combat unit.⁵¹¹ There was no treatment for yellow fever other than isolation and palliative care.⁵¹²

Both malaria and yellow fever were known to be seasonal and were affected by location; higher inland regions were generally free of these diseases and the Philippine Islands were entirely free of yellow fever. If the Army could avoid deployment during the rainy season, it should be spared the ravages of these two epidemic tropical diseases. If deployment during the rainy season could not be avoided, then the mitigation procedures shown in Figures 2 and 3 could be used, although (historically) with limited success. The most promising mitigation technique (other than not fighting in the regions during the rainy season) was quinine prophylaxis for malaria.

If these diseases could not be avoided, then they must be prepared for. One of the major effects of epidemic outbreaks is the high demand for medical logistics – field hospital facilities (tents, beds, bedding, bedpans, etc.); hospital ships for treatment and transportation and/or ships especially outfitted for the transport of sick men; medicines; food suitable for afflicted patients and a clean water supply; doctors, nurses, corpsmen, and support personnel to set up tents and beds, guard the camp, etc.; and land transportation for patients (ambulances, litters) and for supplies (which could be massive). Further complicating matters is the need for immune individuals for treating and caring for yellow fever patients, unless you want an epidemic among your medical personnel. A prophylaxis regimen must be established for malaria. Preventive medicine procedures call for a safe, treated water supply for drinking and food preparation (to

⁵¹¹ U.S. Army, *MSHWR*, vol. 1, part 3, 166-174.

⁵¹² Murray, "The treatment of yellow fever," 313-318.

prevent cholera, dysentery, and typhoid), adequate supplies of healthy food (prevent scurvy, support immune system), wash and laundry facilities for men and their clothes, with replacement clothing items for those that wear out or suffer damage (prevent lice and typhus), and adequate lines of communication for transporting all of these necessities from the United States to the front lines. Tentage was presumed to help block miasmas to reduce malarial outbreaks, and if yellow fever should appear camps would need to be relocated, infected bedding, clothing, buildings, and other fomites must be burned or otherwise disinfected, and an isolated hospital area established for treatment, separate from the required hospital facilities used to treat victims of malaria, dysentery, typhoid, and other predictable infectious diseases. All of these measures must be planned for, adequately supplied through requisition (purchase), transported where needed, and all of the facilities need to care for large numbers of sick soldiers must be constructed and staffed on site, or established stateside with plans and transportation available for evacuation. Last but not least, if large numbers of troops are incapacitated from infectious disease, even if temporarily, fresh troops must be sent either beforehand or immediately upon the start of an epidemic to replace the sick on the front lines. If the epidemic is yellow fever, then immune regiments are needed to fulfill this role – a combat role, not as garrison troops (unless you can be certain that any epidemic will only happen after the campaign has ended, which is a highly fortuitous outcome that cannot be assumed in advance). As we shall see, these requirements were neither anticipated nor met during the course of the war.

These are the medical procedures that must be planned for in advance and then executed in time of war, if the effects of predictable epidemic disease are to be fully minimized. Some of these goals may be unobtainable under the harsh realities of combat, but a successful commander operating under nineteenth century best medical advice (given the state of the medical art and

previous experience implementing (or failing to implement) preventive and mitigating measures) should strive to accomplish these tasks to the maximum extent possible. These are the standards to which the leaders of 1898 should be held accountable – those provided by their own SOPs, their own medical procedures, and their own lessons learned from previous military operations. These are the standards that will be used in Part 2 to evaluate the success or failure of the campaigns of the Spanish-American War from a disease perspective – the perspective most critical to the lives of the nineteenth century soldier.

CHAPTER 5

DISEASE AND MILITARY CAMPAIGNS – CASE STUDIES

Several case studies are presented to illustrate some of the effects of epidemic disease upon wars fought in tropical regions.

There is a subset of conflicts where Europeans have had the greatest losses, and arguably disease its greatest impact: the wars fought for conquest of new territory before the twentieth century. Between 1500 and 1900 there were two eras of major European conquest: the initial acquisition of empire in America, along with trading posts and colonies along the African and Asian coasts during the sixteenth through the early nineteenth centuries, and then the scramble for Africa and any unclaimed regions toward the end of the nineteenth century. The losses were greatest in the areas where the disease climate was the most hazardous to European soldiers: the tropics. The two great killers of these armies were yellow fever and malaria, although dysentery and typhoid took their toll in these regions as in all conflicts. In order to examine the effects of disease on military operations that would have been familiar to the US military it makes sense to narrow our focus to the European wars of conquest in the tropics.

The next wave of imperial conquest in the tropics came toward the end of the nineteenth centuries, as the European powers turned their eyes toward the “Dark Continent” of Africa. By this time, the diseases of the tropics were understood with respect to their symptoms and certain critical causal factors, such as the rainy season that marked the beginning of the tropical sickly season. Although the actual cause and transmission of tropical diseases such as yellow fever and

malaria⁵¹³ (as well as the typical diseases of wartime such as dysentery and typhoid) were still unknown, sanitary techniques accompanied by strict regulation of time, place, and person allowed European powers to avoid the worst of the epidemic effects. The most extreme example of a “doctor’s war” fought entirely around the prevention of disease occurred in the Third Anglo-Ashanti War, the subject of a campaign case study; it is presented in the context of an overall case study of the African conquests.

This era of warfare ends with the identification of the specific causes of disease and the first effective treatments for previously uncontrollable diseases such as yellow fever. The twentieth century marked a major change in warfare: for the first time, more troops were lost due to the effects of enemy weapons than to disease. The sixteenth through early nineteenth centuries were marked with tremendous losses due to disease, ignorance of the cause of the disease, a lack of effective means to prevent infection, and treatments for troops who caught the illnesses that were at best palliative and at worst toxic. The latter half of the nineteenth showed that armies could sometimes mitigate the effects of epidemic disease if they were willing to subordinate military and strategic decisions to choices driven by the desire to avoid disease. However, the major focus of this dissertation – the Spanish-American War – amply demonstrates the lethal power of epidemic disease when the war is fought at a time and place determined by the military situation, not by the medical risks.

Three case studies of military operations fought in unfavorable disease environments are presented in this chapter. The case studies are designed to illustrate various relationships between disease and warfare outlined in Chapter 3. In addition, they provide the military and medical historical background to the Spanish-American War; the campaigns examined in these

⁵¹³ Malaria also occurred in temperate climates and epidemics could even occur (briefly) during the summers as far North as the subarctic, but it was inevitable (and often very pronounced) in the tropics.

case studies were a potential part of the knowledge base of the US military in the Spanish-American War. Knowing the lessons the senior leadership learned (or failed to learn) from these campaigns is essential to understanding the decisions they made before, during, and after the war. The military medical community of the Spanish-American War also had these campaigns available to prepare for the tropical illnesses they could expect to see and the steps they needed to take to prepare for disease before and at the start of the war.

The first case study on the Caribbean shows the consequences of the failure to prevent or treat disease in the tropics. The second details the encounter with tropical diseases that the US military would have been most familiar with – Northern troops fighting in regions of the American South where certain diseases such as malaria were endemic. The final study illustrates the limits of success in tropical warfare using the nineteenth century tools of scientific medicine such as medical statistics (identifying regions, seasons, and geographical and meteorological conditions that correlated with low disease rates) and sanitation (particularly in water treatment) using Africa as a general case study and focusing on the Third Anglo-Ashanti War (1873-4) as a specific campaign study. The Ashanti War was a success from the aspect of minimizing losses from infectious disease, but that success came at great cost from a strategic military perspective.

A Case Study of Failure - the Caribbean

It is well documented that the US civil and military leadership looked at the historical record of campaigns in the Caribbean to help plan for the Cuban and Puerto Rican campaigns, looking for clues to the disease environment they could expect to find in this tropical region.⁵¹⁴ The historical record available to this leadership is reviewed in the following case study for the Caribbean along with a detailed campaign study of the former French sugar colony of St. Domingue. These operations in the Caribbean during the eighteenth and early nineteenth centuries tell a story of failure from epidemic disease for the European would-be conquerors. Even their few victories were Pyrrhic once the accounting for the sick and dead were complete.

Disease has shaped warfare in the Caribbean from the beginning, when expanding European powers sent soldiers and sailors to the tropics to establish empires on the new lands opened for conquest by Columbus' discovery. The first wave of expansion was directed at the newly discovered New World, much of it directed at the fertile islands in the Caribbean Sea. This period also represented a period of almost complete ignorance of disease other than the recognition of illness when it occurred (which did not mean a correct diagnosis of what disease was occurring, much less and treatment or preventative measures). Sixteenth century medicine had not advanced past the classical humoral theories of Galen, and military forces were accompanied by physicians often unfamiliar with the conditions of warfare and surgeons of the "saw and sew" mentality. The conquest and settlement of the New World brought with it a

⁵¹⁴ The various sources of information available to these decision makers and how they used them is the topic of later chapters. For an example of Sternberg's knowledge of prior epidemics, see his letter to Secretary of War Alger dated March 25, 1898, reproduced in Appendix B as item 1. Miles discusses 18th century British campaigns in the Caribbean in Nelson A. Miles, "The War with Spain. – I," *The North American Review* 168, No. 510 (May, 1899): 521-522. Shafter used a bound journal of the siege of Havana as a reference point. William R. Shafter, "The Capture of Santiago de Cuba," *Century Illustrated Magazine* LVII, No. 4 (Feb., 1899): 614-615.

“Columbian Exchange” of disease and death along with the conquistadors. Disease was initially the savior of the European invaders; only massive epidemics among virgin populations would allow a few hundred Spanish soldiers to conquer empires.⁵¹⁵ However, diseases of the Old World such as malaria and yellow fever found a home in the tropical regions of the New World, and the disease virgins turned out to be the soldiers recruited from the cool climates of Europe. This led eighteenth and nineteenth century attempts by European powers to capture Caribbean colonies to repeated disaster, as discussed later in this section.

Modern historians have placed their own interpretations on this period of European conquest. In 1966, Dr. Francesco Guerra argued that European settlement in the Caribbean was largely prevented by epidemic disease. He noted that “all the Spanish-American chronicles referring to the colonization of America present the dread of epidemics in the Caribbean as the greatest deterrent to Spanish immigration, despite all the great opportunities of glory and wealth offered to the conquistadors.” Cromwell’s attempts to establish British colonies in Santo Domingo failed and the Jamaican settlement came close to failure after most of the 2,200 settlers forced to emigrate in 1655-56 died from disease. French colonization in Guinea, Guadeloupe and Martinique in the first half of the 17th century also failed due to yellow fever. Guerra also documented losses to European forces sent to hold the colonies from external attack.⁵¹⁶

More recently, historian J. R. McNeill has suggested that the presence of tropical disease in the Caribbean first helped the Spanish and other European powers seize territory in the Americas, but later acted to prevent them from holding their possessions against native revolts. The reasoning is based on both ecological and military perspectives. A profitable cash crop in

⁵¹⁵ Other factors also contributed, such as endemic warfare between tribes.

⁵¹⁶ Francisco Guerra, “The Influence of Disease on Race, Logistics and Colonization in the Antilles,” *Journal of Tropical Medicine and Hygiene* LXIX (Feb., 1966): 23-35.

sugar enabled the creation of “plantation complexes” over lowland regions suitable for sugar production, which included most of the habitable islands. The profits from sugar both enabled and required the owners to establish fortifications to protect the plantations from seizure by other European powers. These fortifications, based on the Vauban system of scientific fortification, could only be reduced by lengthy sieges.⁵¹⁷ In the Caribbean, siege warfare strongly favored the defenders due to the presence of yellow fever. Epidemic yellow fever requires the *Aedes aegypti* mosquito, wet, humid conditions for the mosquito to thrive, and a sufficient number of nonimmune people for the mosquito to bite. Sugar plantations were ideal breeding grounds for the mosquito; part of the refining process for sugar used clay pots, which either intact or broken into pieces would retain sufficient stagnant water for the mosquito to reproduce. Newly arrived slaves with acquired immunity from African exposure would break the disease cycle, but newly arrived Europeans in military expeditions provided a large, concentrated nonimmune population. The defenders on the other hand were composed mainly of survivors of garrisons stationed in the tropics who had hard-won immunities to the disease. They merely had to hold out for a matter of weeks before yellow fever would strike the besieging force. As a result, expedition after expedition in the tropics, attempting to seize these key fortifications, failed because of catastrophic outbreaks of yellow fever. The consequence of this disease asymmetry was significant: the initial conquerors of the Caribbean were able to retain their hold on their possessions for more than 300 years.

However, once the local population began to revolt against their European overlords the colonizers were on the unfavorable side of the equation; troops sent to secure or reclaim their

⁵¹⁷ The Vauban system created geometric forms that optimized the defensive fires from fortresses and made frontal attacks virtually impossible; thus siege warfare lasting 6 weeks to months was required to take a properly defended fortress. Jack S. Levy, “The Offensive/Defensive Balance of Military Technology: A Theoretical and Historical Analysis,” *International Studies Quarterly* 28, No. 2 (Jun., 1984): 231; see also Jean Gottmann, “Vauban and Modern Geography,” *Geographical Review* 34, No. 1 (Jan., 1944): 120-128.

possessions suffered from major disease epidemics. Even as late as the 1890s, the Spanish failed to suppress the Cuban insurrection in part because of their losses due to disease,⁵¹⁸ and the American force outside of Santiago won the battle just days before malaria and yellow fever began to destroy its fighting effectiveness. Only the discovery of the cause and transmission cycle of yellow fever and subsequent sanitation and vaccination campaigns permitted European operations in yellow fever infested regions in the twentieth century.⁵¹⁹

Recently historian Sheldon Watts extended the disease impact hypothesis to the continuation of slavery in the Caribbean. He argued that “disease determinism” created a medical construct in the minds of sixteenth- through early nineteenth century Europeans that only blacks could be used for labor in the plantation complex because of their perceived immunity to yellow fever. The need to protect planters from a large enslaved black population created a demand for European troops (and their continual replacement as they died from disease). Watts further argues that the loss of the British and French armies in Haiti from yellow fever and *falciparum* malaria created a “psychological blockage that prevented Europeans and Euro-Americans from accepting that a republic established by risen African slaves deserved recognition as a proper sovereign state”⁵²⁰; only a “proper” military defeat would have demonstrated their ability for self-rule.

The medical community seems to agree in general with these observations, but the analysis tends to be much less specific. In his lectures between 1938 and 1939, Dr. Scott stated that

⁵¹⁸ Between 1895 (the start of the insurrection) and 1898, the Spanish lost 53,440 men out of 62,853 deaths, the Cuban rebels lost 3,437 out of 8,617, and the civilians suffered about 218,000 deaths, almost all from disease. The soldiers died from yellow fever, the civilians from smallpox, and some from all populations died of enteric fever (typhoid). Smallman-Raynor and Cliff, “Cuba and the insurrection against Spain,” 331-352.

⁵¹⁹ J.R. McNeill, “Ecology, Epidemics and Empires: Environmental Change and the Geopolitics of Tropical America, 1600-1825,” *Environment and History* 5, No. 2 (June 1999): 175-184. This argument is further developed in his recent book J.R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620-1914* (Cambridge: Cambridge Univ. Press, 2010).

⁵²⁰ Watts, *Epidemics and History*, 237.

“Yellow fever has played a considerable part in the political history of the Caribbean.” He cited a Dr. Bird of Puerto Rico, who stated that “an outbreak of the disease is responsible for that island being now American and not British.” Scott noted that as early as 1598 the British planned to found a colony at Puerto Rico, but yellow fever prevented them from doing so. He also cited the native defeat of the French army in Saint Domingue as evidence of the geopolitical impact of the disease.⁵²¹ Dr. R.S. Bray noted in 1996 that yellow fever played “a contributory role in the drying up of Spanish immigration to the Americas in the seventeenth-century.” He also agreed that disease deterred attacks in the Caribbean; for this reason yellow fever was referred to as the “patriotic disease” in South America.⁵²²

After various European nations had gained their footholds in the Americas, focus shifted from wars between Europeans and the native inhabitants to wars between the European powers. These powers often sought to seize New World colonies in order to keep them, prevent the enemy from using them, or (increasingly in the eighteenth century) as bargaining chips for concessions in Europe or elsewhere at the end of each one of many repeated wars. This is the focus of the first case study, looking at eighteenth and early nineteenth century European wars fought in the Caribbean.

⁵²¹ Scott, *A History of Tropical Medicine*, vol. I, 281.

⁵²² Bray, *Armies of Pestilence*, 110, citing Dr. Albert Moll, an early 20th century medical author.

General Case Study – The Caribbean, 1740 – 1815

Although disease played a major role in the conquest of the regions in and surrounding the Caribbean, the disease advantage quickly turned from the European powers to the creolized descendents of Europeans, natives, and slaves that inhabited the region. Immigrants from the Old World to the New faced a “seasoning” period upon arrival, as their bodies were exposed to the numerous pathogens found in their new environment. Only the survivors of this seasoning process could continue to become residents of the New World colonies; this seasoning process was particularly brutal in the tropical regions such as the Caribbean. European powers attempting to seize these colonies would pit soldiers sent from their Old World home to face the creolized residents of the Caribbean colonies. In these newer engagements, the asymmetry between the disease experience of the opposing forces often dominated the conflicts; army after army perished despite recommendations of doctors like Moseley and Jackson to take the sickly seasons into account before planning military actions.

The British military ignored these recommendations and continued to send troops to the Caribbean for a series of failed adventures. At the British attack on Cartagena in 1741 resulted in 8431 out of 12,000 dying from disease, while an attack on Havana under Admiral Vernon in 1762 resulting in 8,000 men stricken with fever within a month of landing.⁵²³ The siege of Havana brought soldiers came from the British North American colonies as well as from the home islands; included in the force was Lawrence Washington, who later named his plantation Mount Vernon after his commander. The effect of disease on the outcome of the attack later influenced the planning for the military campaign against Santiago de Cuba in the Spanish-

⁵²³ Scott, *A History of Tropical Medicine*, vol. I, 296. The exact percent of losses is a bit uncertain; another source states that British losses at Cartagena were 80% of the force (Bell and Lewis, “The Economic Implications of Epidemics Old and New,” 5). For the colonial experience, see David Syrett, “American Provincials and the Havana Campaign,” *New York History* 49, No. 4 (Oct., 1968): 388-389.

American War; the commander, Major General Shafter, based his plan for the assault on Santiago in a manner to avoid the British experience with disease.⁵²⁴

Later attacks on Spanish possessions in the Caribbean during the Seven Years War (1756 – 1763) had similar results. 2,000 soldiers were lost during a failed attempt to capture Guadeloupe in 1761. Although a year later an attack on Havana succeeded, 3,000 sailors and 5,000 soldiers became ill from yellow fever; only 2,500 out of 6,000 marines survived the attack.⁵²⁵ In addition to yellow fever, another 4,700 men died dysentery or other diseases; this contrasts with the 560 killed from enemy action during the same campaign.⁵²⁶ The French considered attacking Jamaica, left relatively undefended by the move on Havana, but “forces were reduced so low by accident and sickness that the French commanders could not promise themselves a decisive victory, and therefore preferred to attempt nothing.”⁵²⁷

These cases form a pattern of losses of British troops to tropical diseases, mainly yellow fever, which prompted the books by Jackson and Moseley. The fatalities suffered by troops assigned to West Indian campaigns were noticed by soldiers as well. It was so difficult for the British to fill their army during the American Revolution that standards were lowered to admit virtually anyone from any source, to include prisoners and those who were unemployed for reasons of health or age. General Charles Grey, leading a British offensive against the French Leeward and Windward Islands in early August 1793, lamented that the recruits sent to his force were “only serve to fill the Hospitals and are swept [sic] away by the climate.”⁵²⁸ Assignment to the

⁵²⁴ Alger, *The Spanish-American War*, 84.

⁵²⁵ Guerra, “The Influence of Disease on Race, Logistics and Colonization in the Antilles,” 28

⁵²⁶ Scott, *A History of Tropical Medicine*, vol. I, 296; Bray, *Armies of Pestilence*, 110; Sir Alan Burns, *History of the British West Indies* (London: George Allen & Unwin Ltd, 1954), 488.

⁵²⁷ *Ibid.*, 592.

⁵²⁸ Buckley, *Slaves in Red Coats*, 3; Sir Charles Grey to Henry Dundas, “Secret,” no. 32, 17 July 1794, “State of His Majesty’s Forces in the West Indies Under the Command of Sir Charles Grey 17 July 1794,” British Colonial Office 318/13, cited in Buckley, *Slaves in Red Coats*, 11.

West Indies was regarded as a virtual death sentence; desertion, malingering, and self-inflicted wounds were common means used by troops to avoid service. Officers ordered to West Indian regiments resigned or sold their commissions.⁵²⁹

The British government found itself trapped. The tremendous wealth of their Caribbean holdings demanded military protection, but where could they find soldiers to defend their colonies when soldiers refused to enlist, soldiers that were enlisted deserted and officers resigned their commissions, and the few volunteers they could scrape up died by the boatload within months of arrival? The British medical community suggested a solution: use blacks who had immunity to tropical disease. Jackson noted that “it has never been observed that a Negro, immediately from the coast of Africa, has been attacked with this disease [yellow fever].”⁵³⁰ Yellow fever was endemic in Western Africa, the source of slaves destined for the sugar islands; they had acquired immunity to yellow fever based on previous exposure.⁵³¹ Blacks were first recruited for colonial militias during times of peace and during earlier wars; when war first broke out between Revolutionary France and the First Allied Coalition (1792), the West Indian planters (both British and French) asked for regulars from Europe to protect the wealthy sugar islands. Slaves had been recruited into the British military structure (originally as servants to the regular

⁵²⁹ “Whenever a battalion was selected for duty in the West Indies to face the ravages of a tropical clime, desertions suddenly and dramatically increased, as did the number of men admitted to hospital or reporting sick, with complaints of ophthalmia or minor but suitably debilitating ailments which hardened officers always claimed were feigned or self-inflicted.” Burroughs, “The Human Cost of Imperial Defence in the Early Victorian Age,” 7-32.

⁵³⁰ Jackson, *A Treatise on the Fevers of Jamaica*, 249-250. Moseley disagreed, saying “How a climate should foster a disease, and a contagious one, and the natives of that climate be exempt from it, I cannot comprehend: but the whole story is fabulous, therefore it is unnecessary to reason on it.” Moseley, *A Treatise on Tropical Diseases*, 404.

⁵³¹ Buckley, *Slaves in Red Coats*, 7-8. Statistical data from that period seem to support the relative immunity of black troops. “West Indies between 1796 and 1807—hence in wartime conditions—showed an annual average mortality of 244 per thousand effectives per annum among the Europeans and an annual average of only 59.2 per thousand among those of African descent. These statistics are weak, partly because it is only probable—not certain—that these African troops were recruited by purchase in Africa, rather than by purchase from among the West Indian slaves. Nevertheless, the ratio of differential mortality was 4.1 to one in favor of the Africans. Another survey of French troops serving on Martinique and Guadeloupe between 1802 and 1807 shows an annual average death rate of 302 per thousand.” Curtin, “Epidemiology and the Slave Trade,” 206-7.

soldiers) as early as 1662.⁵³² During the Napoleonic Wars, the British West Indian Regiments were raised in the West Indies by recruiting from free and enslaved blacks on the islands. Initially, blacks were used simply to augment white British regiments, especially for fatigue duties as well as for garrison duty. As the war progressed, European troops became increasingly unavailable for West Indian service so two black West Indian regiments (later six) were permanently established in 1797. The black regiments saw extensive service between 1803 and 1813, to include participation in the British assault on New Orleans.⁵³³

Campaign Case Study – Saint Domingue

Although the black regiments were entrusted with defending the islands (given reliable white officers and NCOs), when it came time to take control of the rich French sugar colony of Saint Domingue during the War of the First Coalition (1792-97), an expeditionary force from the home regiments was needed. The French colony had been the richest in the Caribbean, and British planners thought it was vulnerable as war had already broken out on the island after the 1791 slave rebellion – the start of what would later be called the Haitian Revolution. The best modern histories of the revolution were both written in 1973: Theodore Stoddard's *The French Revolution in San Domingo* and Thomas O. Ott's *The Haitian Revolution 1789-1804*; these flesh out Alan Burns' 1954 *History of the British West Indies*.⁵³⁴ The medical history providing the best perspective on the epidemics is H. Harold Scott's *A History of Tropical Medicine*, published in 1942. A contemporary history of the conflict is Bryan Edwards' *An Historical Survey of the*

⁵³² "To conciliate the good will of the troops in Jamaica and to urge them to cultivate the soil, he [Charles II] presented 300 slaves as a royal gift to the officers to be divided among them; some years later James II followed his brother's example" (Buckley, *Slaves in Red Coats*, 2).

⁵³³ Ibid., 94-95.

⁵³⁴ Stoddard, *The French Revolution in San Domingo*; Ott, *The Haitian Revolution*; Burns, *History of the British West Indies*, all cited previously.

French Colony in the Island of San Domingo (1797).⁵³⁵ To Edwards, Saint Domingue was “the Paradise of the New World.” However, he noted (possibly in hindsight) that “The season of the year was unfavourable in the highest degree for military operations in a tropical climate. ... That never-failing attendant on military expeditions in the West Indies, the yellow or pestilential fever, raged with dreadful virulence”⁵³⁶

The white planters invited British intervention, celebrating when they saw the troops arrive.⁵³⁷ However, by January 1794 epidemics of both yellow fever and malaria broke out among the British and their Spanish allies. Bryan Edwards witnessed the results: “They dropt like the leaves in autumn, until at length the garrison became so diminished and enfeebled, that deficiencies of the guards were oftentimes made up from convalescents, who were scarcely able to stand under their arms.”⁵³⁸ Reinforcements from Britain permitted the capture of the key port city of Port-au-Prince; however, they too were hit with an epidemic of yellow fever. The British pulled back on their advance, allowing time for the black rebel commanders of the former colony to consolidate their rule: Rigaud in the South and Toussant in the North. However, Burns noted that the French troops were also suffering from an epidemic at the same time which prevented them from directly attacking the prostrate British forces.⁵³⁹

Although the British forces were successful in seizing some of the key territory within the colony, they were unable to extend their control into the interior of the country. This failure was largely the result of the epidemics; Burns estimated that the British lost 20,000 men to disease,

⁵³⁵ Edwards, *An Historical Survey of San Domingo*, 163.

⁵³⁶ *Ibid.*, 123, 149.

⁵³⁷ Burns, *History of the British West Indies*, 564.

⁵³⁸ Edwards, *An Historical Survey of San Domingo*, 163.

⁵³⁹ Stoddard, *The French Revolution in San Domingo*, 249; Burns, *History of the British West Indies*, 564.

including the entire 96th Regiment of Foot.⁵⁴⁰ Scott documented a smaller British force size, but according to his figures 89% of a British force of 10,000 died from disease.⁵⁴¹ Nevertheless, Britain continued for another two years before surrendering all positions in the former French colony.⁵⁴² By the time Britain withdrew its forces British losses were even higher: “The campaign had cost over ten million pounds and perhaps as many as 100,000 casualties.”⁵⁴³ Despite the warnings from doctors like Moseley and Jackson, the British had gambled and lost just as they had about 50 years earlier.

Napoleon, too, gambled and lost in his attempt to regain this former Paradise. Napoleon had grand schemes for a French Empire in the Americas; Spain had recently ceded its Louisiana Territory to France. The French empire in the New World – Louisiana, the Floridas, French Guiana, and the French West Indies – would be centered on Saint Domingue, so retaking the island was an essential first step. He placed his brother-in-law, Charles Leclerc, in charge of 20,000 of France’s finest soldiers. However, Napoleon failed to take disease into account. Ott was of the opinion that Napoleon needed to send two troops for every one he expected to need to retake the colony.⁵⁴⁴ Stoddard graphically portrayed the fate of the French army; by day the barracks became “vast charnel-houses” while by night “long rows of corpses were laid in the barrack-yards waiting for the death-carts to carry them to the lime-pits.” Thousands died among both the soldiers of the army and the sailors of the navy, with the leadership suffering even

⁵⁴⁰ Burns, *History of the British West Indies*, 565. The Regimental History of the 96th Regiment (combined with and renamed the 63rd Regiment in 1881, now the 2nd Battalion, Manchester Regiment). The history does not comment on losses in Saint Domingue but notes that the regiment was “disappearing from the Army List in 1796.” Museum of the Manchester Regiment, http://www.tameside.gov.uk/museumsgalleries/mom/history/96th, accessed 26 Oct. 2012.

⁵⁴¹ Scott, *A History of Tropical Medicine*, vol. I, 48. It is not clear what caused the discrepancy between Scott and Burns. It is likely that Burns is counting the entire British expeditionary force in the West Indies and Scott is counting just forces immediately assigned to Saint Domingue. Ott agrees with Burns on the British loss of 20,000 men.

⁵⁴² Ott, *The Haitian Revolution*, 86.

⁵⁴³ Ibid., 93.

⁵⁴⁴ “If he needed twenty thousand healthy soldiers, he should have sent an invasion force of at least forty thousand men to Saint-Domingue.” Ibid., 143-5.

higher mortality rates than the men. These were extremely valuable men, veterans needed to fulfill Napoleon's designs, yet they too dropt like the leaves of autumn.⁵⁴⁵ Bonaparte sent replacements to Leclerc, but to no avail, as the replacements were primarily northern Europeans: Germans, Dutch, Belgians, and Poles, who died as quickly as the most patriotic Frenchman.⁵⁴⁶ The desperation is apparent in the letter Leclerc wrote to Bonaparte that fall:

The moment troops arrive, I have to throw them into the field to repress that general insurrection discussed in my last despatches. For the first few days these troops act with vigor and gain successes; – then the disease smites them, and all my reinforcements are annihilated. People assure me of a certain change of season by the 15th Vendémiaire [7th October], but I greatly fear that by that time I shall have no soldiers. I can give you no exact idea of my position: each day it grows worse, and what will most retard the colony's prosperity is the fact that when the disease ceases I shall have no men for aggressive action. If on the 15th Vendémiaire I have four thousand Europeans fit to march, even counting those now on the sea, I shall be glad, indeed. All my corps commanders save two are dead, and I have no fit persons to replace them. To give you an idea of my losses, know that the 7th of the Line came here 1395 strong: to-day there are 83 half-sick men with the colors and 107 in hospital; the rest are dead. The 11th Light Infantry landed here 1900 strong: to-day it has 168 fit for duty and 200 in hospital. The 71st of the Line, originally 1000 strong, has 17 men with the colors and 133 in hospital. And it is the same with the rest of the army... if the French Government wishes to preserve San Domingo it must, on the very day that it receives this letter, order the departure of ten thousand men. They will arrive in Nivôse [January, 1803], and order will be entirely restored before the next hot season: although, if

⁵⁴⁵ Stoddard, *The French Revolution in San Domingo*, 326.

⁵⁴⁶ *Ibid.*, 337.

this disease habitually lasts three months on end at San Domingo, we must renounce this colony.⁵⁴⁷

In this letter, Leclerc showed the power of disease not only as a killer of troops but as a constraint to strategy. Reinforcements can only be useful if they arrive during the colder season when *Aedes* are quiescent; they must be used (then reassigned to safer climes) before the hot season. According to Leclerc, if the epidemic period lasts a quarter (three months), then French efforts to regain its colony are doomed to failure. This necessity for speed continued to be a characteristic of campaigns in tropical regions through the end of the century.

The exact number of the total losses to the French army during its attempted reconquest of Saint Domingue is, like many casualty figures, in dispute. What is certain is that most of the European forces sent from France died of disease on the island. Stoddard stated that the losses were “a few thousand” short of 50,000; Bray stated that “seven eighths of the 25,000 French soldiers sent to reconquer Haiti died,” while Scott simply noted that “one of the finest armies of France perished, at least for all purposes of an army, within the year”⁵⁴⁸ Entomologist Peterson stated that “The effect of yellow fever on the French was staggering. Only approximately 3,000 men returned to France. Although estimates vary considerably, as many as 50,000 soldiers, officers, doctors, and sailors may have died from yellow fever. Before reinforcements arrived, Leclerc's original force of 20,000 was reduced to only a few thousand.”⁵⁴⁹ Burns estimated the toll to the French was approximately 40,000; he also noted that in that epidemic approximately 60,000 black and colored troops also died.⁵⁵⁰ The failure to recapture Saint Domingue led France

⁵⁴⁷ Ibid., 337-8.

⁵⁴⁸ Bray, *Armies of Pestilence*, 110; Scott, *A History of Tropical Medicine*, vol. I, 296.

⁵⁴⁹ Peterson, “Insects, disease, and military history,” no page numbers.

⁵⁵⁰ Burns, *History of the British West Indies*, 581. The losses to black troops were due to the fact that, although some of the African former slaves who were transported directly to the islands before the revolution may have had

to occupy Algeria in the 1830s as a replacement for the wealth and tropical goods formerly supplied by the colony.⁵⁵¹

One enduring legacy of the failure of the European attempts to take the colony and repress the revolt was the heightened fear of slave rebellion by slaveowners across the North American South, the Caribbean, and Latin Central and South America. This was to have a major geopolitical impact in the Spanish colony of Cuba. The physical destruction of much of the sugar producing capital stock and the continued political disruption of Haiti ended its role as the sugar capital of the world; by the 1820s Cuba was the largest sugar producer in the world.⁵⁵² Cuba's sugar wealth was based on slave labor much as it had been in Saint Domingue. This gave Cuba's elites a reason to resist the wave of rebellion across most of Latin America in the 1810s and 1820s; loyalty to Spain was based on preservation of the status quo and protection of slave property and capital against a possible takeover by slave and free blacks and mulattos. Hugh Thomas is certain that the sugar plantations were the only reason that Cuba failed to rebel with the remainder of Spanish America. Fear of the black slave massacres of the whites of Saint Domingue and the reliance on slave labor for their wealth kept the Cuban elite firmly aligned with the colonial *status quo*.⁵⁵³

Case Study – Conclusions

British troops sent from the home islands or from European posts continued to suffer losses when assigned to the West Indian command throughout the remainder of the nineteenth century;

immunity, second and later generation blacks and the free colored class did not have complete immunity (only those who contracted yellow fever earlier on the island and survived would have had immunity).

⁵⁵¹ David Todd, "A French Imperial Meridian, 1814–1870," *Past and Present*, No. 210 (Feb., 2011): 155-186.

⁵⁵² Hugh Thomas, *Cuba: The Pursuit of Freedom* (New York: Harper & Row, 1971), 61.

⁵⁵³ *Ibid.*, 89.

an 1882 article by Surgeon-Major Boileau noted that regiments sent from Malta to Barbados continued to suffer “very seriously” from yellow fever; citing data from 1860 to 1882, concluding that “there is much to be thought of before sending a regiment from Malta to Barbados to take the place of one removed therefrom [*sic*] in consequence of an outbreak of yellow fever.”⁵⁵⁴ As late as 1898, the “the almost universal opinion that the white man cannot colonise the tropics, but must inevitably fall sooner or later a victim to the deadly climate ... the enormous death-rate of whites in the tropics seemed decidedly unfavourable to acclimatisation.” was shared among most of the British medical community.⁵⁵⁵

The British never found a “magic bullet” to eliminate the risk of tropical disease to Europeans sent to the Caribbean, although basic sanitation, the relocation of troops to healthier locations on the islands (away from malarial regions with bad air and worse mosquitoes), and higher peacetime recruiting standards helped to reduce the death rates from tropical diseases.⁵⁵⁶ Their experiences in the Caribbean, along with the French experience in Haiti, continued to serve as a guideline on how tropical epidemics, especially of yellow fever, could break an unacclimated army. Although the British siege of Havana during the Seven Years War succeeded, it was a pyrrhic victory that claimed most of the lives of the soldiers (and sailors) that achieved it. The French experience in St. Domingue showed the worst that disease could do in the Caribbean – loss of an army, a colony, and an overseas empire. The problem was facing a highly contagious untreatable disease whose etiology and contagion was not understood; the

⁵⁵⁴ J. P. H. Boileau, “A Few Remarks On Yellow Fever, And On The Movement Of Troops,” *The British Medical Journal* 1, No. 1097 (Jan. 7, 1882): 7-8.

⁵⁵⁵ “The Possibility of Acclimatisation of Europeans in Tropical Countries,” *The British Medical Journal* 1, No. 1948 (Apr. 30, 1898): 1167-1169.

⁵⁵⁶ William MacLean discussed the changes brought about in the British Army by the sanitary regulations and other medical issues surfaced by the Royal Medical Corps in the 1870s and 1880s in William MacLean, *Diseases of Tropical Climates* (London: MacMillan & Co., 1886), 6-15. His comments were directly about disease in India, but the regulation changes affected the British army worldwide.

nineteenth century doctor faced this disease with almost no weapons in his arsenal. The only effective way to win was to not play; that is, to avoid conducting campaigns during the fever season. This was well understood by the decision makers of 1898. Surgeon-General George Sternberg was a world expert in yellow fever who had intimate knowledge of these prior epidemics from his work with the Havana Yellow Fever Commission of 1879. Nelson Miles cited Sternberg, Juan Guiteras (a Cuban expert on yellow fever working for the US Army in the late 1890s), and others in his reasoned arguments against employing troops during the rainy season. Fifth Corps commander William Shafter bought a bound copy of a journal of the 1762-63 siege of Havana and studied it carefully before committing his soldiers to a Cuban campaign.⁵⁵⁷ Despite this, the Santiago Campaign of 1898 was fought at the height of the rainy season, resulting in epidemics of malaria and yellow fever in addition to the typhoid and dysentery common to campaigns during that era. That will be the focus of Part 2 of this dissertation.

⁵⁵⁷ The various sources of information available to these decision makers and how they used them is the topic of later chapters. For an example of Sternberg's knowledge of prior epidemics, see his letter to Secretary of War Alger dated March 25, 1898, reproduced in Appendix B as item 1. Miles cites Sternberg and Guiteras in his letter to Alger April 18, 1898 (*Correspondence Relating to the War With Spain*, vol. 1, 8). Shafter's discussion of his bound journal is found in Shafter, "The Capture of Santiago de Cuba," 614-615

A Domestic Case Study – the US Civil War

The US Civil War was in many ways the first US war of the Industrial Revolution. Mass armies were supported by the copious outputs of factories running day and night. Some historians argue that it was the industrial output of the North that was the ultimate cause of the Southern loss of the war. Despite America's industrial might, the war was a product of the Disease Era: twice as many men died from disease than from enemy action during the war. Although the ratio of disease deaths to deaths from enemy action was far higher for the Spanish-American War, the sheer numbers for the Civil War are breathtaking: almost 225,000 men died from various diseases during the Civil War (see Table 4 for a comparison between Civil War and Spanish-American war deaths): The Army Surgeon-General's office spent years after the war compiling medical statistics and using them to draw some general conclusions about disease during the war. The conclusions are given in the three medical volumes that comprise Volume 1 of the *Medical and Surgical History of the War of the Rebellion*. The author of Part 3 of Volume 1 concluded that "The popular idea that our armies suffered severely from disease during the campaigns of the civil war is thus well sustained by the statistics," which was despite "the fact

Table 4: Causes of US Army Deaths in the Civil War and the Spanish-American War

Cause	Civil War	Spanish-American War
Killed in Action	67,058	280
Died of Wounds	43,012	65
Died of Disease	224,586	2,565
Total	334,656	2,910
Ratio Disease/Enemy ⁵⁵⁸	2.0	7.4

(Source: Cirillo, *Bullets and Bacilli*, 32)

⁵⁵⁸ Deaths from disease over deaths from enemy action (killed and died from wounds)

that no notable epidemic of imported pestilence, as of typhus, cholera, or yellow fever contributed to their mortality.”⁵⁵⁹ Almost one-third of all reported sick cases and deaths were caused by diarrheal diseases (primarily dysentery) while malarial diseases (malaria, typho-malaria) accounted for additional quarter of disease cases but only one-tenth of the number of deaths.⁵⁶⁰

Despite these statistics, few Civil War historians have argued that the war was significantly impacted by disease.⁵⁶¹ The only book-length treatments of disease in the US Civil War are Paul Steiner’s *Disease in the Civil War* and Andrew Bell’s *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War*.⁵⁶²

One of the campaigns that was clearly affected by disease was McClellan’s Peninsula Campaign during the spring and summer of 1862. Although many factors (not the least of which was McClellan’s generalship) contributed to the failure of the campaign, one factor was insufficient manpower.⁵⁶³ McClellan’s manpower was in turn depleted largely by disease. James McPherson states that “Illness also influenced the denouement of the Peninsula campaign in Virginia. The health of McClellan’s army, already affected by the heavy rains and humid heat among the Chickahominy swamps in May and June, deteriorated further after the army’s arrival at Harrison’s Landing in July. Nearly a fourth of the unwounded men were sick. Scores of new cases of malaria, dysentery, and typhoid were reported every day. ... With the sickliest season of the year (August—September) coming on, the administration decided over McClellan’s protest

⁵⁵⁹ U.S. Army, *MSHWR*, vol. 1, part 3, 10. The author of this part was Major (Dr.) Charles Smart.

⁵⁶⁰ *Ibid.*, 11.

⁵⁶¹ Bell, *Mosquito Soldiers*, 6-7.

⁵⁶² Paul Steiner, *Disease in the Civil War* (Springfield, IL: Charles C. Thomas Pub Ltd, 1968).

⁵⁶³ McClellan was convinced that if he had been given more men, he would have taken Richmond. His hesitations and the alacrity of his withdrawal under attack reflected his certainty that he was vastly outnumbered (two to one). James McPherson, *Ordeal by Fire: The Civil War and Reconstruction*, 3rd ed. (New York: McGraw-Hill, 2001), 264, 266.

to withdraw his army from the Peninsula.”⁵⁶⁴ This suggests that this campaign provides an opportunity to examine in more detail the impact disease had during the Civil War. Most military histories attribute the Peninsula Campaign’s outcome to poor generalship by McClellan and good generalship by Lee; although that certainly was a major (and quite possibly the most important) factor, studies of the medical situation such as Steiner’s *Disease in the Civil War* have suggested that disease also played a major role in the Union defeat and withdrawal.

The Peninsula Campaign was the first major Union offensive in the East in 1862. The Army of the Potomac commanded by Maj. General George McClellan landed at the base of the peninsula created by the York and James Rivers, near the city of Norfolk. McClellan’s plan was to march up the peninsula in order to attack Richmond, the Confederate capital, from the east. This approach permitted easy supply and reinforcement of Union troops throughout the campaign via either river. The Confederate army responded by creating a series of fortifications in successive bands up the peninsula; the Union army was forced to attack and break through each series of entrenchments over a period of several months. This came at a considerable cost, as both sides lost soldiers to disease. Stephen Sears reported that approximately one-tenth of the Union army (11,000 men) were unfit for duty in June.⁵⁶⁵ The reaction of the soldiers was a reasonable fear of contracting disease but also an indifference, as no one could avoid the miasmatic vapors of the Chickahominy bottomlands.⁵⁶⁶ The effect of the pestilential environment

⁵⁶⁴ James McPherson, *Battle Cry of Freedom* (Oxford: Oxford University Press, 1988), 488. McPherson cited Steiner’s book as a source for this information.

⁵⁶⁵ Stephen W. Sears, *To the Gates of Richmond: The Peninsula Campaign* (New York: Houghton-Mifflin, 1992), 98-99, 163-4; quote p. 163.

⁵⁶⁶ *Ibid.*, 163, 164.

negated McClellan's attempts to bring his forces up to par with the Confederates as sick returns increased faster than reinforcements could arrive.⁵⁶⁷

The Army of the Potomac succeeded in getting close enough to Richmond to see the church steeples in the distance by June 1862. The Confederate Army of Northern Virginia, commanded at first by Gen. Johnston and later by Gen. Robert E. Lee, attacked the Union army in a series of battles that collectively became known as the Seven Days Battles. Over that week of conflict, McClellan was forced to withdraw to a position southeast of Richmond on the James River known as Harrison's Landing. The army remained there for several months while McClellan fought with Lincoln and the War Department for additional reinforcements, convinced at every point that he was greatly outnumbered by the Confederate army (in fact the armies were close to the same size, with McClellan holding a slight advantage). The Army of the Potomac was later withdrawn when Lee moved North to attack the Union first near Manassas Virginia (the Battle of Second Manassas) and then at Sharpsburg, Maryland in the climactic Battle of Antietam (September 17, 1862).

The failure of many military historians to place disease among the leading factors affecting the Peninsula Campaign is particularly striking in view of Steiner's discussion of the magnitude of disease during the campaign, particularly among Northern troops not acclimatized to Southern disease environments. Steiner devotes one chapter of his book as a case study of disease during the Peninsula Campaign. According to him, the Union Army of the Potomac had sent 50,000 soldiers to the rear and "invalided a hundred regiments" due to camp disease, attributed at the time to "(a) the mustering of unfit persons; (b) the unhealthy location and inadequate provision of camps, (c) the disregard of camp police [camp cleanup]; and (d) improper and badly cooked

⁵⁶⁷ Ibid., 348. In reality, McClellan's 100,000 men outnumbered the Confederate Army's 90,000, but he was convinced that he was outnumbered 200,000 to 100,000 (McPherson, *Ordeal by Fire*, 266).

food.”⁵⁶⁸ The number of troops lost to illness while encamped waiting for action exceeded the number of reinforcements McClellan claimed were necessary to resume the offensive; since the general attributed his decision not to attack based on the failure of the War Department to provide those reinforcements, it can fairly be concluded that disease was a major factor in ending his offensive and thus ending any significant chance of terminating the war in 1862.

Furthermore, although McClellan was willing to remain at Harrison’s Landing near Richmond in order to mount another attack on the city, Steiner concludes that “The principal reason lastly given for withdrawing from the Peninsula was the threat of even more disease in the late summer and autumn months. ... Thus the threat of disease was a factor in closing out the campaign.”⁵⁶⁹

Disease was also present in the Confederate forces opposite McClellan but was less important from a military perspective because they were fighting in the defense (thus fewer troops were needed) and they were fighting near to their base of supply and reinforcements (Richmond). The Confederate units were also likely to have soldiers from Southern locations where malaria was endemic; these men were likely to have an effective immunity based on a persistent low-grade infection that might degrade their abilities but still leave them capable of fighting.⁵⁷⁰

Steiner justifies his conclusions by examining the official reports of the strength of the Army of the Potomac during this period (which report the numbers Present Sick [sick in camp] and Absent From Duty; the latter were in military hospitals, usually sick) and the various reports filed by the Army’s physicians. The Army of the Potomac suffered significantly from illness even before the campaign; the principal diseases were measles, mumps, diarrhea, dysentery, respiratory infections, and sometimes typhoid fever. Childhood diseases such as measles and

⁵⁶⁸ Steiner, *Disease in the Civil War*, 25-26. The contemporary source cited was the *American Medical Times* (Editorial, Vol. 5, No. 65, 1862).

⁵⁶⁹ Steiner, *Disease in the Civil War*, 98.

⁵⁷⁰ The confederate soldiers were further debilitated by a shortage of quinine used to alleviate the symptoms of the disease. Bell, “‘Gallinippers’ and Glory,” 383-385.

mumps could kill thousands in camps where new recruits, typically from rural areas, were first exposed when crowded into barracks or packed tents in training camps.⁵⁷¹ He concludes that “in each month about one-third of the complement was sick in a hospital. The sick in quarters or on duty are not included. ...in the nine months from August 1861 through April 1862 each soldier was sick on the average three times.”⁵⁷² The Confederate army also suffered from excessive sickness during this period, primarily from the same camp diseases as the Union but also from malaria due to the swampy, mosquito-ridden swamps near the Virginia coastline.

However, during the Peninsula Campaign itself the number of illnesses among the Union army ballooned. Over the months April – August 1862 a total of 124,027 illnesses were reported in a force that numbered between 70,000 and 106,000 men; although most of these men quickly recovered so that the monthly cases were only between 17,000 and 43,000, the July figure of 43,000 out of 106,000 represents a monthly rate of 40.5%.⁵⁷³ Even if the men were sick only a few days, the magnitude of the disease situation is readily apparent. The primary diseases were dysentery and diarrhea, primarily from using the available water – rivers and swamps often contaminated with feces and other material – for drinking and food preparation. The troops called it “Chickahominy Fever” after the winding, sluggish and often swampy river flowing through many encampments. Many of the troops were forced to camp in or near swamps; the need for continuous lines prevented units from bypassing marshy areas despite the perception of high rates of disease from “miasma.” Although the miasmatic theory was incorrect, the dangers of infection were real and realized during the campaign. Once the force reached Harrison’s Landing, McClellan reported that daily disease rates increased from about 8% to 20%, blaming it

⁵⁷¹ See for example Greenwood, “Epidemics and Crowd-Diseases: Measles,” 492-499.

⁵⁷² Steiner, *Disease in the Civil War*, 103-104.

⁵⁷³ Ibid., 124. All numbers are approximate.

on a shortage of medical supplies due to the loss of their main supply base during the Seven Days Battles. Doctors had a more lengthy list of reasons, such as “the sultry heat alternating with the cold, severe rains, exposure in the swamps, labor in the trenches, the location of the camps on the battlefield [filled with poorly buried corpses, decaying horses, and other contamination], the bad water, the air rendered foetid by the emanations from the poorly made and numerous graves, and the constant excitement caused by proximity to the enemy.”⁵⁷⁴

The decision to abandon the campaign and evacuate the peninsula was made by General-in-Chief Henry Halleck in consultation with Lincoln and the Secretary of War. Halleck based his decision on many factors, most of them military – the main offensive had passed to the Union Army of Virginia under Gen. Pope near Manassas, McClellan’s strength had peaked and would require significant reinforcement, and a lack of trust in McClellan’s ability after the significant defeats in the Seven Days Battles. However, Halleck was also worried about disease; in a letter to McClellan explaining his decision, he stated that “To keep your army in its present position until it could be so reinforced would almost destroy it in that climate. The months of August and September are almost fatal to whites who live on that part of the James River.”⁵⁷⁵ The perceived danger was from malaria, endemic to the region as noted by Halleck, in addition to the constant risk of dysentery, typhoid and other camp diseases that were known but their causes misunderstood. Steiner defends this decision as reasonable even under current medical knowledge, given that these diseases were largely untreatable during the Civil War.

One example of how disease affected other campaigns during the Civil War is found in Bell’s *Mosquito Soldiers*. After the battle of Shiloh, the Confederates withdrew to a strong position at Corinth, Mississippi. Both sides were significantly afflicted with malaria; in May

⁵⁷⁴ Ibid., 126, 135.

⁵⁷⁵ Ibid., 142. Letter from Halleck to McClellan dated Aug. 6, 1862.

1862 Sherman had over 2,500 soldiers incapacitated from illness out of 10,542 men. However, Beauregard's Confederate force was in worse condition, suffering from dysentery and typhoid as well as malaria when the soldiers were forced to drink from contaminated water supplies after the wells ran dry. Beauregard, unsure of whether Halleck or disease posed a greater threat to his remaining forces, withdrew to Tupelo, a spot he considered "very healthy."⁵⁷⁶ The tactic succeeded because Halleck regarded a further advance as a suicide mission: "If we follow the enemy into the swamps of Mississippi, there can be no doubt that the army will be disabled by disease."⁵⁷⁷

By the end of the war, Union commanders had considerable experience dealing with malaria, over the course of the Civil War the North experienced over one million cases of malaria out of 2.1 million who served.⁵⁷⁸ The army was fortunate enough to be spared any significant outbreak of yellow fever,⁵⁷⁹ likely as a result of the war; the Union blockade of Southern ports prevented the typical triggers for yellow fever epidemics in the US.⁵⁸⁰ One of the ways in which commanders dealt with malaria was through the use of a new medical concept: chemical prophylaxis. Smart concluded in the *MSHWR* that "It was declared to be a fact well established in the experience of American physicians that the daily use of three to six grains of quinine by those who are exposed to the danger of malarial poisoning will in most instances avert an attack, or failing this, will render the disease milder and prevent the development of the malarial

⁵⁷⁶ Bell, *Mosquito Soldiers*, 56-57.

⁵⁷⁷ Halleck to Secretary of War Stanton. *Official Records of the Rebellion*, Vol. 16, Series 1, Part 2, 62-63, as cited in Bell, p. 57. *Official Records of the Rebellion*, CD-ROM: Carmel, IN: Guild Press of Indiana, 1996).

⁵⁷⁸ Alfred Jay Bollet, *Civil War Medicine: Challenges and Triumphs* (Tucson, AZ: Galen Press, 2002), 289 as cited in McNeil, *Mosquito Empires*, 293. See also U.S. Army, *MSHWR*, vol. 1, part 3, Table C (White Troops) 363-364, CX (Colored Troops) 704-705. The latter are broken out into the various presentations (tertian, quartan, etc.)

⁵⁷⁹ "Yellow fever was imported [from abroad, likely from Cuba], but by timely conservative action most of the troops in the invaded or threatened departments were preserved from the disease. The regiments stationed in the Department of the Gulf wholly escaped." U.S. Army, *MSHWR*, vol. 1, part 3, 675.

⁵⁸⁰ Charles S. Bryan, Sandra Moss, and Richard Kahn, "Yellow fever in the Americas," *Infectious Disease Clinics of North America* 18 (2004): 281.

cachexia.⁵⁸¹ This is particularly important in cases of *vivax* malaria which can lead to a chronic, often wasting, illness.⁵⁸² The danger of malaria for military operations is not in the fatalities, which are relatively low,⁵⁸³ but rather in the widespread debilitation that prevents soldiers from performing their duties.

In 1898, it was malaria, not yellow fever, that accounted for the prostration of the Fifth Army Corps outside of Santiago.⁵⁸⁴ Malaria was a known danger to Spanish soldiers in Cuba; the Public Health Report released on April 29, 1898 detailed the losses of Spanish soldiers to different diseases during the previous year: over 7,000 died from malaria, indicating a much larger sick rate from the disease.⁵⁸⁵ Given the Civil War experience detailed in this brief case study, the Army Medical Department should have been prepared for a significant number of cases of malaria among the Fifth Corps troops sent to Cuba in 1898. Furthermore, the use of

⁵⁸¹ Cachexia is weakness and wasting of the body due to severe chronic illness. U.S. Army, *MSHWR*, vol. 1, part 3, 167.

⁵⁸² *P. vivax* is one of the strains of malaria found in the Americas. Unlike *P. falciparum*, which either kills or disappears after six months, *vivax* malaria can cause reoccurring infections over decades. Marcus, *Malaria*, 24.

⁵⁸³ Recall that in the Civil War malaria accounted for ¼ of all illnesses but only 1/10 of the deaths. U.S. Army, *MSHWR*, vol. 1, part 3, 11.

⁵⁸⁴ The exact percentage of those who were sick at one point or another is unknown, as both commanders and medical staff reported that many of the men who were sick did not appear for sick call out of pride or a feeling that it wouldn't do any good. Col. Theodore Roosevelt told the *New York Times* on August 4th that 90% of the troops were unfit for active work ("Nine Men out of Ten Sick.: Colo. Roosevelt Declares the Whole Army Is in Danger Unless Moved North at Once," *New York Times*, Aug 5, 1898, 7); note that this newspaper report of the "Round Robin" letter is different from the official letter sent by Shafter to the War Department (Appendix B - Correspondence, No. 4 in this dissertation). Shafter later reported on August 8th that "more than 75 per cent of [the 5th Corps] which have been ill with a very weakening malarial fever..." Shafter to Corbin, Aug. 8, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 213. Although the formal sick list was closer to 25% - 50% at any one time, commanders reported that these numbers did not reflect the total number of men actually sick. Lt Parker of the Gatling Gun Detachment stated that "There were no well men in the 5th Army Corps. Those who refused to go on the sick-report were, nevertheless, sick. The author has yet to find single member of the expedition who did not suffer from the climatic fever." John H. Parker, *History of the Gatling Gun Detachment, Fifth Army Corps, at Santiago* (Kansas City: Press of the Hudson-Kimberly Co., 1898), 199. Millis reported that "from sixty to ninety per cent must have been on their backs at one time or another." Millis, *Martial Spirit*, 346. A comparison of the total reported as sick or sick then returned to duty by Aug. 23, 1898 (last day of detailed reports) to the average monthly complement of men indicates that 73-75% of the men were admitted as sick at some point. However, given that this number includes only the numbers formally reported as sick, it is likely that actual sick rates were much higher, probably in excess of 90-95% (see Appendix A for totals)..

⁵⁸⁵ Brunner, "Morbidity and mortality in the Spanish army," 411.

quinine as a prophylactic agent was well established during the Civil War, and could easily have been used to significantly reduce the effect of a malarial epidemic once it occurred.

A Case Study of Possible Success – Africa

In addition to the Caribbean exposure to tropical diseases, European armies would face these diseases in Africa, home to yellow fever, trypanosomiasis, dengue, *falciparum* malaria, and other diseases foreign to soldiers from temperate European climes. Armies from France, Britain, Belgium, Portugal, Italy, and Germany would initially attempt to control the valuable African trade by controlling trading posts and forts along navigable rivers and bays. As much of the remainder of the world came under the sway of the major European powers, their armies would increasingly turn to the conquest of native tribes and the establishment of colonies across Africa; by the latter two decades of the nineteenth century this process became known as the Partition of Africa. By 1914 only Ethiopia and Liberia would be free from colonial rule. This intersection between military operations and disease would cause the death of many Europeans before the conquest was complete. The increase in death rate when a population raised in one disease environment is exposed to another environment is called a “relocation cost.” The relocation cost for Europeans sent to West Africa reached 600 percent in the nineteenth century; it remained as high as 100 to 200 percent by the end of the twentieth century.⁵⁸⁶ The extreme threat from disease prevented the colonization of Africa from matching the colonization rates in more disease-friendly environments, as discussed in this section.

⁵⁸⁶. Curtain notes, however, that “it is measured from such a low base that it is not a serious threat to the individual traveler.” Curtain, *Disease and Empire*, 5.

General Case Study – The European Conquest of Africa

Only one place rivaled the West Indies as a grave for the European soldier; that place was West Africa. The West Indies was called the “cradle of fevers” but Africa was called the “White Man’s Grave.”⁵⁸⁷ Although the West Indies cost the British Army more lives than did Africa, West Africa was the site of epidemics with higher fatality rates and thus gained perhaps a fiercer reputation than the Caribbean. Burroughs stated that “If tropical diseases exacted a heavy price in the West Indies, West Africa was a graveyard for British soldiers, and the short life expectancy made service there equivalent to a death sentence.”⁵⁸⁸ Curtin noted that the cost in increased numbers of fatalities over the norm expected during service at home was 200-300% for service in the West Indies but up to 600% for service in Africa.⁵⁸⁹ Scott stated that “A Handbook of Useful Information was published and among the matters dealt with were ‘How to reach West Africa and how to return,’ and the second part began with the statement, self-evident, though not grammatically expressed, ‘If dead, this will not be needed.’”⁵⁹⁰

The losses suffered in Africa were due primarily to two diseases – malaria and yellow fever. Although doctors distinguished between the two in the 18th century (malaria was generally referred to as an “endemic” or a recurring fever according to the period of recurrence (tertian, quartan)),⁵⁹¹ in practice malaria was often confused with yellow fever, typhoid, and also typhus.

⁵⁸⁷ Philip D. Curtin, “‘The White Man’s Grave’: Image and Reality, 1780-1850,” *Journal of British Studies* 1, No. 1 (Nov., 1961): 94-110; Scott, *A History of Tropical Medicine*, vol. I, 296.

⁵⁸⁸ Burroughs, “The Human Cost of Imperial Defence in the Early Victorian Age,” 14.

⁵⁸⁹ Curtin, *Disease and Empire*, 5.

⁵⁹⁰ Scott, *A History of Tropical Medicine*, vol. I, 69.

⁵⁹¹ The fever cycles are discussed in Chapter 2, Epidemic Disease, subsection on malaria. See also Sinka et. al., “The dominant Anopheles vectors of human malaria,” 1-34.

Europeans had been trading with Africa since the late fifteenth century, but attempts to establish more than a toe-hold on the continent failed due to disease.⁵⁹² Ships calling on the coast as part of the slave trade quickly established the mosquito-ridden coast's reputation as a death-trap for Europeans. Sailors brought malaria, yellow fever, blackwater fever, or a host of other diseases back to their ships.⁵⁹³ The Gold Coast afforded few if any harbors, but there were frequent streams and rivers that could be penetrated with small craft; larger ships could only penetrate short distances along the major rivers. As a result, trading posts and military forts were established in the low-lying regions and islands near the major rivers; these areas were mosquito infested and malarial and yellow fever epidemics were common as well. A ship that mapped the coastline between 1823 and 1826 lost two-thirds of its crew to disease.⁵⁹⁴

Earliest British efforts to settle western Africa was actually in response to the slave trade. A colony was established in Sierra Leone for blacks freed during the American Revolution along with poor blacks from English urban areas. Losses in Sierra Leone quickly established Africa's reputation as a graveyard. During the first year of settlement, 46% of the white settlers and 17% of the black American loyalists died from disease. Exploring expeditions reported similar losses to the settlers.⁵⁹⁵ From 1819 to 1836, British troops stationed at Sierra Leone command died at an average *annual* rate of 48.3%. In 1826, 115 out of 535 there died between June 14th and August 24th. Almost 85% of all deaths were from fevers in general (malaria or yellow fever), but the peak mortality rates were caused by periodic yellow fever epidemics.⁵⁹⁶ British trading posts and colonies for freed blacks and missionaries were also established in Gambia and Senegal. An

⁵⁹² Curtin states that "The early nineteenth-century mortality of newly arrived Europeans was simply too high to allow more intensive occupation than that of a few thinly-manned posts for the slave trade." Curtin, "Epidemiology and the Slave Trade," 204.

⁵⁹³ Lloyd, *Medicine and the Navy*, 156-7.

⁵⁹⁴ Ibid., 158.

⁵⁹⁵ Curtin, *Disease and Empire*, 4.

⁵⁹⁶ Ibid., 4, 15; Scott, *A History of Tropical Medicine*, vol. I, 304.

epidemic in Gambia in 1825 was almost certainly yellow fever; it killed 74 out of 108 soldiers stationed there.⁵⁹⁷ Between May 1825 and December 1826, so many soldiers died that the statistical fatality rate was over 100%, due to replacements being sent (who in turn quickly died). The garrison size during that period varied between 40 and 120; fever killed 279 soldiers in this epidemic.⁵⁹⁸ An officer in the British Army, writing about his experiences campaigning in West Africa, stated that in the early years (prior to 1826) that “out of 1,685 white men sent to the entire West African coastline, 1,298 died, 398 were invalided, of whom 33 were ultimately found fit for further service. So that of the whole force, only two in every hundred survived.”⁵⁹⁹ At Gorée, Senegal, in 1778, 60 out of 93 Europeans died; in 1792, 180 out of 200 soldiers sent to occupy the island of Bulam died within a few weeks; in 1830 144 out of 152 Europeans were stricken with fever; 52 died; in 1859 244 out of 287 are attacked and 162 died. In St. Louis, Senegal in 1830, 328 out of 650 Europeans died and in 1878 an outbreak over the entire region of Senegal infected 1474 Europeans.⁶⁰⁰ Bases established on the islands in the Bight of Benin had an incredible death rate of 66.8%. Lloyd tells us that “it was a joke among sailors that the standing orders were ‘Gang No 1 to be employed digging graves as usual. Gang No 2 making coffins until further orders.’” As late as the 1870s, shipping lines would only issue 1-way trips to these destinations.⁶⁰¹

The British medical community warned travelers and the military about the dangers associated with Africa. Medical knowledge during the seventeenth and eighteenth centuries

⁵⁹⁷ Scott, *A History of Tropical Medicine*, vol. I, 304. Lloyd reports a slightly different number; out of 108 soldiers he states that 21 survived (thus 87 died). Lloyd, *Medicine and the Navy*, 156.

⁵⁹⁸ Scott, *A History of Tropical Medicine*, vol. I, 304; Curtin, *Disease and Empire*, 10.

⁵⁹⁹ Captain Ebenezer Rodgers, *Campaigning in Western Africa and the Ashantee Invasion* (London: W. Mitchell & Co., 1874), 177.

⁶⁰⁰ Scott, *A History of Tropical Medicine*, vol. I, 305-306. Another name for yellow fever in the early 19th century was “Bulam fever”; Sir William Pym published his *Observations upon Bulam, Vomito-Negro or Yellow Fever* in 1848 (London: J. Churchill).

⁶⁰¹ Lloyd, *Medicine and the Navy*, 159; Burroughs, “The Human Cost of Imperial Defence in the Early Victorian Age,” 14.

emphasized the humoral theory of disease and the miasmatic theory of disease transmission as discussed previously. The body's humors could become unbalanced from contact with the poisonous air or "miasma" emanating from marshy areas or brought about by temperature differentials or sun exposure – all of which were present in the tropics.⁶⁰² Dr Richard Reese warned in 1814 that "the inexhaustible fecundity of Africa holds out to Europeans strong excitements to enterprize and research, but these are attended with dangers to their health and constitutions greater than those in any other situations."⁶⁰³ Medical journals printed articles such as an 1842 report on disease in British West Africa, warning against any European settlement.⁶⁰⁴ A report published by the British Admiralty in 1847 documented the losses in Africa over the previous half-century. It concluded that "there is no spot upon the whole coast within the tropics, whether upon the main land or the adjacent islands, that is not highly prejudicial to the health of Europeans stationed there."⁶⁰⁵

The extremely hazardous conditions in the African garrisons created a crisis in the British military. Both officers and men refused duty assignments to the African coast, so the Army garrisoned the forts with the "condemned corps," men convicted of military crimes whose sentences were commuted in return for "volunteering" for African duty. Discipline under such conditions was almost impossible; men spent much of their time drunk when not in hospital. At

⁶⁰² Philip D. Curtain, "'The White Man's Grave,'" 97-98.

⁶⁰³ Reece, *Medical Guide For Tropic Climates*, 198.

⁶⁰⁴ E. J. Burton, "Observations on the Climate, Topography, and Diseases of the British Colonies in Western Africa," *Provincial Medical and Surgical Journal* 3, No. 20 (Feb. 12, 1842): 392-395. He concluded that "it is my opinion that the climate of Western Africa is so destructive to European health, that all attempts to colonize the country must ultimately be abandoned."

⁶⁰⁵ Alexander Bryson, *Report on the Climate and Principal Diseases of the African Station* (London: William Clowes and Sons, 1847), 195.

Sierra Leone, troops were recorded as under medical care an average of three times yearly; the average mortality rate was just under 50%.⁶⁰⁶

Sailors assigned to boat duty on the rivers suffered similar losses. The Admiralty report recommended that naval ships assigned to duties off the African coast remain a few miles offshore; however, the nature of the duty frequently required navigation of the rivers to smoke out slave traders and enforce law and order in British-controlled areas.⁶⁰⁷ Many of the rivers of Western Africa, such as the Senegal River, are only navigable to any significant extent during the rainy season. These facts combined to make expeditions up the river particularly hazardous. In 1841, Britain mounted an expedition up the Senegal River using modern steamboats; in just two months 82% of the crew were sick from malaria and 30% died. This represented a fatality rate of 16.2% *per month* during the “fever season.”⁶⁰⁸

One of the ways in which the British army tried to lower the death rate was to withdraw European troops from African service almost entirely. The garrison in Sierra Leone was abandoned in 1829. The other way in which the British army minimized losses was to shift the black West Indian regiments to African service. After slavery was abolished in British territories, most of the recruits for these regiments were Africans who were recaptured on slave ships intercepted off the coast of Africa. A few were kept for local service⁶⁰⁹ but most joined the West Indian regiments; by the 1850s the British army began to merge the local African troops and the West Indian regiments, all for African service.⁶¹⁰ These black troops had a fatality rate from fevers of only 9.3% per year between 1816 and 1837.⁶¹¹ Since they were stationed in posts

⁶⁰⁶ Burroughs, “The Human Cost of Imperial Defence in the Early Victorian Age,” 14.

⁶⁰⁷ Bryson, *Report on the Climate and Principal Diseases of the African Station*, 200-204, 212.

⁶⁰⁸ Curtin, *Disease and Empire*, 23.

⁶⁰⁹ The local-service troops were sometimes legally part of the West Indian regiments assigned to Africa.

⁶¹⁰ *Ibid.*, 17.

⁶¹¹ *Ibid.*, 8, Table 1.1.

intended to intercept slavers, they would have been stationed in the same disease environment they grew up in – so they would have long-term malarial infections but those exhibit few symptoms, while they almost certainly would be immune from yellow fever from previous exposure.⁶¹² The 2nd, 3rd, and 4th West India Regiments were sent to the Gold Coast in the 1840s and did most of the fighting in the Second Anglo-Ashanti War (1863-64) and also served in the Third war (1873-74).⁶¹³

Campaign Case Study – The Third Anglo-Ashanti War

Medical science and military operations combined effectively in the Third Anglo-Ashanti War (1873-74). The British medical community wrote extensively on the war during and after the conflict, as did the military officers, so it is possible to compare the different perspectives on the conflict. The major medical change between the early 1800s and 1873 was the introduction of measures related to scientific hygiene, or sanitation. Although the medical community still argued between the miasma theory and the germ theory of disease,⁶¹⁴ Snow's groundbreaking discovery of the link between cholera and contaminated water alerted medical authorities to the importance of clean water. Despite this, Royal Army soldiers were issued "cholera belts," flannel belts of cloth to be worn around the waist that would supposedly ward off cholera or malaria by filtering out miasms: Dr. W. Moore stated in 1862 that "the body well wrapped in flannel or clad in warm clothing so as to prevent a check to the perspiration and chill from the night air, is more

⁶¹² Guerra, "The Influence of Disease on Race, Logistics and Colonization in the Antilles," 212.

⁶¹³ S. C. Ukpabi, "West Indian Troops and the Defence of British West Africa in the Nineteenth Century," *African Studies Review* 17, No. 1 (Apr., 1974): 133-150. Despite their record in 1863-4, there was considerable racial animus against their value as combat troops, which was the primary reason white troops were sent to Africa for the Third Anglo-Ashanti War.

⁶¹⁴ An 1871 article presents arguments that "inspire grave doubts as to the truth of the 'germ-theory,' stating that "there are many organic poisons which undoubtedly produce spreading changes in the blood." Bastian, "Epidemic And Specific Contagious Diseases," 403.

capable of resisting malaria...”⁶¹⁵ However, some doctors feared that malaria was an inescapable consequence of the unhealthy climate: “Remittent fever is an endemic disease, and may be said to be the result of marsh malaria. It attacks Europeans and natives alike; but the former, in proportion to their numbers, much more frequently. This is the inevitable climate fever, from which there is no escape: years of residence, or supposed acclimatisation, afford no immunity - good and careful living no security against its attacks....”⁶¹⁶

The war began after the Dutch abandoned their last outpost on the Gold Coast – the fortress of Elmina. The Ashanti kingdom inland of the European settlements on the coast also claimed the territory around Elmina, and they used the Dutch abandonment as a pretext to invade in June 1873. The small peacetime British garrison, mainly a West Indian regiment, was joined by a rapid response detachment of Royal Marines. They succeeded in preventing the Ashantis from taking the fort, but at heavy cost – not from enemy action, but from disease. Within 58 days, the unacclimated white Marine force was virtually annihilated from disease; of the 110 officers and men 12 died and 77 were invalided, a casualty rate of 81%.⁶¹⁷ The government resolved to send a punitive expedition to solve the Ashanti problem once and for all (the Ashantis had been a problem since the First Anglo-Ashanti War began in 1823), but after the experience of the Marine force was hesitant to commit European troops. The head of the War Office, Edward Cardwell, brought in the darling of the Army reformers, Sir Garnet (later Lord) Woseley to take command and demonstrate what the newly reformed professional army could do.

⁶¹⁵ W. J. Moore. *A Manual of Diseases of India* (London, 1862), cited In E. T. Renbourn, “The History of the Flannel Binder and Cholera Belt, *Medical History* 1 No. 3 (July, 1957): 218. Byron Farwell states that the belts were one of the items carried for the soldiers by native porters. Farwell, *Queen Victoria’s Little Wars*, 196.

⁶¹⁶ “African Fever,” *The British Medical Journal*, 2, No. 671 (Nov. 8, 1873): 555. The term “remittent fever” to describe malaria is a common 19th century terminology. “Glossary of Historical Fever Terminology,” *Journal of the History of Medicine* (January, 1961): 76-77.

⁶¹⁷ Albert Gore, *A Contribution to the Medical History of Our West African Campaigns* (London: Bailliere, Tindall, and Cox, 1876), 22-23.

Surgeon-Major Albert Gore was one of the leading medical officers assigned to the Ashanti campaign. He summed up the knowledge that the previous two Ashanti Wars and general experience on the African coast told the British Army and the government before the start of the war: “The climate of Western Africa was especially enervating to the European constitution, and productive of disease,” both the “intermittent form of marsh fever” (malaria) and yellow fever.⁶¹⁸ The government was understandably reluctant to commit white troops to the African disease climate; ideally, Woseley was to defeat the Ashantis with allied native tribes and the meager forces in place (the black 2nd West Indian Regiment and some marines) along with additional black West Indian Regiments stationed in the Caribbean. The problem with this scheme was that “of the 130 English officers and men in the country...only twenty-two were fit for duty”; about a fifth of the black troops were ill as well.⁶¹⁹ In addition, Woseley was convinced that non-white troops were inherently unreliable; part of his army reforms involved a professionalization of the white imperial regiments, with considerably less reliance on sepoy troops in India and elsewhere. The Ashanti campaign would prove that European troops could meet the requirements of imperial power projection. He revealed his feelings in his instructions to troops later in the campaign: “It must never be forgotten by our soldiers that Providence has implanted in the heart of every native of Africa a superstitious dread of the white man and that prevents the negro from daring to meet us face to face in combat. A steady advance or a charge, no matter how partial, if made with determination, always means the retreat of the enemy.”⁶²⁰ When the government proved reluctant, Woseley insisted that “I would do my best to avoid the terrible necessity of having to employ our soldiers in such a climate, but that I deemed it to be absolutely essential to

⁶¹⁸ Ibid., 13-14.

⁶¹⁹ Farwell, *Queen Victoria's Little Wars*, 191.

⁶²⁰ Curtin, *Disease and Empire*, p. 57.

have two first rate battalions told off and specially equipped for a campaign beyond the Prah should I send home to say I could not fulfill my mission without their help.”⁶²¹

Many doctors and army officers also opposed the use of black troops. The doctors questioned their immunity to tropical disease. In his Sanitary Report to the House of Commons in 1863 during the Second Anglo-Ashanti War, Staff Asst.-Surgeon W.A. Gardiner reported that “all West Indian soldiers suffer greatly from change in climate... West Indian soldiers are less able to bear sudden removal to the Coast than even white soldiers.”⁶²² The military questioned the black soldiers’ fitness to fight. Captain Andrew Clarke (later Lieut. General) reported after the war that the West Indian soldiers lacked the “moral qualities” of Europeans. In addition, he thought the troops were unnecessarily costly as one European soldier could replace eight West Indian soldiers in effectiveness while costing no more per man than the blacks.⁶²³

The key advice given by the medical community, as well as old Africa hands, was to avoid campaigning outside of the winter months (December through March). There is some variation between sources; Horton observed in 1847 that “the increase in the mortality of armies, especially in warm climates, is determined in a great measure by the marshy character of the localities occupied...the judicious choice of good positions on elevated ground will often secure to armies – composed of men of the Caucasian race – a perfectly healthy condition.” He also noted the season: “the months of February, March, and April, although the hottest in the year...are the most healthy.”⁶²⁴ The British Medical Journal reported in 1862 that the summer period May – July was healthier because it was dryer.⁶²⁵ A surgeon assigned to one of the

⁶²¹ Lord Woseley, *The Story of a Soldier's Life, Vol. II* (Toronto, The Book Supply Co., 1904), 263.

⁶²² Gardiner, 335-336.

⁶²³ Curtin, *Disease and Empire*, 54.

⁶²⁴ Horton, *Physical and Medical Climate*, 207, 210

⁶²⁵ Charles J. Meller and Geo. G. Gascoyen, “Group Fevers of the South-East Coast of Africa,” *The British Medical Journal* 2, No. 95 (Oct. 25, 1862): 440.

hospital ships stated that “Most of the white men I consulted (that had lived on the Coast some time) said they thought that the 'dry season' is the most unhealthy, and the 'wet season' the most healthy, for Europeans.”⁶²⁶ Despite these conflicting responses, it is likely that the experiences of the previous Ashanti campaign, as reported in the 1863 Sanitary Report by Gardiner, was considered the most official; it stated that “the only time the coast is considered healthy is during the part of the year ...December, January, and February, by which time the inland country has become dry.”⁶²⁷ In any event, Woseley reported in his memoirs that “military operations upon the Gold Coast cannot be begun with safety until about the end of November or the beginning of December, nor can they be prolonged without inordinate risk much beyond the end of February. In other words, for whatever eventualities I might deem it essential to provide, my operations must be planned so as to fit well within those three months.”⁶²⁸ Even with the best 19th-century advances in sanitation, the best advice the medical community could give was to fight the war only when the risk of tropical disease was known to be minimal – the same advice given to Leclerc in 1802. The military commanders, with the acquiescence of their civilian bosses, planned for a campaign that would last two months or less. Regardless of whether the malaria and yellow fever was caused by germs or miasma, the only defense was avoidance.

The same medical advice and military planning factors were seen in the Spanish American war 25 years later. US Army Commanding General Nelson Miles advised the Secretary of War that the US Army should wait until the winter months to avoid disease while Secretary of War Alger stated firmly that “Our army would not have been sent to one of the most unhealthy

⁶²⁶ “The Ashantee Expedition: The Alleged Yellow Fever,” *The British Medical Journal* 1, No. 682 (Jan. 24, 1874): 116.

⁶²⁷ W.A. Gardiner, “Sanitary Report of the Gold Coast, Including Likewise a Short account of the Expedition Against the Ashantee,” *Accounts and Papers of the House of Commons, Vol. 33: Army Medical Department, Statistical, Sanitary, and Medical Reports, Vol. 5, For the year 1863* (London: Harrison & Sons, 1865), 328.

⁶²⁸ Woseley, *Story of a Soldier's Life*, vol. II, 262.

sections of Cuba at the worst season of the year but for the fact that the Spanish admiral took refuge in Santiago Harbor.”⁶²⁹ The British Army was fortunate that the timing of events was more forgiving in the Ashanti kingdom.

In addition to the listing the effects of the season, Gore concluded in his assessment of the lessons learned from previous conflicts that “sickness and mortality appeared to increase in a direct ratio with length of residence.”⁶³⁰ As a result, there was a general agreement that any use of European troops must be done quickly. The War Office set a deadline for any use of European troops – they had to be withdrawn by February or March 1873. Cardwell wrote in September 1873 that operations using European troops must be conducted “with a rapidity of execution which would render the exposure to the climate very short.”⁶³¹ Woseley agreed, “my operations must be planned so as to fit well within those three months” (December – February).⁶³² He assured Cardwell that “a march of limited duration into the interior” would minimize casualties from disease and concluded that such “an expedition does not involve great risk.”⁶³³ In the end, Woseley arrived in Africa in October; his troops arrived in November and were out by February 22, 1874, for a total of 55 days on the African coast.

At the time, the government, the medical community, the military, and the general public all looked at the expedition as a chance to show how a modern force could succeed in Africa where so many had failed from disease. Lord Derby called it “an engineer’s war, a doctor’s war.”⁶³⁴ The British medical community printed a variety of items of advice in the British *Medical*

⁶²⁹ Alger, *The Spanish-American War*, 283. For a discussion on the effect of season on the planning of disease see *War Plans* in Chapter 6 and *Planning for a Caribbean Land War* in Chapter 9.

⁶³⁰ Gore, *Medical History of Our West African Campaigns*, 14.

⁶³¹ *Ibid.*, 27.

⁶³² Woseley, *Story of a Soldier’s Life*, vol. II, 262.

⁶³³ Woseley to Cardwell, Oct. 13, 1873. Charles Low, *General Lord Woseley: A Memoir* (London: Richard Bentley and Son, 1883), 257.

⁶³⁴ Curtin, *Disease and Empire*, 55.

Journal before and during the war. From their perspective, the war provided an opportunity to “test... the effect on the white man's health of the much dreaded West African climate.” The confidence sprang from the massive medical support provided the European soldiers throughout their deployment in Africa. 73 of the 270 officers were medical officers. The troops were afforded luxuries that could only be dreamt of by British soldiers fighting in Malaysia some 70 years later. Gore outlined the steps taken to minimize the amount of effort that the men had to expend each day. The medical officers used native labor to literally pave the way for the troops marching toward the capital at Kumasi, from the coast to the Prah River. Natives fanned out well in advance of the army, constructing eight rest camps approximately one day's march apart. Natives were engaged to do all of the manual labor as well as transport all supplies, including wounded. A path was cleared through the jungle; at each point where a stream was crossed the stream was bridged so that “no man should be permitted upon any pretence whatever either to walk through the water or to use it.” Bearers carrying filtered water and hammocks for the sick or weary followed the column. Gore recommended that “a European should only wear his helmet, flannel shirt, sash, breeches, and socks, and have all his impedimenta carried by a faithful attendant of tried valour. Stick in hand, and revolver in belt, he can trudge on at ease” – and to the extent possible, porters did carry much of the equipment of the individual soldier. The men were told to “move off at a moderate pace, to be gradually increased. On no account whatever,” said Gore, “should their strength be overtaxed.” After an early morning march, the troops halted at the prepared camps for rest the remainder of the day. Natives constructed huts for shelter and to ensure that “the men should never be allowed to lie upon the ground.” Upon arrival, soldiers found fresh filtered water and freshly cooked food; firewood was cut and stacked

for fires; latrines were built for voiding and towels were available to soak up the sweat. The British Medical Journal described the daily regimen:

The troops marched every morning at 3.30, reaching their several destinations by 8 a.m., before the sun had become too warm. The arrangements made along the route are highly spoken of by officers and men as perfect, and conducive in every way to health and comfort. The cold at night and damp of the upper country is all that is complained of – one of the characteristics of this moist and trying climate. The coffee-shops started between Sutah and Yancoomassie, a march of fourteen or fifteen miles, was found most useful, as affording means for a kind of *petit dejeuner*. Fortunately, no rain fell during the several marches, and thus the men were preserved from one of the most fertile causes of disease in this country – a wetting. When mentioning the transport arrangements, I might have told you that our West Indian troops now perform that duty for themselves. At first, the idea was to make them general carriers; but this being unpalatable to the men, it was finally arranged that they were to carry their own supplies from station to station, which they now do, somewhat after the fashion of the Houssa corps. On the road up, filtered water has been supplied to the troops, with alternate rations of fresh and preserved meat, biscuit, and bread; while tea is the staple drink. Cocoa has been provided for the early morning meal; and medical comforts, in the shape of brandy, essence of beef, and preserved milk, are available at each station. ...Up to the present, the troops have remained healthy, not because the climate is better in the interior, but because everything that sanitary science told us was necessary for the preservation of health has been done for the men. Those who have recently arrived here can have no idea of the wilderness of forest and morass which had to be worked through and in parts made habitable. They must be, indeed, astonished when they behold what

perseverance and energy alone sufficed to perform – sites cleared, huts and magazines erected, roads made, marshes fascined, and streams and rivers bridged over, for a distance of eighty miles, through a dense jungle hitherto believed to be impassable for the march of European troops. These things have been, however, accomplished, and, if feasible once, can of course be ever afterwards carried out. On the banks of the Prah, a large space has been cleared, and hut and bell-tents erected for the temporary reception of officers and men.⁶³⁵

Despite this pampering, the British Medical Journal exclaimed that “It is no mean triumph to sanitary and engineering science to march masses of Europeans, in perfect health and with dry feet, eighty miles through a dense forest hitherto untrodden by any of our countrymen except those few gallant officers engaged in preparations, engineering and hygienic, for those who were coming after.”⁶³⁶ British soldiers sweating out malarial attacks in Southeast Asia during World War II must have regarded the *petit dejeuner* in the coffee shops on the road to Kumasi a cruel joke.

After crossing the Prah, the British forced seized the Ashanti capital of Kumasi and burnt it to the ground. Wolseley’s column reached the Ashanti capital on February 4th but “at this point he had so many sick and wounded to be carried back to the coast that he had to limit himself to burning the capital and ordering a retreat two days later.”⁶³⁷ Wolseley declared victory and left Africa by February 22nd. The Ashanti signed a treaty with Britain that both sides realized would be impossible to enforce; nevertheless it was considered a British victory. Despite the fact that Wolseley had to turn back because of the large numbers of sick troops, the overall statistics were highly favorable. Only 71 out of 2,587 European officers and men died, mostly from disease.

⁶³⁵ “The Ashantee Expedition,” *The British Medical Journal* 1, No. 686 (Feb. 21, 1874): 248-249.

⁶³⁶ “The Ashantee Expedition,” *The British Medical Journal* 1, No. 684 (Feb. 7, 1874): 185.

⁶³⁷ Curtin, *Disease and Empire*, 59.

This result was achieved through a combination of luck, speed, careful planning to conduct the campaign only during the dry season and extensive preparation by the medical staff.⁶³⁸ The expedition was considered a great success and a victory for a modern army and modern logistics due to the low fatality rate of 2.7% – a rate not matched in later expeditions. The key to success, however, was not so much modern technology or the “reformed” British Army, but rather the substitution of African and West Indian labor for Europeans for everything except some limited fighting.

The universal solution taken by European explorers and later by the armies of European powers was to hire natives as porters, relying on scores to thousands of men slowly transporting everything from supplies to wounded men on their backs or with litters. The military forces took this need for granted; the use of native labor was generally only commented on when they were unable or unwilling to work.⁶³⁹ This is shown in Major William Butler’s history of his experience in the Third Anglo-Ashanti War, *Akim-foo: The History of a Failure*. It was a failure because he repeatedly failed to get natives to cooperate in fighting or in providing transport.⁶⁴⁰ The number of laborers needed for transport varied from several hundred for a typical patrol or punitive expedition to over 20,000 in the Third Anglo-Ashanti War. Even native women were conscripted for service as carriers. In the East African campaign of World War I, over one million Africans were used for labor, particularly as porters. Armies frequently conscripted

⁶³⁸ Ibid, 58-60.

⁶³⁹ David Killingray claims that “details about conscription of labor for war and the social and economic consequences this had on African communities are thinly scattered in a limited number of monographs and unpublished theses ... The African laborer toiling with his load rarely left any personal record and only a few observers thought his lot worth more than a passing reference.” David Killingray, “Labour Exploitation for Military Campaigns in British Colonial Africa 1870-1945,” *Journal of Contemporary History* 24, No. 3 (July, 1989): 483.

⁶⁴⁰ William Butler provides a description of being carried while sick from malaria. He had 8 men in two relays, a “hammock was slung on a long bamboo pole, the ends of which rested on a negro’s head; in the more open roads, or along the sea-shore, a small cross-bar of wood is placed at the ends of the pole, allowing two bearers at each end; but in the forest paths this is impracticable, and only one man can walk the narrow track.” William Butler, *Akim-foo: The History of a Failure* (London: Sampson Low, Marston, Low, & Searle, 1875), 116.

workers for military operations; even in peacetime colonial governments used conscription to overcome labor shortages.⁶⁴¹ This frequently caused resentment and even revolt among the natives. In the 1900 Ashanti campaign, it was impossible to find enough carriers and the government “dared not pass a compulsory labour ordinance, as this would have been a firebrand to light the beacon of revolt far and wide throughout the length and breadth of the Gold Coast.”⁶⁴² An 1873 article in the *British Medical Journal* noted that “The greatest obstacle to a speedy termination of this war will be caused by the difficulty there exists in procuring either a sufficient or an efficient transport. Horses will not live in this climate of the Gold Coast, and the transport has altogether to be entrusted to men who carry on their heads with ease some sixty or seventy pounds weight of meat or biscuit. As well as we can remember, in the quasi expedition of 1864, the greater number of carriers consisted of Kroomen, who were brought from Cape Palmas. Very few of the natives of the Gold Coast would willingly undertake such duties; and, until they give us that alliance and that aid which we should hope for, we should be in no hurry to meddle in the war of a country which may prove to be the resting-place of many Europeans.”⁶⁴³

Without native labor, the European conquest of Africa would likely have failed in many cases; without that labor, the military could not function. Winwood Reade criticized Woseley for not securing a reliable labor supply before the start of the campaign: “The labour question was the mainspring of the whole affair. Without a supply of labour the army could not advance; and

⁶⁴¹ Killingray, “Labour Exploitation for Military Campaigns,” 485, 487. “The Ashantee Expedition,” *The British Medical Journal* 1, No. 684 (Feb. 7, 1874): 185; “The Ashantee Expedition,” *The British Medical Journal* 1, No. 687 (Feb. 28, 1874): 287.

⁶⁴² Capt. C.H. Armitage and Lt. Col. A.F. Montanero, *The Ashanti Campaign of 1900* (London: Sands & Co., 1901), 116. The frontispiece has a typical African campaign scene: White British troops blazing away at an enemy surrounded by scores of blacks with large parcels on the heads. The status of the carriers is shown in the following quote: When reduced to short rations, meat was distributed as follows: Europeans, 2 lbs.; Hausas (native troops), 1 lb.; carriers, ½ lb. (p. 93).

⁶⁴³ “The Ashantee War,” *The British Medical Journal* 2, No. 672 (Nov. 15, 1873): 582-583.

having advanced, unless the labour supply were kept up, it could not fight, could not pick up its wounded, could not retreat, could not exist for a week.”⁶⁴⁴ Frederick Boyle reported that they resorted to a *levee-en-masse* for native labor, sending Fanti police to roust out any unengaged blacks they could find in Cape Castle; in addition, they converted the 1st and 2nd West India Regiment into carriers and left the Naval Brigade to find their own transport.⁶⁴⁵

Case Study – Conclusions

For many years, much of Africa was considered uninhabitable for European settlers. As late as 1894, travelers were warned that “along the eastern and western sides [of Africa], it is so fever-stricken, so deadly to the white man, as to be hopeless from the point of view of European settlement and dangerous even for Europeans to cross.”⁶⁴⁶ The normal process of conquest led to the creation of forts to secure the territory against imperial competitors and the creation of settlements of whites (and sometimes blacks) from the mother country to exploit the resources and create markets for the metropole. However, it was not until late in the 19th century (and into the 20th) that European settlements were established on the relatively healthy highlands of the interior, away from the deadly mosquito-ridden coasts. Part of the reason for this was the inability of Europeans to move themselves and all of the accoutrements of Western civilization with them past the coastal regions into the interior. This was partly due to geography, as discussed below. However, in Africa it was partly due to a specific disease: trypanosomiasis, or sleeping sickness. The medical community has recently provided the insight into this disease

⁶⁴⁴ Reade, *The Story of the Ashantee Campaign*, 237-38. Reade was a *Times* correspondent. He suggested using elephants, mules, and draught oxen (236).

⁶⁴⁵ Frederick Boyle, *Through Fanteeland to Coomassie* (London: Chapman and Hall, 1874), 117, 252. Boyle recalls finding his “new cook engaged in hand-to-hand struggle with police upon the stairs; like Joseph, he escaped without his garment.” Boyle was the war correspondent for the *Daily Telegraph*.

⁶⁴⁶ C. P. Lucas, *A Historical Geography*, vol. 3, 9.

factor that had previously been largely overlooked, as it had not directly affected European soldiers. In man trypanosomiasis causes lethargy; in livestock (known as *nagana* or livestock trypanosomiasis), it can kill. Dr. I. Maudlin claims that trypanosomiasis was the reason why Africa remained the “Dark Continent” until the end of the nineteenth century. The Conquistadors made swift progress and awed the Indians with their horses while the armies of West Africa trudged slowly on foot.⁶⁴⁷ Horses are particularly sensitive to a form of trypanosomiasis called *Trypanosoma brucei brucei*, which will rapidly kill horses brought into the African tropics.⁶⁴⁸

Military officers of the nineteenth century, writing many of the histories of that period, were quite familiar with the disease. Explorer David Livingstone identified the tsetse fly as the cause of nagana in 1852, although this was not confirmed until 1902.⁶⁴⁹ Capt. William Rodgers stated that “The great difficulty in any expedition is the *want of local transport*, the tsetse fly killing all beasts of burthen – except mules – in the forest land.”⁶⁵⁰ In his discussion of his expedition up the Niger, French Lt. Hourst discussed how to pack for human transport: “No package must exceed 55 lbs. in weight ... the luggage must be water-tight.” At various times he used carts, mules with pack-saddles, and porters.⁶⁵¹ Later historians of the war have at best noted the use of native labor, but have treated it as a detail rather than an essential element of military operations.⁶⁵²

⁶⁴⁷ I. Maudlin, “African trypanosomiasis,” *Annals of Tropical Medicine & Parasitology* 100, No. 8 (2006): 679.

⁶⁴⁸ Trypanosomiasis is endemic in Africa. Wild animals in Africa get only a mild version of the disease, while domestic animals get a severe, often fatal, form. Human African trypanosomiasis (sleeping sickness) is caused by two subspecies of *T. brucei*, *T. brucei gambiense* and *T. brucei rhodesiense*. Dietmar Steverding, “The history of African trypanosomiasis,” *Parasites & Vectors* 1, No. 3 (2008), <http://www.parasitesandvectors.com/content/1/1/3>, accessed 28 Oct. 2012.

⁶⁴⁹ Ibid., 3.

⁶⁵⁰ Rodgers, *Campaigning in Western Africa and the Ashantee Invasion*, 111 (italics in original).

⁶⁵¹ Hourst, *French Enterprise in Africa: The Personal Narrative of Lieut. Horst of his Exploration of the Niger* trans. Mrs. Arthur Bell (London: Chapman & Hall, 1898), 13, 20, 44.

⁶⁵² For example, in his history of the 3rd Ashanti war, Byron Farwell only mentions that there was 1 porter assigned to every 3 enlisted men. Farwell, *Queen Victoria's Little Wars*, 196.

The issues of transportation and trypanosomiasis illustrate the contributions of the modern historical and medical communities to our understanding of the Partition of Africa. Other than Curtin's *Disease and Empire*, historians have largely overlooked the specifics of how disease has affected military operations. Histories of the conquest of Africa or Victorian-era imperialism mention the losses due to disease but fail to go into the extensive preparations taken to avoid disease. That's largely because disease ultimately failed to halt European conquest of Africa, unlike the failed expeditions of the seventeenth and eighteenth centuries in the Caribbean which ended European attempts to initially reorder the balance of power in the region and later to retain their possessions in the face of revolution. Eventually, the European wars of expansion in the late nineteenth century succeeded in their objectives: territories were seized, native tribes were subdued or punished, and colonies were established. By 1900 the entire continent of Africa (save Abyssinia) was in the possession or under the control of one European power or another. Recent examinations of disease and European imperialism such as Sheldon Watts' *Epidemics and History* explore issues such as the cultural impact of western medicine being forced on African people, but give the military aspect short shrift.⁶⁵³

Medical histories and articles written after 1900 have largely overlooked the efforts made by the British army, especially during the Third Anglo-Ashanti War. That may be in part because they succeeded not so much in defeating disease as avoiding it. The doctors at the time were still arguing about classifying tropical fevers and the cause of disease in general. None of the treatments and precautions were effective from a medical perspective, other than quinine for malaria. Although the filtered water and camp sanitation practiced during that conflict may have prevented dysentery and possibly even cholera or typhoid outbreaks, the troops were not in

⁶⁵³ Watts, *Epidemics and History*, 256-268.

theater long enough for us to expect that these diseases might have been a problem.⁶⁵⁴ The truly tropical diseases – malaria and yellow fever – relied on mosquito bites and none of the precautions taken by the soldiers and doctors prevented mosquitoes from biting.⁶⁵⁵ It was the decision to fight the war during the dry season when mosquitoes are not breeding that prevented these two diseases from ravaging the British army. If they had been forced to fight for Kumasi at the same time of year that the US Army fought for Santiago, the result would likely have been the same – an entire army prostrated by disease.⁶⁵⁶

The war was heavily publicized at the time. The *British Medical Journal* had articles almost every week on various medical aspects of the war; there were dozens of books written about the campaign by the officers from Lord Wolseley on down as well as correspondents from the *London Times* and the *Daily Telegraph*. Medical aspects of the campaign were documented by Surgeon-Major Gore, Sanitary Officer during the war.⁶⁵⁷ Professional officers of the late nineteenth century were conversant with the military services of the various major powers; the Journal of the Military Service Institution (a professional association for US officers) had a “reprints and translations” section in every issue providing the best in articles written about the

⁶⁵⁴ Typhoid could have been an issue, if the disease was as prevalent in Britain as it was in the United States. It certainly was a problem for the British in their North African campaigns, which were sometimes called “the typhoid campaigns.” Either there were few if any carriers, the disease was identified and quarantined on the voyage from Britain to West Africa, or the water treatments along with the use of native labor to build fresh, clean latrines every night prevented any epidemic outbreaks. Curtin, *Disease and Empire*, 149-162.

⁶⁵⁵ Mosquito nets over the bunks at night undoubtedly helped to reduce the number of mosquito bites, but the men were vulnerable during the day.

⁶⁵⁶ The options available to 19th century doctors in mitigating the effects of malaria and yellow fever were discussed in Chapter 4; see in particular Figures 4.2 and 4.3 which diagram the options available.

⁶⁵⁷ Wolseley wrote about the campaign in Vol. 2 of *The Story of a Soldier's Life*; he also had many biographers. Charles Low wrote volume 2 of *A Memoir of Lieutenant-General Sir Garnet Wolseley* in 1878, covering the Ashanti campaign (Charles Low, *A Memoir of Lieutenant-General Sir Garnet Wolseley*, vol. 2 (London: Richard Bentley & Son, 1878)). Books written by officers include Captain Rogers, *Campaigning in Western Africa and the Ashantee Invasion* cited previously; *Fanti and Ashanti*, written by Wolseley's Adjutant Capt. Henry Brackenbury (London: William Blackwood & Sons, 1873), who also wrote a 2-volume history *The Ashanti War* (London: William Blackwood & Sons, 1874); Major William Butler, *Akim-foo: The History of a Failure* cited previously. Correspondents included Winwood Reade (*Times*), who wrote *The Story of the Ashantee Campaign* and Frederick Boyle (*Daily Telegraph*), *Through Fanteeland to Coomassie*, both cited previously. Surgeon-Major Gore wrote *A Contribution To The Medical History Of Our West African Campaigns*, also cited previously.

British, French, German, Russian, and even Japanese armies. As an example, the July-November 1899 index lists a reprint of the Medical Statistics of the Spanish Army for 1896, translated from *Revue du Cercle Militaire* of August 26, 1899.⁶⁵⁸ The Third Anglo-Ashanti War can legitimately be considered part of the potential knowledge base for professional military and medical officers on the effects of disease on military campaigns. That war would have been noticeable against many other campaigns because it was so widely publicized as a “doctor’s war,” with incomparable medical outcomes for an expedition to the fever-ridden West African coast.⁶⁵⁹ Curtin maintains that “the reputation of these two campaigns [the Ashanti war in 1874 and the Ethiopian campaign of 1868] lived on to the end of the century and beyond as examples of what should be possible.”⁶⁶⁰

⁶⁵⁸ “Medical Statistics of the Spanish Army for 1896,” *Journal of the Military Service Institution* XXV (Jul.-Nov., 1899): 434-436. The translation from a French journal reporting on Spanish medical issues illustrates the cosmopolitan nature of a military officer’s professional readings at the end of the century.

⁶⁵⁹ Lord Derby called it “an engineer’s war, a doctor’s war.” Curtin, *Disease and Empire*, 55.

⁶⁶⁰ *Ibid.*, 28.

Lessons Learned from Military History

This chapter has demonstrated through repeated historical examples that the effects of disease on military campaigns goes well beyond the immediate effects caused by death and incapacitation of soldiers. Those immediate effects have been previously included in military histories that examine in detail the battles, campaigns, and wars where epidemics have broken out among troops of one or both sides. Histories of medicine and epidemiology have also looked at the morbidity and mortality rates that have occurred during wartime; they also typically examine the effect of disease on the civilian populations in areas devastated by war (or areas where soldiers go to during or after wars, such as soldiers returning home, prisoners sent to prisoner-of-war camps, and soldiers moving through areas going to or leaving from war). It is both interesting and useful to link these two source areas, typically published in different journals and read by different audiences, together in one place. However, it is not enough to simply combine the two sources; rather, it is necessary to look at the effects of disease on military operations outside of the immediate effects created by disease casualties. Some of these effects have been noted in one or both of the two different disciplines (military history and the history of medicine), but they have not been the focus of study nor have they been consistently examined in any one source.

The environmental effects that affect combat outcomes in the different conflicts examined in this paper. The effects of location and season were shown in the yellow fever epidemics that caused the British and French attempts to capture Saint Domingue after the slave rebellion during the French Revolutionary War and the Napoleonic War; avoiding the fever season and

low-lying mosquito infested areas was a major reason for Wolseley's success in the Anglo-Ashanti War.

The problems associated with poor diet were shown directly in the appearance of scurvy in the Crimean War and beriberi in the Russo-Japanese War. However, diet was almost certainly a contributing factor in the typhus epidemics in the sieges of Mantua, Danzig, and Torgau and in the retreat from Moscow in 1812. A failure to maintain high standards in camp sanitation and personal hygiene led to epidemics of dysentery, cholera, and typhoid. Dysentery led to the failure of the Prussian advance into France in 1792 and incapacitated almost half of the entire German force during the Franco-Prussian War of 1870. Cholera killed 20,000 Russians and over 8,000 French during the Crimean War. Typhoid was a major factor in the Boer War, where over 10,000 were hospitalized in just one epidemic in Bloemfontein, South Africa; it also incapacitated many American troops in camps during the Spanish American War. Overcrowding often lead to typhus, the primary cause of fatalities to the French army during its retreat from Moscow; earlier during the Thirty Years War typhus killed up to half of the population of Germany.⁶⁶¹ Once the “armies of revolution” began to recruit large numbers of men from rural farms their susceptibility to childhood “crowd diseases” made training camps into oversized sickrooms; diseases such as smallpox and measles incapacitated or killed solders before they could ever be assigned to combat; this was a major factor in the US Civil War.⁶⁶²

This chapter also provided examples of the primary effects that disease had on the planning and execution of military operations. At first, military planners ignored previous histories of epidemics in certain areas; this led to disasters like the Havana campaign of 1762 and the

⁶⁶¹ Prinzing, *Epidemics*, 92, 195; Bray, *Armies of Pestilence*, 173; Pagaard, “Disease and the British Army in South Africa,” 75; Bray, *Armies of Pestilence*, 143.

⁶⁶² Connolly and Heymann, “Deadly comrades: war and infectious diseases,” s23.

Walcheren expedition of 1809. However, as early as the 1790s medical professionals began to publish accounts of epidemics and treatment of diseases in areas such as the West Indies.

Massive failures to account for diseases such as the aforementioned Walcheren expedition also led to public and political pressure to study the timing and location of epidemic disease and to include such information in military planning.

Unfortunately for thousands of soldiers who would soon become fatality statistics, military priorities made operations in disease-plagued areas such as Saint Domingue necessary. The case study on Saint Domingue shows that it was not until Britain lost up to 100,000 casualties (and over 10 million pounds) that it finally quit trying to conquer the French colony.⁶⁶³ Even after these losses, British troops were still needed to protect the British West Indies and guard against or suppress slave rebellions in British islands; the case study on British experiences in the West Indies shows the casualties resulting from these requirements. The French would lose another army in the swamps of Saint Domingue following the same military imperative. It was only after immune populations (such as Africans recently arrived in the islands) were recruited that losses from disease declined; removal of military barracks from low-lying areas to higher elevations in the 1830s and 1840s would also help reduce casualties.⁶⁶⁴

Disease also affected recruitment and the choice of troops for military operations. The reputation of the West Indies (later West Africa) as a disease-ridden Hell made recruitment of volunteers very difficult; the result was often futile. The case study on the West Indies indicates that large numbers of men in poor health were recruited into the British Army but up to a majority of them were lost to disease when first assembled into camps for shipment; during transport; and in the barracks upon arrival. These losses would lead to the recruitment of more

⁶⁶³ Ott, *The Haitian Revolution*, 86.

⁶⁶⁴ Scott, *A History of Tropical Medicine*, vol. I, 48.

unhealthy recruits and the cycle would continue, all due to the perception of disease reducing the recruitment pool and the reality of disease thinning the forces deployed. One of the consequences of this was the increasing use of natives as soldiers or as helpers (bearers, road-builders, drivers, laborers, etc.). White officers were suspicious of the capabilities of blacks, especially when used as soldiers, but the increased susceptibility of Europeans to tropical disease forced this policy of replacing whites with blacks. The results are shown in the case study on Africa.

Large numbers of sick imposed large logistics requirements for care. During the Napoleonic Wars, sick soldiers were often abandoned, left not only without medicine but also sometimes without food and water. The Africa case study shows the logistical impact of actually caring for sick troops in times of war. By the end of the nineteenth century, when the British army was unable to move the large amounts of medical supplies, shelters, provisions, and the like to sick soldiers during the Boer War, the result was a scandal.⁶⁶⁵

Morale could be devastated by the fear of disease; the occurrence of disease itself, particularly when fatality rates were high and incubation periods short; and any instances of poor treatment of the ill. The British had such difficulty recruiting soldiers for the West Indies that they created black regiments from slaves bought in the markets of Jamaica; European soldiers also frequently deserted or feigned sickness once orders were issued deploying their regiments to the tropics. West Africa was such a deathtrap that the garrisons were staffed from a “condemned corps” consisting of military criminals who accepted assignment in lieu of punishment.

An asymmetry of disease susceptibility between two opposing forces could magnify any other differences in size or military capability. It was also a common occurrence in sieges; as

⁶⁶⁵ Abandonment of soldiers during the 1812 Russian campaign is found in Zamoyski, *Moscow 1812*, 529. The Boer War scandal involved typhoid patients at Bloemfontein, South Africa, is found in Pagaard, “Disease and the British Army in South Africa,” 75.

discussed previously the sieges of Mantua (1796-97), Danzig (1813), and Torgau (1813) all resulted in thousands of deaths among the garrisons defending the city. Since disease outbreaks in besieged cities were so common, they were considered as much a part of the siege process as starvation; if assaults did not succeed garrisons surrendered when they were either starved out or lost too many men to disease. In the Caribbean, disease favored the defenders while decimating the besieging armies; this was a clear lesson of the 1762-3 siege of Havana. Defenders of tropical strongholds learned that perseverance had its own reward; if they could successfully defend until the sickly season arrived, disease could win the battles for them.

Despite the focus of this paper on the secondary effects of disease on military operations, it is important not to lose sight on the primary effects – deaths and incapacitation of large numbers of soldiers. Sometimes both sides lose about the same number of soldiers to disease that the balance of military power is unchanged; this happened in the Crimean War when both sides lost over 10,000 soldiers to cholera. More commonly, however, one side was stricken harder by disease than the other; this often resulted in the surrender or abandonment of the field by the disease stricken side. This occurred in the Quebec campaign of 1775-76, where the Continental army was forced to withdraw due to a smallpox epidemic, ending what was likely America's best chance of incorporating Canada into the newly formed United States.⁶⁶⁶ Sometimes the losses are so great that an entire campaign is abandoned; as shown in the case study on Saint Domingue, both the British and French governments gave up on the idea of capturing or recapturing the colony when most of their army was lost to disease. Finally, disease can be a major factor in the loss of a war. This probably happened in the Napoleonic War; Napoleon lost so many soldiers to disease, primarily typhus, that eventually he ran out of troops and was unable to resist his

⁶⁶⁶ The Continentals were vulnerable to the disease as they did not require inoculation against the disease until later (largely as a result of this defeat); the British routinely inoculated their regular force. Cirillo, "Two Faces of Death," 125-6.

enemies. The loss of almost half a million troops in Russia in 1812 was the major factor in losing the war but it was on top of hemorrhaging troops in the Peninsular campaign, in various battles on the continent, and in the West Indies.⁶⁶⁷

All of these facts should have been known to any military professional in 1898, to include the Medical Corps. The tremendous losses of men to disease in the US Civil War (60% of deaths due to disease; statewide totals exceeding 50% for most states)⁶⁶⁸ would be known not just to Civil War veterans but the young officers coming to age after that conflict. To be unaware of the greatest threat to your soldiers would be a cardinal sin for any officer in any army. Repeated testimony to the Dodge Commission showed that the senior officers expected disease outbreaks to occur during the Spanish-American War, particularly to the troops deployed to Cuba. Military medical officers also issued circulars and guidance about the diseases that could be expected to occur during the campaigns.⁶⁶⁹ It is safe, therefore, to use these case studies as a part of the corpus of knowledge available to decision makers during the 1898 war with Spain.

The thesis of this dissertation suggests that these lessons learned were either ignored or not acted upon during the Spanish-American War, making much of the sickness and death resulting from the war unnecessary. The arsenal of weapons available to the commanders and medical officers in 1898 was limited, but expecting the disease means that you act to avoid exposure to

⁶⁶⁷ Bray, *Armies of Pestilence*, 143, 145. Napoleon lost 600,000 troops to disease on top of 400,000 to enemy action (Smallman-Raynor and Cliff, *War Epidemics*, 108).

⁶⁶⁸ Smallman-Raynor and Cliff, "Impact of infectious diseases on war," 351.

⁶⁶⁹ Testimony includes Generals Shafter ("I had been in the yellow-fever country and knew that no matter what precautions were taken men would get it and other fevers" *Dodge Commission Report*, vol. 7 (Testimony), 3200), Wheeler ("the army was given to understand that possibly 90 per cent of it would have to go through yellow fever" *Dodge Commission Report*, vol. 3 (Testimony), 48), and Chaffee ("Our minds were somewhat bent upon yellow fever. We talked of that at Tampa as probably the disease with which we would have to compete" Chaffee, *Dodge Commission Report*, vol. 4 (Testimony), 909). Surgeon-General Sternberg advised all army officers of the dangers of epidemic disease to soldiers deploying to Cuba in Circular No. 1 (April 25, 1898): "In Cuba our armies will have to contend not only with malarial fevers and the usual camp diseases—typhoid fever, diarrhea, and dysentery—but they will be more or less exposed in localities where yellow fever is endemic and under conditions extremely favorable for the development of an epidemic among unacclimated troops." Appendix B, Item 3, from *Report of the Surgeon-General of the Army, 1898*, 139-140.

the disease when and where you can and act to prepare the forces for the appearance of disease where you cannot. The lessons of the Caribbean showed what could happen when disease epidemics are allowed to occur. The Civil War showed the likelihood of malarial fevers and the possibility that up to 100% of the force could be afflicted by malaria once an epidemic began. The Third Anglo-Ashanti War showed that it was possible to minimize disease even in the worst areas of the world – if you organized and fought the war entirely around disease avoidance. Part 2 will show where and when epidemic disease made its appearances during the Spanish-American War, what was done to prepare for and then treat the diseases once they occurred, and the outcomes not only to the individual soldiers afflicted with diseases that could kill or cause chronic illness but also to the units comprised of soldiers too sick to fight or even to care for themselves and their fellows. The Spanish-American War, along with the roughly contemporaneous Boer War, represented the last conflicts fought during the Era of Disease. The outcome was predictable – more losses to disease than from enemy action. But being predictable, was it preventable, or was it possible at least to mitigate and alleviate its effects? That question will also be addressed in Part 2.

PART TWO: DISEASE AND THE SPANISH-AMERICAN WAR

CHAPTER 6

THE ROAD TO WAR: THE UNITED STATES ON THE BRINK OF EMPIRE

The US Military and the End of the American Frontier

Before we can examine the effects of disease on military operations, it is necessary to understand the development of the armed forces of the United States between the US Civil War and the Spanish-American War. The nation was undergoing significant changes due to industrialization, massive immigration to man the factories, mills and mines feeding the new industrial empires, and labor unrest as the nation changed from an agricultural nation to an industrial nation. This spurred the need for institutional changes in the government, including the armed power of the state contained in its Army and Navy. The trend toward professionalization in society was reflected in the development of professional societies, licensure and other professional standards. A changing university system that emphasized the new social sciences helped spread a faith in scientific approaches to enduring human conditions. These shifts also could be felt within the social structure of the career military.⁶⁷⁰ In addition, as the nation expanded and became wealthier and more populous, key interests within government and the private sector shifted attention from internal affairs to national security issues outside of the U.S. Politicians and industrialists as varied as President Chester A. Arthur and steel magnate Andrew Carnegie pressed for an internationalist approach to American growth in the last decades of the nineteenth century. The expanding horizons of national interests altered the insular mission

⁶⁷⁰ Robert Wiebe documented the rise of the new professional middle class in *The Search for Order*, 111-132. Edward M. Coffman documented the professionalism of career military officers in *The Old Army*, 269,284.

statements of the military services; the Navy began to shift from coastal defense to worldwide commerce protection and power projection, while the Army moved from frontier constabulary duties to expeditionary missions overseas.⁶⁷¹ This process was slow and evolutionary rather than rapid and revolutionary; what might have been best for national interests and for the services themselves had to be mediated by the existing national power structure and constrained by the politics of the Gilded Age.⁶⁷²

Both services were faced with similar problems in the late 1890s as a war with Spain became more and more likely. The first was planning for war and attempting to define the missions for each service in times of war (particularly a war that would involve operations outside of the United States). The second was the expansion of the services to wartime strength. This would involve not only increasing the manning of the Army and Navy but the acquisition of significant amounts of equipment, weapons, and ammunition. The Navy was particularly capital-intensive, as expansion meant the building, purchase or transfer of ships for naval service. The Army also had an expensive, long-term, capital-intensive building and acquisition mission of its own: the construction of coastal defenses, to include arming the forts and fortifications with large-caliber guns, along with adequate supplies of expendable ammunition and the men to fire and maintain the defenses.⁶⁷³

The problems of the 1890s had their roots in issues raised much earlier. The roles of a standing army and state militias had been a subject of debate even before the creation of the

⁶⁷¹ Allen Millet and Peter Maslowski, *For the Common Defense*. (New York: The Free Press, 1994), 265-280.

⁶⁷² These constraints are emphasized by Stephen Skowronek in *Building a New American State: The Expansion of National Administrative Capacities, 1877-1920* (Cambridge: Cambridge Univ. Press, 1982). "From the turn of the century professional's point of view" such as the author of the Military Service Institution's prize essay on the organization of the Army, "the most basic operating standards of the early American state – patronage appointments, pork barrel politics, and a radical devolution of authority – posed insuperable obstacles to national administrative modernization" such as reform of the Army to a centralized professional force optimized for national power projection (119).

⁶⁷³ Trask, *War with Spain*. 145-146; Millet and Maslowski, *For the Common Defense*, 269-270; 287-290.

United States. The defense establishment of the United States was a product of an evolutionary compromise between the need for a national defense against the Indians and foreign countries (such as Great Britain and Spain) and the fear of a standing army and a too powerful executive that was rooted in English history. According to Lt. Gen David Palmer “the ghost of Oliver Cromwell has never ceased haunting the American psyche.”⁶⁷⁴ The army created by the Constitution reflected this tension. A standing army was created, but Congress was careful to limit its size as well as maintaining a fundamental reliance on the militia.⁶⁷⁵ Even the largest Army in American history before 1898 – the Civil War Army – relied on the volunteer citizen-soldier rather than on a significant expansion of the Regular force.⁶⁷⁶

The US Navy had a more permanent basis, as the Constitution authorized a standing Navy despite Republican objections during ratification.⁶⁷⁷ However, the role of the Navy over the country’s first century remained rooted in coastal defense rather than overseas power projection. The large Navy created for the Civil War was allowed to atrophy after that conflict, even as a revolution in shipbuilding took place. The *USS Monitor* and the *CSS Virginia* (better known as the *Merrimack*) led the way in the transition from wood to steel but it was the European navies that built the new all-steel battleships after the war, while the US Navy returned to wooden sailing ships on overseas patrols for reasons of economy.⁶⁷⁸ Both services, however, would be forced to change during the decades between the Civil and Spanish-American Wars. The Army’s constabulary duties on the Western frontier began to diminish around 1890 as the frontier

⁶⁷⁴ David R. Palmer, *1794: America, Its Army, and the Birth of a Nation* (Novato, CA: Presidio Press, 1994), 282.

⁶⁷⁵ The militia was federally regulated although remaining under the control of the states in peacetime. This would evolve into the present National Guard which continues to form an essential part of the present US Army. Ibid.

⁶⁷⁶ Geoffrey Perret, *A Country Made by War* (New York: Random House, 1989), 176.

⁶⁷⁷ The Navy did inspire fears that it would provoke the European powers into declaring war against the infant nation. However, the undeclared war against France in the 1790s and the antipiracy patrols off the Barbary States quickly gave the Navy wartime missions and support in Congress. Millet and Maslowski, *For the Common Defense*, 100, 102-108.

⁶⁷⁸ Ships had auxiliary steam capabilities, and even reactionaries realized that the days of sail were numbered. Ibid., 249- 251, 266-267.

became settled and the Indians were confined to reservations, requiring the Army to reorient its mission. The naval missions of defending the American coasts and protecting commerce overseas remained unchanged⁶⁷⁹, but increased American interests in Hawaii, Midway, and Samoa as well as the development of modernized steamship navies by maritime nations spurred calls for a Navy capable of competing against foreign navies.⁶⁸⁰ In 1887, Representative Charles Lowe noted, "the American people are far in advance of Congress in respect to an American navy," calling for a navy "with which we may meet the foe away from our coast when he comes."⁶⁸¹ The Navy was to become the primary agent of military power – which would have far reaching impacts not only on the Navy, but also on the Army, as they prepared for war in 1898.

The US Army, 1865 – 1898

The initial mission for the post-Civil War Army was political: the occupation of the American South and the protection of Reconstruction governments and their largest voting bloc, the newly enfranchised freedmen. In addition, Regulars returning to the Western territories found them increasingly aflame from Indian uprisings, as settlers pushed into lands previously reserved for the tribes. Gold and silver strikes in the 1870s further pushed American whites into Indian lands,⁶⁸² while the railroad and the Homestead Act facilitated widespread settlement of the Great

⁶⁷⁹ Although the mission of commerce protection was unchanged, the scope increased significantly during the latter part of the nineteenth century, especially off Latin America and in the Pacific. This was the heyday of "gunboat diplomacy," with marines and sailors staging numerous small raids to protect American citizens (including missionaries) but also to protect American interests and commerce. Ibid., 250.

⁶⁸⁰ Between 1867 and 1889 the United States obtained basing rights in Pearl Harbor, Hawaii and Pago Pago, Samoa as well as acquiring the island of Midway. Ibid., 266

⁶⁸¹ Quoted in Alexander Campbell, *Expansionism and Imperialism* (New York: Harper & Row, 1970), 93. Many in Congress regarded the Navy as insufficient; perhaps the bluntest was Rep. Burrows, who said "We never dare be out after dark as a nation, and we never lose sight of land unless it is in a foreign ship." Quoted in H. Wayne Morgan, *From Hayes to McKinley* (Syracuse, NY: Syracuse Univ. Press, 1969), 357

⁶⁸² The most famous gold strike in Indian territory occurred in the Black Hills of North Dakota in 1874; the campaigns to force the Indians off of the land desired by miners and settlers included the Battle of Little Big Horn in 1876. Stuart Banner, *How the Indians Lost Their Land: Law and Power on the Frontier* (Cambridge, MA: Harvard Univ. Press, 2009), 239-244.

Plains from the end of the Civil War through the 1890s.⁶⁸³ Indians were not happy with the sedentary life on reservations, farming often marginal land and relying on subsidies that were sometimes stolen by Indian agents or simply reduced by a Congress wishing to save money.⁶⁸⁴

Between the Civil War and the Spanish-American War, the Army spent most of its time guarding the frontier and fighting the Indians. This required only a small professional army that varied in size between 15,000 and 25,000. Nonetheless the 1870s and early 1880s were a period of significant Indian fighting. The Indian campaigns were long and difficult. Army officers were ambivalent about fighting the Indians; many sympathized with the tribesmen and despised the selfish, grasping settler. In addition, the army was widely dispersed into very small units and poorly equipped. However, in some respects the Army could not return to being simply a frontier constabulary; as Coffman argues in *The Old Army*, “the most striking development that made the three decades following the Civil War a period of critical transition for the army was the rapid disappearance of the frontier.” If the frontier no longer existed, how could the army’s mission be defined by it? The Indian Wars did provide small units valuable experience in guerrilla warfare and operating independently with few if any lines of supply. It also provided the company-grade officers (lieutenants and captains) significant leadership experience; these junior officers (in rank but not necessarily in years of service) were accustomed to making their own decisions without immediate guidance from their superiors. The post-war Army was

⁶⁸³ The original Homestead Act (1862) was designed for the fertile prairie regions, with land grants of 160 acres. However, this proved untenable when applied to the more arid reaches of the “Great American Desert.” Land grants were increased to 640 acres (Desert Land Act, 1877) up to 5120 acres in Texas, which had retained its public lands when admitted to the Union. The invention of barbed wire (1874) was also essential to making the settlement of a 160 acre homestead possible. Walter Prescott Webb, *The Great Plains* (Lincoln, NE: Univ. of Nebraska Press, 1981, reprint Boston: Ginn, 1931), 318; 410-427.

⁶⁸⁴ Robert Utley, *The Indian Frontier of the American West, 1846-1890* (Albuquerque, NM: Univ. of New Mexico Press, 1984), 227-255.

manned with long service regulars; many of the regiments such as the black “Buffalo Soldiers” of the 24th and 25th U.S. Infantry were highly skilled at small unit tactics.⁶⁸⁵

However, the narrow focus on Indian fighting affected the Army in several ways. First, although the Army always had to keep other missions in mind, almost all of its attention was focused on frontier constabulary duties. The army, spread out thinly across a multitude of small posts, became isolated from society and inwardly focused. Even as late as 1911, the Secretary of War criticized the diffusion of Army units across 49 posts, most in company-sized units.⁶⁸⁶ Second, the officers were unable to command units larger than a battalion during field operations; even when multiple regiments were deployed for major campaigns during the Indian Wars, they were spread out into smaller formations, often operating at a company level.⁶⁸⁷ As Civil War veterans aged and retired or resigned their commissions, the Army leadership lost valuable experience in regimental, division, and corps level warfare.⁶⁸⁸

The grand bargain struck after the contested 1876 Presidential election called for the withdrawal of federal troops from the South in return for Republican control of the White House. The Reconstruction mission of the Army was over. This left the Army with only guarding the frontier and policing the Indians, which required a minimal peacetime force. The resurgence of the Democratic Party, now supported by a South soon controlled by white Democratic state governments as the black vote was increasingly suppressed, meant that any measures to reform or expand the Army or its roles were opposed by groups united in the Anti-Federalist tradition of states’ rights, small government, and the citizen-soldier. These groups were also suspicious of a

⁶⁸⁵ Coffman, *The Old Army*, 254-261, 369-371; quote 216.

⁶⁸⁶ Barton C. Hacker, “The United States Army as a National Police Force: The Federal Policing of Labor Disputes, 1877-1898,” *Military Affairs* 33, No. 1 (Apr., 1969): 256.

⁶⁸⁷ They did start to conduct training exercises with regimental formations beginning in 1889. Steven T. Ross, *American War Plans, 1890-1939* (New York: Frank Cass Publishers, 2004), 5.

⁶⁸⁸ Richard W. Stewart, ed., *American Military History, Vol. I: The United States Army and the Forging of a Nation, 1775-1917* (Washington: Center of Military History, US Army, 2005), 349; Coffman, *The Old Army*, 282-283

professional West Point elite.⁶⁸⁹ The influence of this resurgent political philosophy was most clearly seen in the reactions to the massive labor strikes, beginning with the railroad strike which began in July 1877. The House had moved to reduce the Army from 27,000 to 17,000 men as soon as the Democrats took over the chamber. Regular troops were needed to suppress labor unrest, particularly after militia units proved ineffective and subject to sympathizing with the striking workers. Republicans and industrial interests pushed for an expansion and reorganization of the Regular force but the Democrats, supported by governors concerned with states' rights, held the line. In addition to resisting expansion of the Army, Congress passed the *Posse Comitatus Act* (1878) prohibiting the use of federal armed forces in domestic law enforcement.⁶⁹⁰ The Army was still turned out to suppress major strikes when militia was unavailable or unreliable. Many Regular Army officers found strikebreaking objectionable, increasing their psychological isolation from the American public and reinforcing the inward-seeking drive toward professionalization and motivating the search for a new mission of continental protection superseding Indian fighting.⁶⁹¹

After being rebuffed in Congress, Army reformers turned inward to try to create a professional military force, realizing that changes had to come from within the military service rather than hope that Congress would some day impose it from without.⁶⁹² Professionalization and formal training could also serve as a way to broaden the scope of the Army's mission. The leading reformer after the Civil War was Emory Upton, a general officer during the war. After the war Upton was a leading member of a small group of professional Army officers that sought

⁶⁸⁹ Skowronek, *Building a New American State*, 98.

⁶⁹⁰ *Ibid.*, 99-103.

⁶⁹¹ Hacker, "The United States Army as a National Police Force," 261-2. In some ways strike-breaking was a continuation of its temporary occupation duty during Reconstruction. See Andrew L. Slap, "'The Strong Arm of the Military Power of the United States': The Chicago Fire, the Constitution, and Reconstruction," *Civil War History* XLVII, No. 2 (2001): 146-163. Between 1877 and 1892 30% of the National Guard's active duty time was spent breaking strikes (Hacker, "The United States Army as a National Police Force," 259).

⁶⁹² Skowronek, *Building a New American State*, 103-104.

to systematically reform the US military. After conducting extensive studies of foreign militaries in the mid-1870s, he prepared a report for the Commanding General William T. Sherman: *The Military Policy of the United States*, posthumously published by the government after the Spanish-American War. Upton's central thesis was that the United States had been unprepared for every war in which it had fought.⁶⁹³ The impact of this unpreparedness is evident in the conduct of the Spanish-American War.

William Sherman pushed for reforms in the Army during his tenure as Commanding General (1869-1883); in particular he established a formal system of professional education. He created the School of Application for Infantry and Cavalry at Fort Leavenworth; it began as a school in small-unit tactics for junior officers but evolved to become the forerunner of today's Command and General Staff College. By 1892, the Army had established multiple formal professional education programs. In addition to professional education, the army began to train its units and enlisted personnel in marksmanship, establish physical training, create examination boards for officers, and for the first time since the Civil War, train for larger unit formations. An example of the focus on professional development is the 1896 publication of *Sources of Information on Military Professional Subjects*, an exhaustive list of publications and even book sellers on military topics, to include an extensive list of foreign publications by the leading military powers.⁶⁹⁴

When the Democrats and many state governors refused to allow the Regular Army to expand and fulfill a full-time strikebreaking mission, they were forced to revive moribund state militias.

⁶⁹³ Emory Upton, *The Military Policy of the United States* (Washington: GPO, 1904). He placed much of the blame for this on the fact that at the beginning of each war, the military was manned by green volunteers, both officer and enlisted, who lacked military knowledge and training. This also the thesis of Charles Heller and William Stofft, eds., *America's First Battles, 1776-1965* (Lawrence, KS: Univ. Press of Kansas, 1986).

⁶⁹⁴ US Army Adjutant-General's Office, Military Information Division #10, *Sources of Information on Military Professional Subjects* (Washington: GPO, May 1896).

Militia units also returned to their prewar prominence as elite social institutions; together these factors sparked a renaissance in the militia. Between 1881 and 1892 every state in the Union revised its state militia code; organized units adopted the name of National Guard and militia officers formed the National Guard Association (NGA) as a vehicle to lobby Congress for financial support.⁶⁹⁵ Guard officers possessed considerable political power at both the local and national level as they could influence the votes of the men in or associated with their units. The National Guard had a conflicting place in national defense from the beginning. Veteran Guard officers recognized that state militia needed to be professional organizations capable of performing in combat, yet they also insisted on all of the prerogatives of local control, to include the election of company (and sometimes regimental) officers. State governors relied on militia commissions as a major source of political patronage, which in turn created a decentralized officer corps that did not receive the level of training envisioned by Sherman and his successors. The clash of philosophies did not end there, extending as well to the mission of both the National Guard and the Regular Army. The NGA lobbied for Guard units to be recognized as the first line of the nation's defense upon wartime mobilization, while Uptonian Regular officers insisted on using the Guard to flesh out Regular cadres, using West Pointers for command positions.

There was also a fundamental philosophical difference on the role and reliability of the citizen-soldier. Guard members could point to the role that volunteers had in every conflict from the Revolution through the Civil War; Regulars could point to the failures of green militia troops in combat.⁶⁹⁶ The public had a widespread but possibly simplistic belief in not only the virtues of the citizen-soldier but also the effectiveness of a volunteer force. Many people saw no need for the fuss over a professional force; this view was expressed in a newspaper article a few years

⁶⁹⁵ Millet and Maslowski, *For the Common Defense*, 263-264.

⁶⁹⁶ Skowronek, *Building a New American State*, 92-96.

before the war: “the fellows that sneer at our little army and our old hulk of a navy forget that there are fifty million people behind them. Uncle Sam can wave that old flag from the top of the National Capitol or from some peak on the Rocky Mountains and sound a bugle call, and ships would fall into line, and one and one-half million of men would answer ‘Ready!’”⁶⁹⁷

Professional military officers were well-aware of the shortcomings of the National Guard; these were continually discussed in professional journals.⁶⁹⁸

By the 1890s the Army had shifted its focus away from frontier duties to continental defense. As the navy began to shift toward overseas missions (see below), the Army began to assume much of the responsibility for coastal defense. In 1885, a joint Army-Navy-civilian board was created under Secretary of War William Endicott. In its report the following year, the Board recommended the creation of a massive system of coastal fortifications commonly referred to as the Endicott system.⁶⁹⁹ This permitted the Navy to focus outward while giving both the Regular Army (primarily the Engineer Corps) and the National Guard a major wartime mission. This also created some unusual political alliances that were to shape the debate over the nation’s defense

⁶⁹⁷ Quoted by Lt Louis Scherer, “Limitations of the National Guard,” *Journal of the Military Service Institute* XVIII (Jan.-Jun., 1896): 267-284 (hereafter referred to as *JMSI*). The article was a graduating thesis at the US Infantry and Cavalry School, Ft. Leavenworth. It is interesting to note that graduation at the current US Army Command and General Staff College (the descendent of the Infantry and Cavalry School) does not require a thesis paper for graduation. Scherer also made the same two arguments about a standing army: “There are two fundamental political axioms which our people never tire of repeating: that a standing army is dangerous to the liberties of the Republic, and that a well-regulated militia is necessary to the security of a free state.” (269)

⁶⁹⁸ These failings were arguably too well known, reflecting the inherent bias of the full-time professional against the part-time volunteer. As examples, the Scherer paper in early 1896 was followed a year later by Walter Frazier, “The National Guard: National in Name only” *JMSI* (Jan.-Jun., 1897): 518-523 with three comments published in the next issue; Howard Giddings, “How to Improve the Condition and Efficiency of the National Guard” *JMSI* (Jul.-Dec., 1897): 61-75, while the Prize Essay of the Infantry Society published in the same issue was on “The Necessity of a Well Organized and Trained Infantry at the Outbreak of War...”; the Jan-Jun 1898 issue didn’t have an article on the National Guard *per se*, but did have the prize essay S.M. Foote, “How should Our Volunteer Armies be Raised, Organized, Trained, and Mobilized for Future Wars,” *JMSI* (Jan.-Jun., 1898): 1-49.

⁶⁹⁹ In 1885, President Cleveland’s Secretary of War, William Endicott, convened a board to devise a plan for upgrading coastal defenses in the United States. Although appropriations for the recommended system did not begin until 1890, the system of coastal fortresses was called the Endicott System. Congress authorized funding at far recommended level, however, so the system was largely unfinished in March 1898. \$20 million was allocated from the \$50 Million Dollar Bill to upgrade the defenses, but at the start of the war McKinley stated that “our coasts were practically undefended” and there was a critical shortage of ammunition for completed weapons. Edward Ranson, “The Endicott Board of 1885-86 and the Coast Defenses,” *Military Affairs* 31, No. 2 (Summer, 1967): 75-78.

structure. Some of the Eastern Guard units allied with the Regular reformers as they were assured wartime roles manning the coastal defenses. Some Regular officers allied with the National Guard in the South, Midwestern and Western states – the staff officers in the War Department bureaus. The reformers called for the creation of a General Staff, which would rotate officers between line and staff appointments. This reform threatened the cushy status quo of the staff officers in the Army bureaus, who had assignments in comfortable major cities (many in Washington, DC close to Congress) and better chances for promotion than the line officers stuck in squalid remote forts in the West. Propinquity and politics combined to give the staff officers an inside track with Congress, and they combined with the NGA (outside of the Eastern states) to lobby against reforms in the 1880s and 1890s.⁷⁰⁰ This gave the Democratic and populist politicians additional support in blocking the expansion of the Army or reform of its structure. This political conflict would conclude with the battle over the Hull Bill in early 1898, which attempted to reform and expand the Army as part of wartime mobilization.

By early 1898 (before its expansion), the United States Army was a small, inward focused force of 25,000 men.⁷⁰¹ The state militias, now known as the National Guard, totaled about 114,000 men, mostly infantry. The level of preparedness was decidedly mixed, depending upon the individual unit. The requirements of the Spanish-American War would tax the peacetime Army; neither the Regular Army nor the National Guard was capable of suddenly transforming into a wartime force capable of overseas deployment. It was hard enough for the Army to fight the land forces of the decaying Spanish empire. It proved to be much more difficult for the Army

⁷⁰⁰ Skowronek, *Building a New American State*, 96-98.

⁷⁰¹ Cosmas, *An Army for Empire*, 1. The actual strength toward the end of 1896 was only 22,382 men and 1,690 officers. Department of War, *Annual Report of the Secretary of War FY 1896* (Washington: GPO, 1897), 6. The US Army was so small that when the German General Staff produced a survey of armies across the world in 1897 the US Army did not merit a mention – but Portugal and Montenegro did. Millet and Maslowski, *For the Common Defense*, 280.

to fight the invisible forces of epidemic disease in the age before an understanding of the cause and transmission of diseases like malaria, dengue, and yellow fever were known, much less any knowledge of a means for effectively treating these diseases.

The US Navy, 1865 – 1898

Shipbuilding technology underwent a revolution in the years after the Civil War. Ironclads (iron or steel over a wooden frame) gave way to all-steel construction. Muzzleloaders gave way to breechloading guns with an automatic recoil mechanism. The United States accidentally gained a slight advantage over Europe as it waited until the mid-1880s to begin to upgrade its fleet. Although the American Navy had waited for reasons of economy, during that period various techniques for building ships, propelling them, armoring them, and arming them had been tried, discarded, and improved; the United States went directly to the improved designs when it began shipbuilding.⁷⁰²

At the end of the 1870s the American fleet was an embarrassment, inferior to that of all of the European powers. John D. Long (Secretary of the Navy in 1898) estimated that even the navy of Chile could defeat the American Navy at the start of the “War of the Pacific” (1879-1883). He said that if Chile had sent two of her ships against San Francisco at that time the US fleet would have been helpless against them. In 1879, the Navy’s five “first-rate” ships were 25 years old and obsolete and only nine of its twenty-seven second-raters were seaworthy. The remainder of the Navy consisted of some third-rate ships and obsolete ironclads along with twenty-two sailing ships.⁷⁰³ In 1883 Congress authorized the construction of three protected cruisers⁷⁰⁴ and later in

⁷⁰² Millet and Maslowski, *For the Common Defense*, 266-267.

⁷⁰³ The War of the Pacific was a war between Chile and Peru, which included naval operations along the South American Pacific coastline. It involved modern (for the time) second-generation monitors like the *Almirante Cochrane* (Chile) and the *Huascar* (Peru; captured by Chile) which were the two ships Long mentioned. It is

the 1880s authorized three armored cruisers (two were rated as second-class battleships once built: the *USS Texas* and *USS Maine*) and eight additional protected cruisers as well as some additional ships.⁷⁰⁵ The construction also helped spur a period of robust innovation that launched a modern steel manufacturing infrastructure in the United States, which quickly moved on to create steel rail, bridges, machinery, etc. on a scale which helped the US to be considered an industrial giant by the time of the Spanish American War.⁷⁰⁶

The Navy also underwent an its own intellectual transformation with the creation of its own professional organization, the United States Naval Institute, in 1873 and the founding of the Naval War College in Newport, Rhode Island in 1884. Led by officers such as the War College President Admiral Stephen Luce and Captain Alfred Thayer Mahan, the focus was on the transformation of the Navy using “modern scientific methods to the study [of maritime issues] and [to] raise naval warfare from the empirical phase to the dignity of a science.”⁷⁰⁷

At the end of the 1880s, despite having built a navy that could theoretically defeat Chile, the American fleet of armored and protected cruisers were no match for modern battleships, which began to increasingly fill the ranks of European navies. In his *Report of the Secretary of the Navy* (1889), the new Secretary Benjamin Tracy called for a doctrine emphasizing command of the sea, which could only be achieved with battleships: “The country needs a navy that will exempt

interesting to note that Alfred Thayer Mahan commanded a ship off the coast of Chile and Peru at the end of the war. Long, *New American Navy*, vol. 1, 13-14.

⁷⁰⁴ A “protected” ship has a steel deck; an unprotected ship has a wooden one.

⁷⁰⁵ The *Maine* and *Texas* are considered to be the first two US battleships; although the keel of the *Maine* was laid first (17 Oct 1888), the *Texas* (laid 1 Jun 1889) was the first commissioned and thus considered the first US battleship. Source: “US Navy Battleship List,” U.S. Navy, <http://www.navy.mil/navydata/ships/battleships/bb-list.asp>, accessed 6 July 2016.

⁷⁰⁶ Long, *New American Navy*, vol. 1, 19-20.

⁷⁰⁷ Letter from Admiral Stephen Luce to Secretary of the Navy William Chandler (1884), quoted in Millet and Maslowski, *For the Common Defense*, 274. See also Morgan, *From Hayes to McKinley*, 358.

it from war, but the only navy that will accomplish this is a navy that can wage war.”⁷⁰⁸ He recommended the building of twenty new battleships, eight for the Pacific and twelve for the Atlantic. Opponents of an offensive maritime strategy in Congress forced a more limited start to this building program; the first three ships built under the Navy Act of 1890 (*Oregon*, *Indiana*, and *Massachusetts*) were officially called “sea-going coastal battleships” with a 4,500 mile range. However, once the United States began building a modern fleet the construction gained its own political pull; subsequent ships built in the 1890s were true battleships and officially regarded as such. These would later be termed “The Great White Fleet” when Theodore Roosevelt sent them on a world-wide tour from December 1907 to February 1909 as a display of the American naval might, capable of defending its new-found empire captured from Spain.⁷⁰⁹

Tracy’s vision was not limited to the building of ships; he foresaw the transformation of the Navy into an agent for empire. “The sea will be the future seat of empire,” he said in 1891, “and we shall rule it as certainly as the sea doth rise! To a permanent rank among nations, colonies are of the greatest help.”⁷¹⁰ This vision found its prophet in the son of West Point’s Dennis Mahan: Alfred Thayer Mahan.

Mahan helped to create a strategy fit for the “New American Navy” beginning in 1890. His vision was introduced in *The Atlantic Monthly*, in an article entitled “The United States Looking

⁷⁰⁸ “The defense of the United States absolutely requires the creation of a fighting force. So far the increase has been mainly in the direction of unarmored cruisers. These vessels, while useful in deterring commercial states from aggression and as an auxiliary to secure celerity and efficiency in larger operations, do not constitute a fighting force, even when it is intended exclusively for defense. To meet the attack of ironclads, ironclads are indispensable. To carry on even a defensive war with any hope of success we must have armored battleships. ... We must have a fleet of battle ships that will beat off the enemy's fleet on its approach, for it is not to be tolerated that the United States, with its population, its revenue, and its trade, is to submit to attack upon the threshold of its harbors. Finally, we must be able to divert an enemy's force from our coast by threatening his own, for a war, though defensive in principle, may be conducted most effectively by being offensive in its operations. If the country is to have a navy at all, it should have one that is sufficient for the complete and ample protection of its coast in time of war.” Benjamin Tracy in Department of the Navy, *Report of the Secretary of the Navy 1889* (Washington: GPO, 1890), 4. The short quote from Tracy in the main text is also cited in Millet and Maslowski, *For the Common Defense*, 268.

⁷⁰⁹ Ibid., 268-269, 319-320.

⁷¹⁰ Secretary of the Navy Benjamin Tracy, quoted in Morgan, *From Hayes to McKinley*, 358.

Outward” appearing in the December 1890 issue. Aligning himself with Senator Blaine, he pointed to the threats posed by the imperial designs of the major European powers: “German commercial and colonial push...the affair with the Caroline Islands with Spain; the partition of New Guinea with England” and other hotspots across the globe. He viewed the impending opening of the Panama Canal with real concern; although “Europe has now little interest in the Caribbean Sea. When the Isthmus is pierced this isolation will pass away, and with it the indifference of foreign nations.” He took a *realpolitik* view on international law, saying “neither the sanctions of international law nor the justice of a cause can be depended upon for a fair settlement of differences, when they come into conflict with a strong political necessity on one side opposed to a comparative weakness on the other.” Yet in America “we have not the navy, and what is worse, we are not willing to have the navy, that will weigh seriously in any disputes with those nations whose interests will then conflict with our own.” He concluded with a call to action; for America to look outward.⁷¹¹

Mahan established his theories based his opus *The Influence of Sea Power Upon History, 1660-1783*, also published in 1890. In this and other works published throughout the decade, Mahan laid out a complete maritime strategy for the U.S. based on control of the sea and international trade. This strategy required overseas naval bases and coaling stations to allow a fleet to conduct operations off of the American coasts and possibly off the coast of a hostile foreign power. The naval missions inherent in this strategy were primarily offensive in nature; the Navy would be the future offensive arm of the United States military. The Army’s role in this

⁷¹¹ He specifically proposed that three elements of readiness are met: The “protection of the chief harbors by fortifications and coast-defense ships,” the creation of an effective “naval force, the arm of offensive power,” and “an inviolable resolution of our national policy that no European state should henceforth acquire a coaling position within three thousand miles of San Francisco”; the latter “for fuel is the life of modern naval war; it is the food of the ship; without it the modern monsters of the deep die of inaction.” Alfred Thayer Mahan, “The United States Looking Outward,” *The Atlantic Monthly* (December, 1890), <http://www.theatlantic.com/magazine/archive/1890/12/the-united-states-looking-outward/306348/>, accessed 6 July 2016.

strategy was primarily defensive in nature; centered on its traditional role of defending the American homeland from foreign invasion. Any offensive operations under the new strategy would be adjunct to naval operations, consisting of small expeditionary forces used to seize and hold naval bases and foreign ports.⁷¹² This revised role for the Army and the Navy is clearly seen in the war plans drawn up for the war with Spain, discussed in the next section.

The Navy of 1898 was successful in performing its role in the Spanish-American War: destroying the Spanish Caribbean and Asiatic squadrons, blockading ports (such as Santiago and Havana) and the coastline of Cuba, convoying the movement of Army expeditionary forces, and supporting the capture of ports such as Manila in the Philippines and Ponce in Puerto Rico. The impact of disease on the navy was minimal; it had the entire ocean as a sanitary system and sailors were naturally isolated from transmission vectors such as mosquitoes and flies. As a result, its role is minimal from the perspective of a medical history of the Spanish-American War.

The US Military: 1898

The state of the US military in 1898 was shaped by three major trends. The first was geopolitical. Between 1865 and 1898, the nation became a fully industrialized state with significant commercial interests overseas, with a significant expansion of trade into the Pacific. An internationalist bloc emerged in the Republican Party that led to the development of a new steel Navy. The Arthur Administration began with the development of the ABCD steel ship

⁷¹² Cosmas, *An Army for Empire*, pp. 30-31; Millet and Maslowski, *For the Common Defense*, 275-276.

cruiser construction,⁷¹³ with additional protected cruisers and what would be considered the first US battleships – the *USS Texas* and the *USS Maine*; it is ironic that the *Maine* would become famous as the pretext for the Spanish-American War. Although the 1886 Naval Appropriation Act authorizing the first battleships was signed into law by President Cleveland, it was the Harrison Administration that authorized the beginning of the true battleship Navy of the late 1890s.⁷¹⁴ The battleships provided the capability for a new American maritime strategy that called for the projection of power overseas using the offensive power of this new navy. According to the Spanish-American War Secretary of the Navy John D. Long, this “New American Navy” was the key to success: “Spain suffered crushing defeat in 1898 because she was not ready and because the United States - comparatively only - was ready for the combat.”⁷¹⁵

The transformation of the Navy from a coastal and commerce defensive force to an offensive force helped shape the Army as it was forced to change by the second, domestic, trend: the industrialization of the country and the settlement of the West, which marked the end of the American frontier. The industrialization sparked massive labor unrest that required the armed intervention of the US Army and the revitalization of the state militias, both for use in strikebreaking. The end of the frontier also marked the end of the Indian Wars that had dominated the Army’s attention from the 1860s through the 1880s. When the Army began to develop an interest in continental defense and overseas power projection, the Endicott system of

⁷¹³ Arthur’s message to Congress was clear: “I cannot too strongly urge upon you my conviction, that every consideration of national safety, economy, and honor imperatively demands a thorough rehabilitation of the navy.” Long, *New American Navy*, vol. 1, 15.

⁷¹⁴ The *Indiana* class ships were considered the initial class of [first class] battleships by the US Navy; the *USS Indiana* was given the number BB-1 (all battleships are designated with BB). The *Maine* and *Texas* were not given BB nomenclatures, although the US Navy does consider the *Texas* to be the first battleship in the fleet. US Navy Battleship List, US Navy, <http://www.navy.mil/navydata/ships/battleships/bb-list.asp>, accessed 6 July 2016.

⁷¹⁵ Long, *New American Navy*, vol. 1, 15-25; quote 1.

coastal defenses gave it a significant role in continental defense. However, the new maritime strategy called for the Army to retain only a supporting role in overseas power projection.

The last trend was political. The end of Reconstruction in 1876 began a twenty year period where a resurgent Democratic Party contested control of Congress and the Presidency with the Republicans, a twenty year period that also included some of the major strikes such as the Great (railroad) Strike of 1877, the Haymarket Riot of 1886 (sparked by police repression of a Knights of Labor strike), the Homestead Strike of 1892, and the Pullman Strike of 1894. The Army attempted to use the strikebreaking role as a pretext for expansion and reform after the 1877 railroad strike, only to be defeated by Democrats determined to uphold states' rights and ensure that the Army could not be used to protect freedmen in the South. The strikebreaking role was instead given to a resurgent state militia system, which evolved into a powerful political lobby in the form of the National Guard Association. The NGA and the Democratic Party combined to prevent Army expansion or reform during the 1890s, to include expansion to become the major combat force during the Spanish-American War. Instead, the Army was forced to accept a vast Volunteer Army sized to include all of the National Guard units (should they choose to enlist) that was far too big to equip, house, or train effectively and far in excess of that needed to actually conduct the war. The oversized mobilization combined with the poor discipline of the volunteer soldiers created many of the crises of the war, to include the typhoid epidemics that killed more soldiers than anything the Spanish could come up with.

The new maritime strategy of the United States gave the Navy the lead in planning for possible future wars. The Naval War College provided the capability to plan for future wartime contingencies, a process new to the American military but commensurate with its impending role on the world stage.

War Plans

Before the start of increased tensions with Spain over its treatment of Cubans while repressing the rebellion of 1895, the United States Navy had begun to consider what a war with Spain might be like.⁷¹⁶ Neither service had a formal plan for a war with Spain,⁷¹⁷ but studies conducted at the Naval War College identified some of the key strategies that might be employed in case of a conflict with Spain and other overseas powers. The first such study was completed by Lt. Commander Charles Train in 1894. He noted that “The only point where the interests of Spain and those of the United States could possibly clash, with the result of bringing on a war, would undoubtedly be Cuba. ...It is obvious that in a war with Spain for the possession of Cuba, the command of the sea would play an all-important part. With great superiority on the sea by Spain, the capture of the island by us would be an impossibility.” His study called for three fleets: “one [composed] of our heaviest and most powerful ships, for fighting the enemy; one, of cruisers and armed merchant ships, for blockade; and a third for convoying and transporting our forces to the enemy’s shores.” The plan detailed the precise sailing orders for specific ships in the US fleet. The army’s role in this plan was primarily to seize and hold an anchorage and

⁷¹⁶ The Naval War College began to conduct training exercises in the 1890s for possible wartime scenarios. Students were required to develop plans for naval operations for each hypothetical conflict. The College began to examine a possible war with Spain beginning in 1894. Mark L. Hayes, “War Plans and Preparations and Their Impact on U.S. Naval Operations in the Spanish-American War,” paper presented at Congreso Internacional Ejército y Armada en El 98: Cuba, Puerto Rico y Filipinas on 23 March 1998, <http://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/s/spanish-american-war-war-plans-and-impact-on-u-s-navy.html>, accessed 25 March 2015.

⁷¹⁷ In his book *American War Plans, 1890-1939*, Steven T. Ross states that the process of creating war plans in peacetime was an entirely new concept. He explains America’s prior experience with planning: “In previous conflicts the country usually declared war and then called for volunteers. The President and his advisors would then proceed to devise strategy. There was no military organization designated to produce war plans prior to a conflict and strategy was usually created on an ad hoc basis. The growing complexity of warfare, however, led some military minds to conclude that pre-war planning was necessary.” Ross, *American War Plans*, 7.

coaling site on the Cuban coast; he recommended Point Mariel, within 20 miles west of Havana.⁷¹⁸ The island of Cuba and the locations of the ports and cities are shown in Figure 4.

Additional plans were created in 1895 and 1896. Lieutenant William Kimball released a plan entitled “War With Spain – 1896” on June 1, 1896. Kimball called for a “purely naval war” for six reasons, the third of which explicitly considered the possible effect of disease: (1) lowest cost, (2) lowest loss of life, (3) “It would be the only practicable one to follow in the rainy season during which the war might have broken out,” (4) it would in any event be the initial part of any plan that included an “army of invasion,” (5) it would be the fastest way of “wounding the prestige of Spain, of crippling her revenues and of thus bringing her to treat for peace,” and (6) it would be the most attractive plan from a diplomatic point of view as Cuban nationals would establish their own republic “instead of a conquest and occupation of Spanish territory by an organized army of invasion from this country.” If a land force were required he considered basing at either Tampa or Matanzas, Cuba; he recommended the latter be seized as it would provide the easiest access by land to attack the Cuban capital of Havana and also had good rail transportation with which to supply arms and ammunition to Cuban rebels. The final objective would be an attack on Havana, which could be deferred if necessary until after the rainy season (“It would be better strategically to delay the invasion rather than to make it in the yellow fever season, and in any event to plan as brief a campaign as possible”). Kimball prefers the option of using the navy to bombard and blockade the capital, with Cuban rebels used to interdict the water supply. The land force requirement would be minimal as the ground element “would probably go no further than threatening the town sufficiently to render necessary a large garrison

⁷¹⁸ Lieutenant Commander Charles J. Train, “Plan of Operations against Spain,(1894),” Naval History and Heritage Command, Documentary Histories, Spanish-American War, <http://www.history.navy.mil/research/publications/documentary-histories/united-states-navy-s/pre-war-planning.html>, accessed 15 Dec. 2015. The coastal town of Mariel, Cuba is spelled as Muriel in the plan. The Marine Corps executed this mission during the war, seizing Guantanamo Bay as a base for operations against Santiago de Cuba. See also Trask, *War with Spain*. 73-74.

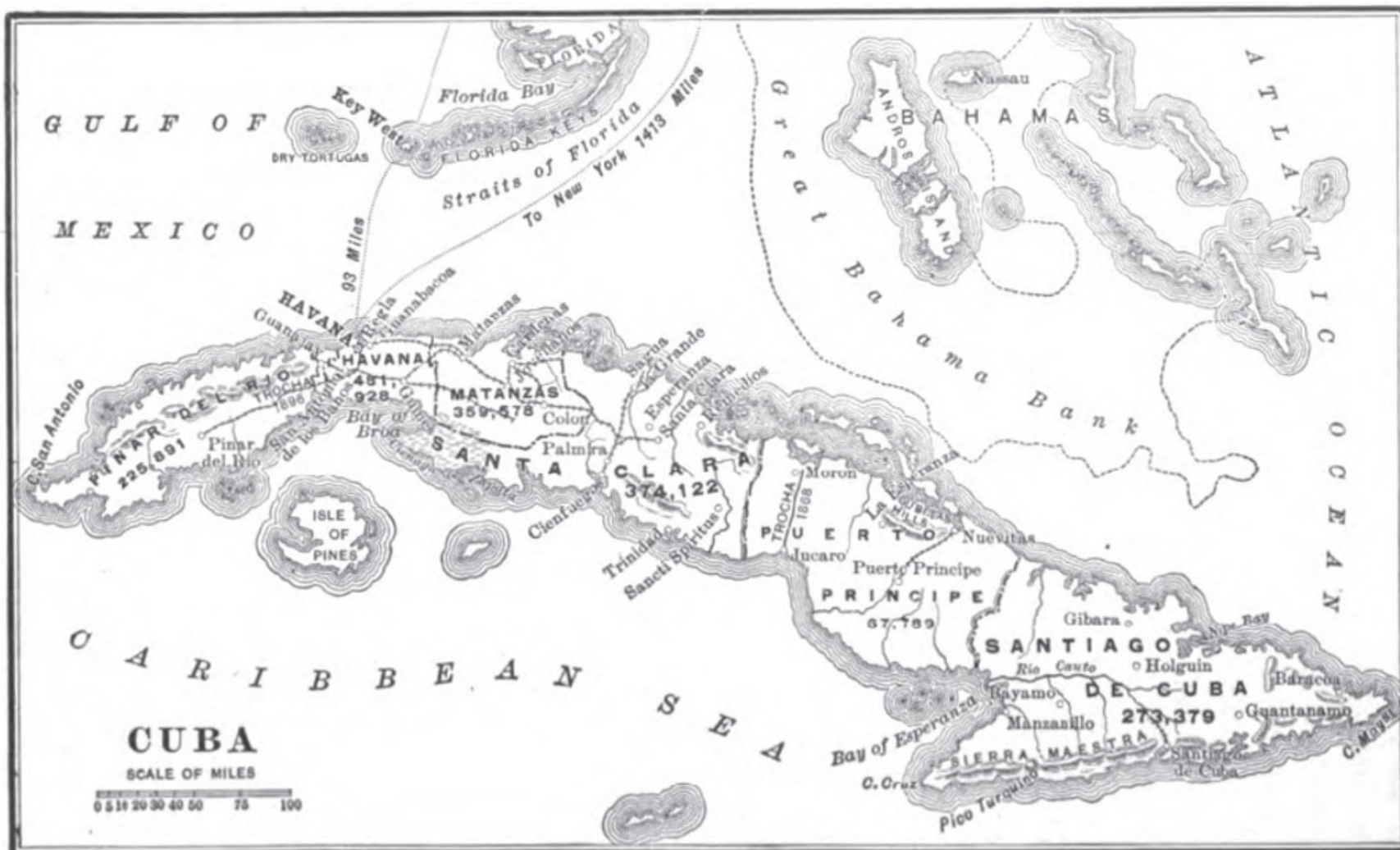


Figure 4: The Island of Cuba, 1898

(Source: Henry Russell, *An Illustrated History of Our War With Spain* (Hartford: A.D. Worthington, 1898), 183)

in Habana” and could be composed of Cuban insurgents. If it is decided to attack the capital using land forces, he recommended a force of not less than “60,000 men with 40,000 in reserve.” Kimball also recommended two secondary naval campaigns, one directly against the Spanish coast “showing the Spanish people their lack of protection” and one against the Philippines to “reduce and hold Manila itself.”⁷¹⁹ Kimball explicitly considered the threat of yellow fever to US forces, but only planned for an epidemic in the fleet, as his plan is primarily a navy-only one.⁷²⁰

A more detailed plan was prepared by Captain Henry Taylor, published in December 1896. It was released in part as a rebuttal of Kimball’s plan. Taylor identified three alternatives. First, Spain could be attacked directly, but it would be costly in men and materiel, and the outcome “would be somewhat doubtful.” Second, Spain’s Pacific colonies could be attacked. This would be relatively inexpensive and quite likely to succeed, but the payoff would be meager, as “it would not certainly bring the enemy to terms.” Third, the West Indian colonies of Cuba and Puerto Rico could be attacked, at a relatively low cost and being close, “the transportation difficulties would be a minimum.” Although Taylor did not think it would necessarily bring Spain to the negotiating table, it would make it very difficult for Spain to continue operations in the Caribbean, as the islands would be close to the United States and far away for Spain. Furthermore, “The strategic relation of Cuba to the Gulf of Mexico is so close and intimate that the value of that island to the United States in the military and naval way is incalculable.” Taylor recommended alternative three, and the remainder of the plan fleshes out this option. The land operations called for the Army to mobilize a force of 30,000 regulars and 250,000 three-year volunteers to take and hold the capital at Havana and occupy the western part of Cuba near the

⁷¹⁹ Lieutenant William W. Kimball, “Plan Of Operations Against Spain Prepared By Lieutenant William W. Kimball (1896),” Naval History and Heritage Command, <http://www.history.navy.mil/research/publications/documentary-histories/united-states-navy-s/pre-war-planning.html>, accessed 15 Dec. 2015. See also Trask, *War with Spain*, 74-75.

⁷²⁰ “In case of yellow fever in the fleet, the sick of this disease could be sent to the Widows Island hospital on the coast of Maine as fast as possible.” Kimball, “Plan Of Operations Against Spain.”

capital. The eastern part would be left to Cuban insurgents, aided by US arms and ammunition.⁷²¹

Senior naval officials were unhappy with either war plan and a board was formed in August 1896 which delivered its own plan on December 17, 1896.⁷²² The board identified food supplies as a critical vulnerability of the Spanish occupation forces. As a result of the large Spanish army, pro-Spanish Cuban volunteers, the requirement to feed civilians in towns and cities held by the Spanish, and the widespread destruction of crops by both sides, “an imported food supply is absolutely essential to the continued maintenance of the war, or indeed the occupation of the island by Spain.” A tight naval blockade of both Cuba and Puerto Rico along with the “destruction or capture” of Spanish merchant and naval vessels would stop the supply of foodstuffs to the island, resulting in the capitulation of the garrisons of all “fortified seaports and cities.” This plan also called for action against the coastline of Spain after capturing the Canary Islands for use as a forward base. After the navy established control of the Cuban coastline, the Army would be called upon to provide “the immediate military occupation of that island” in case the Spanish Army continues to hold interior regions of the island.⁷²³ Revisions of this plan in 1897 by a War Planning Board under Rear Admiral Sicard called for an attack on the Philippine Islands, operations against the Spanish coast without the seizure of the Canaries, and an early capture of Puerto Rico.⁷²⁴

⁷²¹ Captain Henry C. Taylor, “Situation in case of War with Spain (Dec. 1896),” Naval History and Heritage Command, <http://www.history.navy.mil/research/publications/documentary-histories/united-states-navy-s/pre-war-planning.html>, accessed 15 Dec. 2015. See also Trask, *War with Spain*, 75-76.

⁷²² Drafts of Taylor’s plan would have been available prior to the December 1 delivery date.

⁷²³ “Plan of Operations Against Spain (1896),” Navy Department, December 17, 1896, Naval History and Heritage Command, <http://www.history.navy.mil/research/publications/documentary-histories/united-states-navy-s/pre-war-planning.html>, accessed 15 Dec. 2015. See also Trask, *War with Spain*, 76-77.

⁷²⁴ Hayes, “War Plans and Preparations.” See also Trask, *War with Spain*, 77.

During the winter of 1897 – 1898, Asst. Secretary of the Navy Theodore Roosevelt actively studied strategies for a war with Spain with Lt. Kimball and other officers, as he was convinced that such a war would be beneficial to the United States. He wrote Senator Henry Cabot Lodge, a man with similar inclinations on September 21, 1897 discussing a meeting with the President where he urged “the necessity of taking an immediate and prompt initiative,” especially in the event of Japanese intervention in the Pacific over the Hawaiian Islands. He called for a blockade of Cuba, naval action against both the Spanish coast and the Philippine Islands, and an expeditionary force to invade Cuba. He thought that the war would be over in six weeks (“so far as the acute phase of it was concerned”) if these actions were taken.⁷²⁵ He also endorsed elements of Kimball’s plan in a letter to the Lieutenant on November 19, 1897, saying that “war will have to, or at least ought to, come sooner or later; and I think we should prepare for it well in advance.” He called for an Army force of thirty to forty thousand, stating that although the Navy “would be the main factor in producing the downfall of the Spaniards, the result would be much hastened by the Army... .”⁷²⁶

Naval strategy focused on the Spanish East and West Indies as theaters of operation. The objectives were twofold: “the absolute crushing of the Spanish squadron in the Philippines” and control of the Atlantic Ocean, particularly the waters of the Caribbean. This would secure American naval supremacy: “Annihilation of the Spanish squadrons in those regions would require the dispatch from Spain of new forces, which, deprived of support at points of destination

⁷²⁵ Theodore Roosevelt, letter to Henry Cabot Lodge, September 21, 1897. Roosevelt also suggests that the War College study the impact of Japanese intervention in a letter to Captain Caspar Goodrich (President of the Naval War College), May 28, 1897, Naval History and Heritage Command. Both letters <http://www.history.navy.mil/research/publications/documentary-histories/united-states-navy-s/pre-war-planning.html>, accessed 15 Dec. 2015.

⁷²⁶ Footnote 4 to letter from Theodore Roosevelt to Henry Cabot Lodge, September 21, 1897, *ibid*.

and embarrassed by voyages far distant from their initial bases, could be met and overcome by superior commands.”⁷²⁷

The Army’s role in a future war was institutionally regarded as primarily defensive in nature. Lt. Gen. Schofield, the Commanding General (1888 – 1895) prior to Nelson Miles, wrote in his memoirs in 1897 that “the navy is the *aggressive* arm of the national military power ... It may be that in special cases military forces may be needed to act in support of naval operations, or to hold for a time important points in a foreign country; but such service must be only auxiliary, not a primary object. Foreign conquest and permanent occupation are not a part of the policy of this country.”⁷²⁸ Army officers, writing in such publications as the *Journal of the Military Service Institution*, defined a role in keeping with Mahanian visions of a Naval force capable of overseas power projection and Schofield’s vision of land forces as an auxiliary force in that role. The Army’s role was to defend the homeland against foreign invasion, through a system of coastal defenses and use of the nation’s rail network to concentrate power at any point of invasion, repelling enemy expeditionary forces.⁷²⁹ If the Army had any role at all in a war with Spain, it would involve only a small expeditionary force as part of a naval overall strategy.⁷³⁰

When the army finally did start to plan for operations just before the war, it envisioned a force of 75,000 to 100,000 men, in line with the navy’s prewar planning.⁷³¹ Given the joint nature of the proposed intervention, Secretaries Alger and Long created a joint board of two representatives from each service. The board recommended a blockade of Cuba similar to Kimball’s plan, with a small land force to occupy an eastern port in order to supply arms and

⁷²⁷ Long, *New American Navy*, vol. 1, 166.

⁷²⁸ John M. Schofield, *Forty-Six Years in the Army* (Norman: University of Oklahoma Press, 1998, reprint New York: Century Company, 1897). 527. Also cited in Cosmas, *An Army for Empire*, 32.

⁷²⁹ Schofield, *Forty-Six Years in the Army*, 526; Cosmas, *An Army for Empire*, 33-34.

⁷³⁰ Cosmas, *An Army for Empire*, 75.

⁷³¹ *Ibid.*, 82.

materiel to the Cuban rebel armies. If a major attack on Cuba were necessary (at the time considered unlikely), a force of about 50,000 would be used to seize Havana. The same force could later be used in an attack on Puerto Rico. A key constraint was the Cuban rainy season – a period when Spanish operations were reduced in order to minimize troop losses to the deadly tropical diseases endemic during those months.⁷³²

The fear of epidemic disease was at the forefront of the minds of the principal architects of the planning for the Cuban campaign. Surgeon-General of the Army Sternberg sent Secretary of War Alger a letter on March 25, 1898, that emphasized the dangers of yellow fever in Cuba. Drawing on his expertise gained from membership in the Havana Yellow Fever Commission of 1879, Sternberg discusses the history of the epidemics that have swept across the island, indicating cities and ports where yellow fever is prevalent.⁷³³ Commanding General Miles explicitly cited this letter in his memorandum to Secretary of War Miles written on April 18. In this memo, Miles recommended delaying the introduction of any land force into Cuba, citing the risk of exposure to epidemic disease: “it would be injudicious, to put an army on that island at this season of the year, as it would undoubtedly be decimated by the deadly disease.” He was also concerned with deploying American soldiers naïve to yellow fever against the Spanish survivors of three years of deadly tropical epidemics: “having to cope with some 80,000 troops, the remnant of 214,000, that have become acclimated.” Miles also had the fear, shared by many others, that bringing soldiers exposed to yellow fever back to the United States would result in an

⁷³² Ibid., 75

⁷³³ Surgeon-General Sternberg, letter to the Secretary of War, March 25, 1898, The Philip S. Hench Walter Reed Yellow Fever Collection, University of Virginia, <http://etext.lib.virginia.edu/etcbin/fever-browse?id=14304001>, accessed 9 October 2014, also as item 1, Appendix B.

epidemic of the disease in any city the soldiers are returned to; wanting to “avoid the spread of yellow fever over our own country.”⁷³⁴

The war plans developed before the war explicitly avoid exposure of American troops to tropical disease. Although naval plans considered the possibility of epidemic outbreaks among sailors or marines aboard ships (possibly after landing actions or riverine operations, both of which historically resulted in outbreaks among naval personnel),⁷³⁵ disease was not a primary focus. The new Mahanian naval strategy called for the Navy to be the offensive arm of the nation; the ultimate battle would be a fleet-on-fleet action to determine control over the sea lanes. Furthermore, the Navy generally planned for land operations only when the disease risk was low. Lt. Kimball argued that his 1896 plan for a war against Spain was “the only practicable one to follow in the rainy season during which the war might have broken out” as the plan was “one in which a purely naval war were intended, a war of blockades, bombardments, harassments, naval descents on exposed colonies, [and] naval actions whenever they can be brought on under fair conditions.” If everything went well, the naval blockade combined with support to the Cuban rebels would force the Spanish to surrender; if a land force was needed, it could wait until the tropical disease season was over: “It would be better strategically to delay the invasion rather than to make it in the yellow fever season, and in any event to plan as brief a campaign as possible.”⁷³⁶ We can see that naval planners considered Army involvement only feasible under conditions where the disease threat was minimal. As we shall see, the actual plan executed in the Caribbean and the Pacific during the Spanish-American War violated these precepts, but the only disease epidemics occurred among Army personnel. As planned, the Navy stuck to “a war of

⁷³⁴ Miles to Alger April 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 8.

⁷³⁵ 3,000 sailors of the British navy contracted yellow fever in the 1762-3 Siege of Havana (Scott, *A History of Tropical Medicine*, vol. I, 296); a naval expedition up the Sengal River in Africa in 1841 resulted in an 82% infection rate from malaria; 30% died (Curtin, *Disease and Empire*, 23)

⁷³⁶ Kimball, “Plan Of Operations Against Spain.”

blockades, bombardments, harassments” and “naval actions whenever they can be brought on” during the war; all operations without significant risk of infectious disease.

The other plans developed between 1896 and 1898 emphasized a naval blockade of Spain’s Caribbean possessions once the American navy established local sea superiority. If a blockade did not impose enough pain on the Spanish Army to force it to surrender, a small Army expeditionary force could be dispatched to seize ports or even proceed against the center of Spanish power at Havana. The keys to success for a land campaign were perceived to be timing and location – timing the attacks outside of the sickly season and keeping the duration as short as possible. Roosevelt’s estimate that a land campaign could be successfully conducted in six weeks might seem overly optimistic, yet the actual land campaigns against Santiago de Cuba and the follow-on invasion of Puerto Rico each took less than six weeks.⁷³⁷

General Miles was also in favor of supplying Cuban rebels rather than sending a US force, likewise out of concern for disease.⁷³⁸ These concerns, along with the assumptions related to pre-war planning, meant that the War Department preparations for fielding an expeditionary force would be inadequate for the size of the force actually mobilized for war by President McKinley. McKinley further exacerbated the problem by failing to issue clear guidance on these issues.⁷³⁹

This prewar planning clearly indicates that the senior military leadership of both the Army and Navy was well aware of the dangers of using ground troops in Cuba during the rainy season. Lessons from the Caribbean campaigns of the British and French between 1740 and 1815 clearly

⁷³⁷ Although the Puerto Rican campaign was interrupted when a ceasefire was called preliminary to the peace treaty, it is quite possible that the US forces could have completed the campaign in just a few weeks, given their degree of success up to that point.

⁷³⁸ Miles to Alger April 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 8. The Surgeon-General’s letter referenced in the quote is reproduced in Appendix B. Guiteras’ first name was Juan, but it appears as James or John in some accounts.

⁷³⁹ Cosmas, *An Army for Empire*, p. 68.

reinforced these concerns. The Haitian campaigns were a complete disaster for both nations; they lost tens of thousands of men and failed to achieve either their tactical or strategic objectives. The 1762-3 Siege of Havana succeeded militarily, but at a significant cost in men lost to disease. That siege campaign also did not include a protracted period of occupation as might be required in any future war against Spain over the future of the colony. The Navy was only affected by the impact of disease when planning operations on or near land. Most naval missions kept the ships safely offshore and thus away from disease carrying mosquitoes, and their ships had unlimited amounts of seawater to keep the ships clean and to dispose of waste, negating the filth diseases such as typhoid or dysentery. As a result, naval operations could be conducted at any time and in any region from the disease perspective, as long as land or riverine operations were not contemplated.⁷⁴⁰ The only time that disease was considered in naval operations conducted during the Spanish-American War was with respect to the Army. The reliance on the Army to supply troops to garrison captured port cities led Secretary Long to order Sampson to avoid exposing his ships to the fire from Spanish fortifications at “Havana, Santiago de Cuba, or other strongly fortified ports in Cuba” in part because “There may be no United States troops to occupy any captured stronghold, or to protect from riot and arson, until after the dry season begins, about the first of October” – after the Cuban rainy season.⁷⁴¹ In the 1890s, the only way to prevent the exposure of troops to yellow fever was to avoid sending them to regions where the disease is present, during the times when the disease has been known to occur. In Cuba, this meant avoiding the rainy season from June to September, when the lowlands are rife with the *Aedes* mosquito, much as Lord Wolseley had in the Third Anglo-Ashanti War.

⁷⁴⁰ As discussed in a previous footnote, landing operations such as the Siege of Havana resulted in epidemics among naval personnel, while some European naval expeditions up the African rivers had enormous casualties from mosquito-borne diseases such as malaria.

⁷⁴¹ Richard H. Titherington, *A History of the Spanish -American War of 1898* (New York: D. Appleton and Co., 1900), 120.

US Military Planners and Tropical Diseases, 1898

The four major epidemic diseases encountered by Spanish and American troops during the Spanish-American War and the insurrections immediately preceding and succeeding it were malaria, typhoid, yellow fever, and cholera.⁷⁴²

The disease of greatest concern to American planners and commanders was yellow fever. Yellow fever posed the greatest risk of mortality to unacclimated soldiers, with a fatality rate as high as 85%. The disease was assumed to be caused by a yellow fever germ, which in 1898 had yet to be conclusively discovered. The means of transmission was assumed to be contact of unexposed personnel to yellow fever fomites; it was assumed that both camps and buildings quickly became contaminated with yellow fever germs. The greatest fear of yellow fever exposure lay with the expected fatalities from the disease. Maj. General Joe Wheeler testified “It was expected that the army would have to go through yellow fever. I expected it, and the experts were instructed to go to the officers at Tampa and give us information about yellow fever, and the army was given to understand that possibly 90 per cent of it would have to go through yellow fever. We all knew, however, that the disease only lasted about ten days, and therefore it would not be long before the entire army would be composed of immunes.”⁷⁴³ The experience of the Spanish in Cuba was sobering. During the Cuban Revolution of 1895-1898 immediately preceding the war, 3,101 Spanish soldiers lost their life to combat actions or to wounds from

⁷⁴² A recent paper hypothesizes that some cases of dengue fever also occurred during the war but were misdiagnosed; it is known that an outbreak of dengue fever occurred in Cuba the year before (1897). Gibbons et al., “Dengue and US Military Operations,” 623. Smallman-Raynor and Cliff also document a smallpox epidemic in the Cuban civilian population during this period (Smallman-Raynor and Cliff, “Cuba and the insurrection against Spain,” 331-352).

⁷⁴³ Wheeler, *Dodge Commission Report*, vol. 3 (Testimony), 48. Despite his testimony, the Army appeared to be unprepared for an epidemic of yellow fever when it did occur.

combat. At the same time 41,288 soldiers died from disease, 37% of them from yellow fever. Even more problematic was the sick rate of men prostrated by disease and unable to fight. There were an estimated 9,000,000 hospital admissions for disease during the three plus years of the revolution.⁷⁴⁴ In this respect, from a combat effectiveness perspective US Army senior commanders should have been more concerned about disease disablement than death. Incapacitation rates that severe can also have a significant adverse affect on morale. To this day, we cannot be sure of the actual extent of the yellow fever epidemic that broke out in Cuba during the war due to the difficulty in correctly diagnosing the disease. We can only be sure that hundreds of soldiers were so diagnosed, and that if it was yellow fever it was of a fairly mild strain as the mortality rate was fairly low.

The other major tropical disease that threatened US troops was malaria. The last time the US Army had experience with major outbreaks of malaria was during the Civil War. The case study in Chapter 5 detailed how malaria subtracted from the effective strength of McClellan's command as fast as reinforcements could arrive. Over the course of the Civil War, on average every soldier in the Army had almost 3 attacks of malaria during his service. Nevertheless, the mortality rate from malaria was extremely low – only 6% of the disease deaths during the war.⁷⁴⁵ It is possible that the low mortality rate led planners and commanders to minimize the malaria risk, ignoring the likely debilitating effect it might have on the troops even if it did not result in many deaths. Major (Dr.) Pope, Fifth Corps Chief Surgeon, offered another possible reason in testimony for the Dodge Commission: "In our peace establishment we have very little experience with malaria fever. Malaria gave a very small return at most of our posts; it had been practically

⁷⁴⁴ The nine million number resulted from serial admissions. "What was happening, of course, was that men were falling sick, recovering, taking to bed again, and so on, throughout the war. Although impossible to verify statistically, it seems likely that almost every soldier Spain sent to Cuba spent some time, probably a good deal of time, under medical supervision." Tone, "How the Mosquito (Man) Liberated Cuba," 283-284.

⁷⁴⁵ US Army Surgeon General, *MSHWR*, vol. I, part 3, 11.

eliminated, and I think I may say we had considered it a rather trifling disease which could be easily met with large doses of quinine continued. I, for my own part, had no idea that the typical malaria, until I saw it was such a persistent and such a deadly poison as it has proven itself to be.

Q. Was there not in the service a sufficient number of officers familiar with the malaria of the Gulf Coast to know that it was a serious disease...? A. I do not know of any. I think perhaps the Surgeon-General himself was the only one who had knowledge of that fact by personal experience. Nearly all the older men who had had experience with these Southern fevers during the civil war had left the service.”⁷⁴⁶ General Chaffee also testified that all of the commanders were fixated on yellow fever as the disease threat to their troops; the malaria epidemic caught him and others by surprise.⁷⁴⁷

Typhoid was a camp disease that was familiar to all nineteenth century armies; typhoid epidemics routinely occurred among European troops deployed to Africa and Afghanistan during the latter part of the nineteenth century.⁷⁴⁸ A soldier can be incapacitated from typhoid for approximately four weeks with a 10 – 20% fatality rate. The Medical Corps was concerned about possible typhoid outbreaks before the war, but Colonel (Dr.) Greenleaf, the Chief Surgeon for the armies in the field, was sure that “this is a waterborne disease” which could be avoided as “the greatest care has been exercised in the selecting of the sources of water supply and of the examination of the water by every means known to science.” We shall see that he was guilty of looking for disease in all of the wrong places⁷⁴⁹ when typhoid does strike among the soldiers mustered for the Spanish-American War.

⁷⁴⁶ Pope, *Dodge Commission Report*, vol. 6 (Testimony), 3048.

⁷⁴⁷ “Our minds were somewhat bent upon yellow fever. We talked of that at Tampa as probably the disease with which we would have to compete, but we did not discuss the sickness of malaria.” General Adna Chaffee, *Dodge Commission Report*, vol. 4 (Testimony), 909.

⁷⁴⁸ Reed et al., *Abstract of Typhoid Board Report*, 167, 175

⁷⁴⁹ Sounds like a great title for a Country Western song.

A key to understanding the effect of disease on the progress of the Spanish-American War is the fact that the epidemics of dysentery, malaria, typhoid, and yellow fever were all predictable. Dysentery and typhoid were characteristics of military campaigns in the nineteenth century. Malaria and yellow fever were diseases of the tropics; both were known to be extant in Cuba and malaria and cholera were known to exist in the Philippines. The microorganisms causing each disease was known for all but yellow fever and the circumstances under which they could be expected to occur (e.g., malaria and yellow fever during the rainy season) and the effects they could have on a military force were well known from prior conflicts, as shown in the case studies. Nineteenth century medical science could not treat these diseases with anything other than palliative care (other than quinine for malaria), but they could often be avoided; even if the circumstances were such that they could not be avoided, the requirements for treating the men and continuing a military campaign given epidemic outbreaks were known.⁷⁵⁰ In retrospect, there were few surprises during the war; the only surprise from a medical perspective was how mild the cases of malaria and yellow fever were, resulting in a very low mortality rate. Unexpected circumstances could not be blamed for the failures resulting in illness and death for thousands of men during the war.

⁷⁵⁰ This does not imply that the requirements for replacements given a severe epidemic could not become overwhelming, defeating a military operation. It simply means that the timing and extent of an epidemic could be estimated given the historical experience gained from previous military operations in the region of interest.

CHAPTER 7

SPAIN AND THE DECLINE OF THE SPANISH EMPIRE

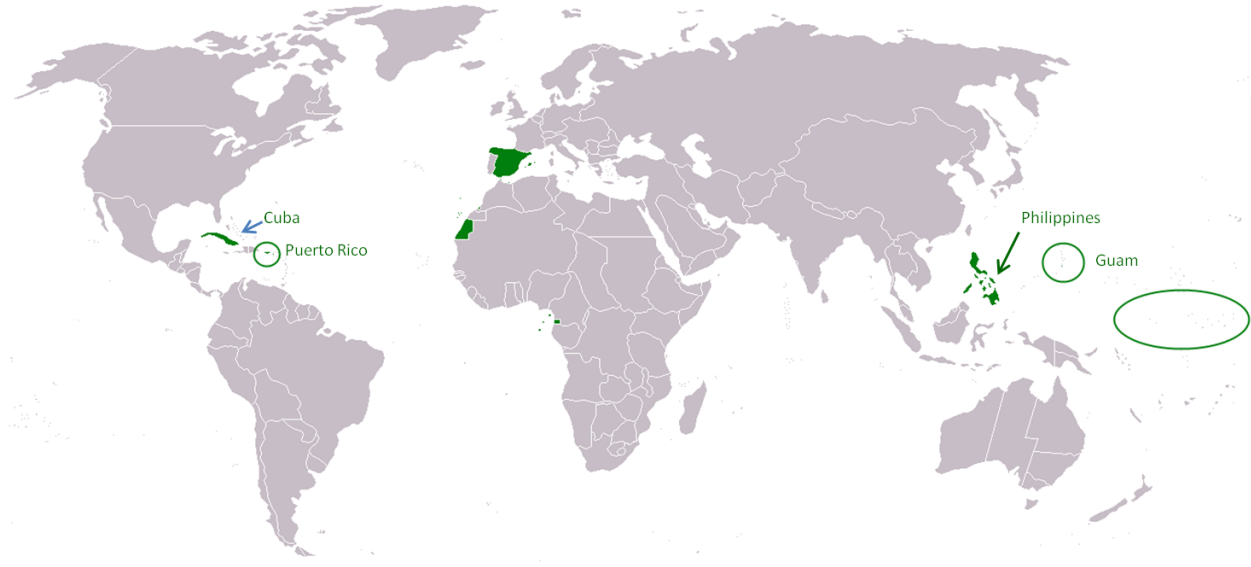


Figure 5: The Spanish Empire in 1898

(Source: "Spain in 1898" by Xaverius)⁷⁵¹

The Spanish Empire

The Spanish-American War was a conflict between the old, decaying Spanish empire and the new, expanding United States. It was fought on and near the islands of two continents: the Caribbean in the Americas (with land battles on Cuba and Puerto Rico) and the Philippines in Asia (with land battles on Luzon near the Spanish capital Manila). Both regions shared important characteristics. They were Spanish colonies for hundreds of years, with a large creole population administered by officials from Spain whose authority was backed by soldiers recruited in Spain.

⁷⁵¹ "Spain in 1898" by Xaverius - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Spain_in_1898.png#mediaviewer/File:Spain_in_1898.png. Labels added by author.

They were both administered by viceroys with nearly unlimited powers, lacking any effective representation in the metropole. They were separated from their parent country by long distances, yet in communication via cable at the end of the nineteenth century. The colonies had large disaffected populations, with a history of revolt and in a full-scale state of insurgency at the start of the war. Finally, both regions were in the tropics, home to endemic tropical diseases such as malaria and yellow fever, though the disease environment of the Philippines was much less hazardous to American troops than that of Cuba.⁷⁵²

The region that received the greatest political—and public—attention before and during the war was the Caribbean. The war began over the actions the Spanish took to subdue the Cuban rebellion of 1895. The greatest potential direct threat to the United States was the appearance of the Spanish fleet in the Caribbean, which had the theoretical potential to threaten the Eastern seaboard of the United States,⁷⁵³ although the capabilities of the aged, poorly constructed, supplied, and maintained fleet was considerably less than the tonnage implied. The campaign that garnered the bulk of the public attention during the war was the land campaign against Santiago de Cuba, somewhat ironically directed against the naval target of the Spanish fleet which took refuge there. Arguably the capture of Manila, which secured US title over the Philippine archipelago, had greater geopolitical importance, but the Caribbean land and naval

⁷⁵² Malaria was also present in non-tropical regions (for example a major epidemic occurred in the Arctic (Archangel, Russia) but was endemic in tropical regions where the *Anopheles* mosquitoes thrived. Packard, *The Making of a Tropical Disease*, 1-3.

⁷⁵³ According to Chadwick, European and American opinion considered the Spanish fleet to be superior to the US fleet. Chadwick, *Relations*, vol. 1, 39-40. Cervera's analysis of the Spanish fleet of 1898 indicates that the fleet was essentially a paper tiger. Senator Lodge remarked that Cervera's "squadron, as it appeared on paper and in the naval registers, was, as a whole, powerful in armament, fast, and very formidable" although he dismissed fears that it would descend upon the towns of the Eastern seaboard. Henry Cabot Lodge, *The War With Spain* (New York: Harper & Bros. Publishers, 1899), 73-74. For Cervera's analysis, see Pascual Cervera y Topete, "A Collection of Documents Relative to the Squadron Operations in the West Indies," in *Notes on the Spanish-American War*, Office of Naval Intelligence (Washington: GPO, 1900).

campaigns required the bulk of the US military forces, and it was in the Caribbean that the major losses to disease during active warfare would occur.⁷⁵⁴

The Antilles

Cuba is the largest island in the Antilles, larger than all of the other islands combined; a total of 43,319 sq. miles. It lies within the region defined by 74 – 85 degrees west longitude and 19 – 23 degrees north latitude. Its strategic importance lies in its location at the entrance to the Gulf of Mexico where the Gulf meets the Caribbean Sea. The lands along the coasts are low and swampy, especially along the southern coast while the interior is high with numerous mountain ranges up to approximately 6,000 ft. in elevation. The low coastal regions are tropical in nature, well suited to support a mosquito population year-round. The plains in the interior are more temperate, with occasional frosts at higher altitudes.⁷⁵⁵ It has a rainy season between May and October, with an average rainfall of 60 inches and an average relative humidity of 75%.⁷⁵⁶ The geography shapes the disease environment of Cuba; yellow fever and malaria threaten outsiders on the coasts while the inland regions are relatively healthy. In the nineteenth century Cuba had a high infant mortality rate from the tropical diseases but the adult survivors could ignore the fevers that rendered the *gringos* prostrate. Europeans and especially Americans of that period regarded Cuba as pestilential for good reason, as Cuba became the source for repeated yellow fever epidemics in North America.⁷⁵⁷

⁷⁵⁴ Most of the disease deaths occurred in the United States, from the typhoid epidemics

⁷⁵⁵ Department of War, *Military Notes on Cuba* (Washington, DC: GPO, 1898), 3-4; 7-9. See also Andrew Rowan and Marathon Ramsey, *The Island of Cuba* (New York: Henry Holt, 1896), 1-40.

⁷⁵⁶ US Weather Bureau, *Climate of Cuba* (Washington: Weather Bureau, 1898), 7; 10.

⁷⁵⁷ See Espinosa, "The Threat from Havana," 541-568. The threat was well known at the time; another term used for yellow fever was the "Cuban plague" U.S. Treasury Department, *Annual Report MHSUS 1898*, 291.

Puerto Rico lies in the same tropical zone as Cuba, at the eastern end of the Antilles island chain. It is about 1/12 the size of Cuba, yet in 1898 had six times the population density of Cuba. The island has a low central mountain chain surrounded by well-drained plains with little marshland. The average daily temperature is 80° F. but moderated by a northerly wind. The disease climate is similar to other tropical locations, but the mortality rate from yellow fever is lower than Cuba, as the island is less prone to widespread epidemics. “The hot and moist climate induces dysenteries and fevers of all kinds,” states an 1898 geographical study, “Yellow fever occasionally visits the coast, but mostly in individual cases, and is not always epidemic.” When yellow fever occurs, “it principally affects Europeans and newcomers,” indicating an endemic environment that induces acquired immunity in childhood for those that survive to adult status.⁷⁵⁸ Other disease hazards included smallpox which “has never been absent from Puerto Rico and has frequently been epidemic,” dysentery, and malaria.⁷⁵⁹

Spain in the Pacific

Spain’s overseas empire included chains of islands in the Western Pacific, entry to the silks and spices of the Oriental trade. The major possession was the Visayas island group, called the Philippines after Philip II, King of Spain. Halfway between the Philippine island of Mindanao and the soon-to-be American territory of Hawaii laid the Caroline islands, named after King Charles V. North of the Carolines laid the Ladrones, the “robber islands” once infested with pirates. The southernmost and largest island in the Ladrones is Guam. All three of these island chains were held loosely by the Spanish since Magellan’s voyage, under the administrative

⁷⁵⁸ Robert Thomas Hill, *Cuba and Puerto Rico, with the other islands of the West Indies* (New York: The Century Co., 1898), 152-3. Hill was a member of the US Geographical Survey agency.

⁷⁵⁹ Major John Hoff, “Report of the Superior Board of Health of Porto Rico,” *Military Government of Porto Rico, Appendix I* (Washington: GPO, 1901), 117-121.

control of the Spanish Philippine capital, Manila.⁷⁶⁰ When the war began, there was no definitive plan to annex the Philippines; indeed, McKinley's later instructions to the Army commander sent to seize and hold Manila were purposely vague.⁷⁶¹ However, the attack on the Philippine islands was part of McKinley's plan to force an early resolution to the war by putting pressure on the Spanish worldwide, dividing their forces and their attention, and making continuation of the war increasingly costly as their overseas possessions were attacked one by one.⁷⁶² The island of Guam was also targeted for use as a coaling station and as part of a line of American communications across the Pacific.⁷⁶³

At the time of the Spanish-American War, the exact number of islands in the Spanish Philippines was unknown, but was estimated at between 1,200 and 2,000; some outside of Spanish control remained unexplored. However, over 90% of the population (between 7 and 9 million) were located on Luzon (the largest island with the capital Manila) and the five largest islands of the Visayas group. Luzon is about the size of the state of Virginia at 41,000 sq. miles, Mindanao (second largest) is about 37,500 sq. miles, while the other large islands have close to 10,000 square miles each. The topography is mountainous, with long irregular coastlines.⁷⁶⁴

The islands are in the tropical zone, with a mean average temperature of 80° F. and 78% humidity. The period between November and February is relatively cool and dry, while the rainy season occurs between June and October, with the heaviest rain in July and August.⁷⁶⁵

⁷⁶⁰ Adjutant E. Hannaford, *History and Description of our Philippine Wonderland* (Springfield, OH: the Crowell & Kirkpatrick Co., 1899), 10-11, 173-4.

⁷⁶¹ See the instructions given to Maj. Gen. Merritt, next section.

⁷⁶² Trask, *War with Spain*, 382-383; Alger, *The Spanish-American War*, 326. Secretary Long pointed out that "Outlying colonies, inadequately defended, are, in time of war, sources of serious weaknesses to the mother country." Long, *New American Navy*, vol. 1, 165-166.

⁷⁶³ Trask, *War with Spain*, 386.

⁷⁶⁴ Department of War, *Military Notes on the Philippines*, Sept. 1898 (Washington: GPO, 1898), 2-3; Murat Halstead, *The Story of the Philippines* (Chicago: Our Possessions Publishing Co., 1898), 99.

⁷⁶⁵ Department of War, *Military Notes on Cuba*, 13; US Weather Bureau, *Climate of Cuba*. 22-23

The disease climate differs from that of the Caribbean, with yellow fever being unknown in the islands – undoubtedly from the fact that African slaves were never imported into the islands. The principal diseases were cholera, smallpox, and malaria. At the time, it was widely assumed that these diseases “are preventable by proper precautions, even by troops on campaign.”⁷⁶⁶ Asiatic cholera first appeared in the islands in 1820, reportedly killing over half of the inhabitants. The cholera epidemic that swept across the Philippines during the Philippine Insurrection⁷⁶⁷ from 1902 to 1904 killed 200,000 of the islands’ then 8 million inhabitants.⁷⁶⁸

The island of Guam is the major island in the Ladrões (now referred to as the Marianas). In 1898 it was a Spanish possession with a population of approximately 9,000.⁷⁶⁹ It was taken without opposition by the US warship *Charleston* on June 20, 1898; the Spanish garrison of between 60 and 108 men surrendered unconditionally.⁷⁷⁰ The island was later ceded to the United States in the treaty of Paris which ended the war, and remains a United States territory today. The disease environment was typical of tropical Pacific islands, with mosquito-borne malaria and dengue fever both present; however, disease was not a significant factor during the

⁷⁶⁶ Halstead, *The Story of the Philippines*, 102.

⁷⁶⁷ The trend among many modern historians is to consider the claims of independence made by the Philippine revolutionary government as valid, thus making the “insurrection” a war between the United States and the Republic of the Philippines. Some names given to the conflict as a war include Philippine-American War, Filipino-American War, Fil-American War and the Philippine War (Trevor K. Plante, “Researching Service in the U.S. Army During the Philippine Insurrection,” *Prologue Magazine* 32, No. 2 (Summer, 2000), National Archives, <http://www.archives.gov/publications/prologue/2000/summer/philippine-insurrection.html>, accessed 29 January 2016).

⁷⁶⁸ Henry Lippincott, “Report Of Lieut. Col. Henry Lippincott, Deputy Surgeon-General, United States Army, on the Condition of Medical Affairs in the Philippine Expeditionary Commands,” Aug. 31, 1898 in *Report of the Surgeon-General of the Army, 1898*, 262. This contrasts with 135 killed in action. Ibid., 265. Part of the problem lay in the unsanitary conditions at a hospital set up at Cavite, which Gillette says “was apparently always regarded as ‘a kind of pest hospital.’” Gillett, *The Army Medical Department*, 165. Trumbell White, *Our New Possessions* (N.p.: 1898), 52; Matthew Smallman-Raynor and Andrew Cliff, “The Philippines insurrection and the 1902–4 cholera epidemic: Part I—Epidemiological diffusion processes in war” *Journal of Historical Geography* 24, No. 1 (1998): 70.

⁷⁶⁹ Joseph Wheeler, *Report on the Island of Guam* (Washington: GPO, 1900), 8; Alden March, *The History and Conquest of the Philippines and Our Other Island Possessions* (Philadelphia: World Bible House, 1899), 259. Trumbell White reports only 600-700 on Guam in his book *Our New Possessions*, page 280, but given that Wheeler’s report was an official War Department report based on the military government’s estimates White’s estimate appears unreliable; it was likely rushed to print in 1898 before official information was available.

⁷⁷⁰ White reports 108 men in the garrison (White, *Our New Possessions*, 274) but an eye witness (2nd Lt. Mulla, 14th Infantry) reported that six officers and 54 men were taken prisoner (ibid., 280).

seizure or occupation of the island.⁷⁷¹ The naval expedition that officially annexed the island of Guam also seized Wake Island in the Central Pacific, claiming it as United States territory.⁷⁷² Wake was later to become an important refueling point for aircraft crossing the Pacific.

Control of the Seas

When the United States planned for land engagements across the Spanish colonial empire, four targets (shown in Figure 5) were identified at the start: the islands of Cuba and Puerto Rico in the Caribbean; the island of Guam in the Western Pacific Ocean, and the islands of the Philippine archipelago, especially the main island of Luzon containing the capital at Manila. From a planning standpoint, both Spain and the United States were significantly constrained by geography. The Philippines lay half a world away from both Spain and the United States, although modern cable communication ensured that both nations remained in telegraphic communication with remote forces, Spain via its colonial capital Manila and the United States through the neutral port of Hong Kong. Forces needed to be committed weeks to months in advance, and reinforcement was out of the question for the fiscally pinched Spanish Crown. In the Caribbean, the United States had a critical advantage: Cuba was just a few miles away from the naval base in Key West, but weeks away from naval forces based in Spain. However, both nations lacked any land connection with the two major theaters of war (the Caribbean and the Pacific), so all power projection by either nation relied on its naval forces. Spain could not reinforce its colonies without a significant naval escort; the United States could not project land forces to either Cuba or the Philippines without local control of the seas. Even a relatively short

⁷⁷¹ Malaria is currently no longer present but dengue fever is still a risk."CDC Health Information for Travelers to Guam, Non-Vaccine-Preventable Diseases," Centers for Disease Control and Prevention, <http://wwwnc.cdc.gov/travel/destinations/clinician/none/guam>, accessed 12 Jan 2015.

⁷⁷² White, *Our New Possessions*, 282.

movement from Florida to Cuba could not be risked if Spain had a fleet at large in Caribbean waters. Both powers were forced to conduct the naval battle for control of the waters off western Asia with their existing fleets, the Asiatic Squadron of the United States and the Philippine squadron of Spain. It was not until Dewey wrested control of the seas from Spain that the United States could send the Eighth Army Corps to the Philippines to contest mastery of the islands with the Spanish army in Luzon and the other islands of the archipelago. And it was not until after the US North Atlantic fleet bottled Cervera's Spanish squadron in Santiago that the US could send its Fifth Army Corps to Cuba.

However, before we can discuss the naval battles which began the war, it is necessary to explain the *status quo ante bellum*; how and why Spain found it necessary to commit much of its land forces to its overseas colonies and how and why the United States found it necessary to intervene in affairs in Cuba. The situation at the start of conflict in the spring of 1898 had its roots in Spanish colonial affairs during the nineteenth century.

Spanish Colonial Insurrections

The Cuban Rebellions

Cuba in 1895 was a land of great contrasts and divided loyalties. It was a land of great wealth and enduring poverty; of lush plantations of sugar, coffee, tobacco alongside overgrown abandoned fields and the burnt shells of former farmsteads; a colony with significant loyalties to the Spanish motherland and widespread talk of and planning for rebellion; a land divided by race into white, black and mixed (mulatto) yet brought together by ideology into integrated multiracial movements for or against rebellion. By 1898 the country was devastated by three years of a war for independence yet neither the loyalist nor rebel side had a clear advantage. To understand Cuba at the brink of the war between Spain and the United States, it is necessary to briefly examine the history of Cuba, especially the series of rebellions throughout the nineteenth century.

Cuba was discovered by Columbus on October 28, 1492 and remained under Spanish rule until the Spanish-American War other than a short hiatus under British military rule (1762-3).⁷⁷³ The island was administered as part of the Viceroyalty of New Spain (Mexico) prior to Mexican independence at a net economic loss; revenues from Mexico subsidized the island until the sugar industry took off after the start of the Haitian rebellion. The island was useful to Spain as a

⁷⁷³ The British under Lord Albemarle attacked the city of Havana in 1762 as part of the Seven Years War. The attack was successful despite heavy casualties from disease (primarily yellow fever) as discussed previously in the case study on the Caribbean. The Spanish surrendered the island as well as the city, but regained Cuba in 1763 as part of negotiations conducted at the end of the war (Treaty of Paris).

transshipment point and a source of tobacco, hides, and locally-grown food – a “service colony” supporting the immensely profitable gold and silver mining in the mainland colonies.⁷⁷⁴

The slave rebellion in Haiti, followed by the unsuccessful attempts of the British to capture the French colony and attempts of the French to recapture the colony from the revolutionaries (discussed previously in the case study on St. Domingue) had a major effect on Cuba. First, the economics of the sugar trade were upended; the French lost the largest producer of sugar in the world, and in response started a major effort to manufacture sugar from beets – what Hugh Thomas called “the first shot in the great ‘war of the two sugars.’”⁷⁷⁵ Second, Cuba also benefited greatly from the decline of Jamaican sugar production and a doubling of the sugar price between 1788 and 1795. The last effect was alluded to in the case study – Cuban planters redoubled their efforts to prevent any possible slave rebellion, which in turn tied them more tightly to the Spanish empire.⁷⁷⁶ In turn, the island now became profitable for Spain, helping to offset the lost revenues from Central and South America.

When the tide of revolution swept Spanish America from Mexico to the Argentine, Cubans stayed loyal to the Crown; Cuban creoles regarded themselves as Spaniards born in Cuba. When the absolute monarchy ended in Spain in 1836, Cuba, Puerto Rico, and the Philippines all elected deputies for the Spanish Cortes (parliament). However, they were denied seats in the Cortes on the basis that their provinces were “different” and would be administered directly. This appeared in part to be racially motivated: Miguel Tacón y Rosique, Captain-General of Cuba, claimed that the Cortes was united in the belief that representation of Cuba in parliament was “a step towards”

⁷⁷⁴ Thomas, *Cuba*, 27. Thomas also notes that the Spanish empire’s revenues from precious metals had been overestimated by the British for generations; Spain had frittered away most of its wealth on wars and projects at home (ibid., 50).

⁷⁷⁵ Ibid., 77

⁷⁷⁶ Ibid. A large number of Jamaican plantations were abandoned, sold, or sued between 1799 and 1805.

independence... all steps toward independence were but a step away from the extermination and ruin of capital and people... The island of Cuba, if it does not remain Spanish, is bound to become Negro, inevitably Negro.”⁷⁷⁷ Here we see the beginning of Spanish propaganda designed to bind the white majority to Spain; according to this discourse, independence will inevitably result in another Haitian-style massacre of whites and the ruin of the island economy. This claim was cited repeatedly by Spanish colonial authorities in the wars for independence: The Ten Year’s War (1868–78); the “Little War” (1878–9), and the final War of 1895 (1895–98).⁷⁷⁸

As a result of the 1836 denial of representation, the Governor-General appointed by the Spanish government for each overseas province was granted absolute powers over that province. Before 1836, Cubans were part of a greater Spain; afterwards, the majority of Cubans rejected the status quo. However, differences appeared in Cuban public opinion – some sought independence from Spain while others sought independence only as a necessary step toward annexation by the United States, by then Cuba’s major trading partner.⁷⁷⁹ Both paths were entwined with US desires to maintain trade with Cuba (a source of wealth for US investors) and antebellum Southern desires to add another slave state to the Union. The Tyler, Polk, Buchanan and especially the Pierce Administrations all attempted to purchase Cuba from Spain; the going price was between \$100 and \$130 million.⁷⁸⁰ Franklin Pierce attempted to use the purchase of Cuba to both bolster Southern slavery and divert attention from the issue of slavery in the Kansas

⁷⁷⁷ Tacón, *Correspondencia Reservada, 1834-6*, ed. Pérez de la Riva (Havana, 1963), 69, as cited in Thomas, *Cuba*, 198.

⁷⁷⁸ Ada Ferrer, *Insurgent Cuba: Race, Nation, and Revolution 1868 – 98* (Chapel Hill: Univ. of North Carolina Press, 1999), 8.

⁷⁷⁹ Rafael E. Tarragó, “The Road to Santiago: Cuban Separatism and United States Americanism and how they Converged in 1898,” *Iberoamericana, Nueva época* 1, No. 3 (Sept., 2001): 62. On Cuban trade with the United States, for example 783 out of 964 ships entering Havana harbor in 1826 were U.S. (Thomas, *Cuba*, 194). This increased to 1,702 ships between 1846 and 1850; and 2,088 between 1851 and 1856. “By early in the 1880s, Cuba had passed almost entirely into the North American economic orbit. Nearly 94 percent of Cuba’s sugar production was exported to the United States.” (Louis A. Perez, Jr., “Between Baseball and Bullfighting: The Quest for Nationality in Cuba, 1868-1898.” *The Journal of American History* 81, No. 2 (Sep., 1994): 496).

⁷⁸⁰ Thomas, *Cuba*, 213, 223. Buchanan tried to get Cuba for \$30 million in bribes rather than direct purchase

and Nebraska territories; his Minister to Spain, Pierre Soule, wrote the “Ostend Manifesto” (1854) as a rationale for the purchase, implying that war would result if Spain refused.⁷⁸¹ Southern slavery apologists also added a moral⁷⁸² issue; “the maintenance of slavery in Cuba” (legally in question due to British abolitionist pressure on the Spanish government) “was crucial to the preservation of Southern society.”⁷⁸³ Multiple filibusters were mounted from Southern ports during this period, some with the support of Cuban annexationists; some without.

The first major step in Cuba’s path towards independence was the 1868 “Grito de Yara” (Cry of Yara), a declaration of Cuban independence issued by Manuel de Céspedes, owner of a small slave-run sugar plantation in the Eastern province of Bayamo. This famous call to independence started what was to become known as the Ten Years War (1868-78), which laid waste to much of the eastern (Oriente) section of Cuba. Western Cuba, centered on Havana, Cuba’s capital and largest city and port, had become increasingly wealthy as the sugar industry was mechanized with steam mills and railroad transport. These improvements required large sums of money, available to the richest planters and areas of external capital influx (mainly from the US). The smaller mills that continued to use oxen-driven machinery and oxcarts for transportation were left behind. This became a regional issue as Eastern Cuba, home to many small sugar plantations as well as small coffee and tobacco growers, grew increasingly far behind the West. The small plantation owners such as Céspedes saw Cuban independence as the only solution to economic marginalization and ruin under the Spanish *status quo*; Céspedes accused the government of

⁷⁸¹ “Franklin Pierce: Foreign Affairs,” Miller Center of Public Affairs, Univ. of Virginia, <http://millercenter.org/president/biography/pierce-foreign-affairs>, accessed 6 Jul 2016.

⁷⁸² Moral from their viewpoint; to the modern reader it is an immoral point.

⁷⁸³ Albert W. Ely, “Spanish and Cuban Views of Annexation,” *DeBowys Review* XVIII (March, 1855): 311, as cited in Lester D. Langley, “Slavery, Reform, and American Policy in Cuba, 1823-1878,” *Revista de Historia de América*, No. 65/66 (Jan. - Dec., 1968): 76. An 1854 editorial in the *Richmond Enquirer* stated that “we regard the acquisition of Cuba as essential to the stability of the system of slavery and to the just ascendancy of the South...” (March 17, 1854), cited in Thomas, *Cuba*, 222.

“arbitrary despotism, fiscal oppression, and denial of civil freedoms.”⁷⁸⁴ In *Insurgent Cuba*, Ada Ferrer adds a racial motive for the eastern move toward independence: western Cuba was the home of conservative slaveowners, who feared the loss of their slave capital and the possibility of a race-based war similar to the Haitian Revolution. In this region, slaves formed a large part of the population, with few free black or mulatto peasants. The east was less dependent on sugar (which was very labor intensive); the eastern Manzanillo district (home to Céspedes and other insurgents) had only 6% of the population living on sugar plantations. The east also used a large number of free laborers, especially outside of the sugar areas.⁷⁸⁵

Although Céspedes and his followers sought independence, another group (the Junta Revolucionaria of Puerto Principe)⁷⁸⁶ called for annexation by the United States. These two groups joined with others to declare a Cuban Republic with Céspedes as President and an Assembly which petitioned President Grant for annexation. The rebellion became a war for independence after US President Grant denied the request; the Republic created the Cuban Liberation Army to force independence from Spain.⁷⁸⁷

The rebellion quickly exceeded the scope and intent of the *Grito de Yara*; rather than improving the economic prospects of the East, it laid waste to the eastern provinces of Cuba, destroying most of the farms and plantations and killing thousands of the inhabitants. The rebel Republic created by the insurgents could not dislodge the Spanish center of wealth and military strength in the West, while the Spanish government could not control the countryside in the East outside of the cities and major villages. The small Spanish army of 7,000 troops was greatly

⁷⁸⁴ Tarragó, “The Road to Santiago,” 65.

⁷⁸⁵ Ferrer, *Insurgent Cuba*, 18-19; Thomas, *Cuba*, 242-7.

⁷⁸⁶ Puerto Principe (later called Camaguey) was a province just west of Bayamo (but still in the Oriente region) bordering the southern shore of the island.

⁷⁸⁷ Tarragó, “The Road to Santiago,” 65-66.

outnumbered by pro-Spanish volunteers; wealthy sugar barons raised 30,000 infantry and about 13,500 cavalry largely from the middle-class in the west. These volunteers had the military and political power to force the Spanish commander to pursue a harsh policy of repression against the rebels; the moderate Captain-General Domingo Dulche was forced out of office, replaced by the hard-line Caballero de Rodas in July 1869.⁷⁸⁸

A classic guerilla war ensued that lasted ten years. The insurgent army, swelled by slaves seeking freedom and peasants dispossessed of their land by the movements of armies, conducted raids against the Spanish lines of communication (roads and railroads) in order to isolate the soldiers yet avoid direct combat when outnumbered. These raids largely failed to accomplish any military objectives; rather, it was a free-for-all for bandits and self-proclaimed vigilantes to profit from constant raids while Spanish Army officers enjoyed the extra pay and promotions that came with a combat assignment. Both sides suffered from frequent desertions. According to Thomas, “it was less war than a breakdown of order.”⁷⁸⁹ In 1869 President Céspedes escalated the violence by authoring the destruction of any sugar plantations not under the control of the rebels. After burning out much of the eastern provinces a Spanish counterattack penned many of the rebels and their sympathizers into the major cities where they were placed under martial law. Atrocities were committed by both sides, which further hardened Spanish policy by apparently justifying harsh rule. It became harder for anyone to remain neutral; the pro-Spanish volunteers treated any armed Cuban as a rebel while the insurgents regarded any commerce with the Spanish-controlled areas as treason.

⁷⁸⁸ Thomas called Dulce “a prisoner of the volunteers”; de Rodas, on the other hand, had recently violently put down a rebellion in southern Spain (Thomas, *Cuba*, 252).

⁷⁸⁹ *Ibid.*, 254.

By 1870 a stalemate existed. The rebel government was riven by factions advocating different policies; the split between annexationists and independence seekers remained, while pro-rebel Cubans in America continued to mount filibustering expeditions which in turn were intercepted by the neutral U.S. government. There was also significant disagreement on military policy; some rebels to include the prominent generals Máximo Gómez and Antonio Maceo advocated an invasion of the western provinces while Céspedes and others felt that would be too risky. Spain was unstable during most of this period, with frequent changes in government delaying any effective resolution of the Cuban issue. In Cuba, the Spanish military fought the guerilla war using classic tactics: they defended the cities in the east and separated the Oriente region from the west by creating a heavily fortified trench (*trocha*) across the island from the northern shore to the southern shore. The powerful Western provinces remained peaceful and prosperous with a record sugar harvest in 1873. The Spanish also succeeded in killing Céspedes in an ambush in late 1874.

The stalemate was threatened when Gómez finally crossed the trocha in early 1875, laying waste to much of the Sancti Spiritus province. However, the impact of this accomplishment was diminished between actions by the Cuban Republic (sending many of Gómez's troops back east) and Spanish defenses. When the Spanish government was brought firmly under control of the monarchy in 1876, it dispatched 25,000 additional troops to Cuba under the command of General Martinez Campos, bringing the total under his command to 70,000 men. Martinez Campos used a carrot-and-stick approach against the Cuban Republic. After eight years of war, many of the rebels were disheartened; he proclaimed a general amnesty for all but the rebel leaders which led to significant desertions from the rebel army and surrenders. At the same time, his troops conducted counterattacks that drove the rebels back across the *trocha* and conducted a series of

military actions that included the capture of the new President Estrada Palma. By February 1878 Martinez Campos proposed a general pardon of all rebels, the “political equality” of Cuba and Puerto Rico, the liberation of all slaves and Chinese indentured servants who had fought for the rebels, and freedom for rebel leaders provided they accepted exile. An armistice was signed on Feb 11, 1878 at Zanjón – the “Peace of Zanjón” also called the “Treaty of the Trench.”⁷⁹⁰

The Ten Years War ended with the peace of Zanjón but one of the major rebel leaders – the mulatto General Antonio Maceo – refused to accept any terms other than independence. The result was the so-called “Little War” (*Guerra Chiquita*) of 1878-80, fought by Maceo, Máximo Gómez, and the rebel General Calixto García who sailed from New York. The war was brief – although eastern Cuba returned to a state of full-blown conflict, it lasted but a few months. The rebel forces were betrayed by spies, isolated in the east, and many were recaptured. When Calixto García was captured a few weeks after arrival, the little war ended.⁷⁹¹

The Ten Years War became a prelude to the final war for independence started in 1895. Although Cuba was generally prosperous during the intervening years, there were increasing demands for autonomy or independence. Increasing production of beet sugar in Europe and cane sugar in the southern United States caused a collapse of sugar prices after 1884 which remained depressed until the First World War. The resulting revolution in the means of sugar production to reduce costs forced sugar producers to either expand and industrialize or go out of business. The largest producers with access to capital expanded; most of the remaining producers, to include much of the island’s plantation elite, went bankrupt. The surviving mills used railroads to transport sugar to centralized mills, eliminating the need for massive workforces at harvest time to process the cane into sugar. In addition, widespread confiscation of property of suspected

⁷⁹⁰ Thomas, *Cuba*, 264-6.

⁷⁹¹ *Ibid.*, 268-9.

rebels during the Ten Years War created a class of bitter Cuban exiles in the United States that would later support Cuban independence from Spain.⁷⁹²

The legal and moral basis for slavery had been weakened by the war; the slaves who had remained loyal to their owners remained enslaved while those who had rebelled were rewarded with freedom and in some cases small land grants. Slavery was to formally end in 1888 with a transition period of “apprenticeship” (*patronato*) but many owners who believed that wage labor was cheaper than maintaining slave labor under *patronato* freed their slaves early; slavery ended two years early by general agreement. In addition, white emigration into Cuba grew during the 1880s and 1890s, making the population of Cuba more racially balanced. This had important ramifications for the 1895 rebellion. The Ten Years War had failed to achieve independence because the western elite planter class remained firmly pro-Spanish in order to protect their investment in slaves. The rebel government relied on donations from independent-minded western plantation owners to finance the rebellion; as a result the government failed to agree on a policy that would end slavery and opposed invasion of the western provinces, a condition for military success. In addition, Spain successfully used the specter of the Haitian Revolution as a means to rally support among the middle class; even abolitionists feared a takeover by vengeful ex-slaves. Cuban society remained racially split during the 1868-78 revolution. Antonio Maceo (a mulatto) was continually suspected by Cuban whites of wanting to create a free black republic; he was relieved of command under Gómez after successfully campaigning west of the *trocha* in 1875; his very success raised fears of a black *El Supremo*.⁷⁹³

⁷⁹² Alfonso Quiroz, “Loyalist Overkill: The Socioeconomic Costs of ‘Repressing’ the Separatist Insurrection in Cuba, 1868-1878,” *Hispanic American Historical Review* 78, No. 2 (May, 1998): 305. Quiroz notes that there was no correlation between property confiscation and actual support to the rebellion (279).

⁷⁹³ Ferrer, *Insurgent Cuba*, 59.

After the war, however, Cuban nationalists began to portray blacks and mulattos who participated in the rebellion as supporters of Cuban freedom, reducing the racial animosities so long exploited by Spanish authorities. The peaceful end of slavery in the islands made the fears of a Haitian-style uprising seem overblown, while increased white immigration to Cuba before and after the Ten Years War brought a white majority to the island that no longer had to fear being outnumbered. Although these trends hardly brought universal peace and harmony between the races, they made it difficult for Spain to exploit racial fears when the next major insurrection began.⁷⁹⁴

The end of the *Guerra Chiquita* in 1880 failed to bring an end to Cuban attempts at independence; Spanish authorities discovered five major plots between 1880 and 1895. Cuban nationalists on the island joined by Cuban expatriates in the United States agitated for the end to Spanish rule in Cuba, either as a basis for independence or a basis for annexation. The most prominent of these agitators was José Julián Martí. Martí is considered by Cuban historians and the Cuban public as the hero of the Revolution of 1895, although much of the writing has been characterized as more “medieval hagiography than modern historical discourse.”⁷⁹⁵ He was a true believer convinced of the righteousness of his cause, a skilled propagandist and orator, an effective politician, and a great hater of Spanish authority. He was also strongly opposed to any U.S. influence in Cuba, fearing annexation as much as continued Spanish rule. He created the Cuban Revolutionary Party in Tampa in 1892 in order to achieve independence through armed

⁷⁹⁴ Ibid., 132-137.

⁷⁹⁵ Tarragó, “The Road to Santiago,” 69. Thomas explains his appeal to Cubans as due to “his great energy, his organizing ability, his sensuous proclamation of Cuban identity apart from that of the U.S. and by the belief that, despite his pure European origin and his long residence in North America, he was a true ‘son of the tropics’, the most Cuban of Cubans.” (317).

revolt against Spain. He recruited Maximo Gomez and Antonio Maceo to lead the military arm of the planned revolt, placing Gomez in charge.⁷⁹⁶

In Spain, the government was plagued with revolutionaries, anarchists, and a continual instability in the Cortes (parliament), which discouraged any effective resolution to the “Cuban problem,” although various reform efforts were offered to Cuba. Ironically, major concessions were offered to Cuba and Puerto Rico in February 1895 to include local control over their budgets; reforms which were never implemented due to Marti’s uprising on Feb 24, 1895.

Marti had planned several filibustering expeditions from Fernandina, Florida, to support the revolt but U.S. authorities quashed the plan on January 14, 1895 under the Neutrality Act.⁷⁹⁷ Marti then called for uprisings in Cuba on February 24th in various sites in eastern Cuba as well as within the western province of Matanzas, near Havana. The three leaders of the western revolt were arrested in Havana soon after, but the seeds of revolution were sown across the east; Gomez reported “Gunfire can already be smelt in Cuba.”⁷⁹⁸

The revolutionary cause suffered a blow on May 19th, when Marti was killed when attempting to meet Gomez in the field. It gained a martyr, however, and ever since his writings have become gospel to many Cubans – and like the Bible, his writing has been cited to support almost any perspective.⁷⁹⁹ The death of Marti also meant that Gomez and Maceo could execute the kind of economic warfare that they had advocated during the Ten Years War: the destruction of the economic base of Spanish rule on the island and the source of finance for the pro-Spanish volunteer forces by destroying all of the sugar plantations and other farms in Western Cuba.

⁷⁹⁶ Tarragó, “The Road to Santiago,” 68-70; Thomas, *Cuba*, 301-6.

⁷⁹⁷ Antonio Rafael de la Cova, “Fernandina Filibuster Fiasco: Birth of the 1895 Cuban War of Independence,” *The Florida Historical Quarterly* 82, No. 1 (Summer, 2003):16-42.

⁷⁹⁸ Maximo Gomez to Antonio Maceo, quoted in Thomas, *Cuba*, 307.

⁷⁹⁹ Thomas says that “Sentences have been extracted from the immense bulk of his work to prove almost any point of view.” (Thomas, *Cuba*, 317).

They began in October 1895, burning their way across Cuba, reaching the western tip by mid-January 1896. They eventually relented somewhat by sparing the plantations of owners willing to pay a “revolutionary tax,” although many of the estates were burned regardless from an excess of zeal. The local guerrilla groups were particularly destructive; a leader known as El Mejicano destroyed the entire San Francisco plantation while being “fighting crazy drunk.”⁸⁰⁰ The Terry plantations, one of the largest, were largely destroyed despite the marriage of a Terry heiress to the rebel general Cabrera.⁸⁰¹ The guerillas also invited reprisals by executing any Cuban enlisted in the Spanish army, even if wounded;⁸⁰² a violation of the laws of war that went underreported amongst the vast amount of pro-revolutionary propaganda and favorable reports of European reporters such as Grover Flint’s *Marching With Gomez*.⁸⁰³ The U.S. yellow press stirred up circulation by printing lurid accounts of Spanish atrocities based on fabrications created by the Cuban junta.⁸⁰⁴

Spain sent the hero of the Ten Years War, Martinez-Campos, to Cuba with 50,000 Spanish troops to quell the rebellion. However, when Gomez and his followers began to burn the western provinces the relatively pacific measures used by Martinez-Campos were insufficient to win this kind of total war being waged by the Cuban rebels; he resigned in January 1896. His replacement was up to the task: General Valeriano Weyler. Weyler was a ruthless no-nonsense veteran of the first Cuban war and the victor over Carlist rebels in Spain. He imposed classic anti-guerrilla tactics of counter-mobility and isolation achieved by dividing the island into regions using additional fortified north-south *trochas*. Counter-guerrillas were recruited to harass the rebels and

⁸⁰⁰ Ibid., 324.

⁸⁰¹ Ibid., 322.

⁸⁰² Tarragó, “The Road to Santiago,” 71.

⁸⁰³ Grover Flint, *Marching With Gomez: A War Correspondent’s Field Note-Book Kept During Four Months with the Cuban Army* (Boston: Lamson, Wolfe & Co., 1898).

⁸⁰⁴ Thomas, *Cuba*, 326.

pro-Spanish volunteers were used to garrison the small towns, freeing up the Spanish army for direct action against the rebel army. He responded eye for eye to the rebels, destroying the pro-Cuban countryside and executing anyone found armed outside of the pro-Spanish forces.⁸⁰⁵

Weyler began his counterattack against Maceo in the West. Despite two unsuccessful engagements, Maceo was generally able to avoid contact with Spanish columns in the spring and summer of 1897, destroying the canefields and the plantations that failed to pay the required tax. By the fall, however, Weyler had managed to confine Maceo's operations to the Pinar el Rio province, and scored a great coup with Maceo's death in December 1896. By the end of 1896 the three western provinces were quiet. Weyler then moved into central Cuba, where he was able to stymie the rebels under Gomez.

Although Weyler was succeeding militarily, he still had problems suppressing the insurrection, especially in the eastern region. His subordinates were generally corrupt, forcing landowners to make payments for protection. Richard Harding Davis identified why Spanish officers were invested in keeping the rebellion going: "they receive double pay while they are on foreign service, whether they are fighting or not, promotion comes twice as quickly as in time of peace, and orders and crosses are distributed by the gross. They are also able to make small fortunes out of forced loans from planters and suspects, and they undoubtedly hold back for themselves a great part of the pay of the men."⁸⁰⁶ Cuba's economy was in tatters; many sugar estates had been leveled or were idle, the workers having joined either the rebel army or the pro-Spanish guerillas in order to eat. Much of the remainder of the population were confined to garrisoned cities and towns. Weyler then embarked on a classic counter-insurgency strategy:

⁸⁰⁵ Ibid., 328-334

⁸⁰⁶ Richard Harding Davis, *Cuba in War Time* (New York: R.H. Russell, 1897), 30.

separate the rebel forces from their base of support in the civil population by confining civilians to the garrisoned towns – a strategy of concentration.⁸⁰⁷

Thus began the much-maligned Spanish policy of “reconcentration” (*reconcentrado*), which involved displacing the rural population and forcing them into controlled areas. About 400,000 civilians (a quarter of the total population) were forced into the garrisoned urban centers within 10 months of the February 1896 order.⁸⁰⁸ The American press, aided by the propaganda efforts of the junta, began to castigate Weyler, calling him “the Butcher.” Flint repeated second-hand accounts of Spanish cruelty in *Marching with Gomez*, including a *Boston Globe* article of unknown providence.⁸⁰⁹ Davis fed stories to Hearst while producing his own book, *Cuba in War Time* in 1897, illustrated by Frederick Remington. Hearst’s *New York Journal* fabricated a story about Spanish policemen conducting a strip search of three Cuban girls; the 5-column headline and story “Does Our Flag Protect Women?” caused a major stir which only subsided when the girls arrived in New York and completely denied being searched by men.⁸¹⁰ The famous exchange between Remington and Hearst occurred in early 1897 – Remington: “Everything is quiet... There will be no war. I wish to return.” Hearst: “Please remain. You furnish the pictures and I’ll furnish the war.”⁸¹¹ The US consul at Havana, Fitzhugh Lee, promoted the same cause based on the same ignorance of facts; neither Lee nor the reporters went into the countryside to independently verify the claims of the revolutionaries.⁸¹²

Weyler’s concentration orders did succeed in the short term, as did his expanded system of fortified *trochas*. They prevented the rebels from moving from one province to another, or

⁸⁰⁷ Thomas, *Cuba*, 334-5; Tarragó, “The Road to Santiago,” 71-72.

⁸⁰⁸ Smallman-Raynor and Cliff, “Cuba and the insurrection against Spain,” 335.

⁸⁰⁹ Flint, *Marching With Gomez*, 76-78, 98-109.

⁸¹⁰ Thomas, *Cuba*, 340-41.

⁸¹¹ *Ibid.*, 340, citing J. Creelman, *On the Great Highway* (1901), 177-8.

⁸¹² *Ibid.*, 343.

combining forces. However, the impact on the Cuban population was horrific, in part due to epidemic disease. Crowd disease such as smallpox broke out in the densely populated reconcentration areas. Davis reported that “The huts in which these people live at present lean one against the other, and there are no broad roads nor green tobacco patches to separate one from another. There are, on the contrary, only narrow paths, two feet wide, where dogs and cattle and human beings tramp over daily growing heaps of refuse and garbage and filth, and where malaria rises at night in a white winding sheet of poisonous mist. ...In Jaruco, in the Havana province, a town of only two thousand inhabitants, the deaths from smallpox averaged seven a day for the month of December, and while Frederic Remington and I were there, six victims of small-pox were carried past us up the hill to the burying ground in the space of twelve hours. ...There is no attempt made to police these military camps, and in Jaruco the filth covered the streets and the plaza ankle-deep.” US Marine Hospital Service (USMHS) officers stationed in major Cuban reports had similar reports: “a pest hole, known as Los Fosos... 500 people found in and around the building, and of that number over 200 were found lying on the floor sick and dying. I saw no child under 10 years of age who could be considered in good health . . . The emaciation of their bodies was startling . . . [T]he death rate is enormous.”⁸¹³ It was a repeat of the Ten Years War, Spanish troops reacting to guerilla strikes, with long futile chases over the countryside. The government could hold the fortified trochas, cities, and reconcentration camps while the rebels held sway over much of the remainder of the island, particularly in the

⁸¹³ Smallman-Raynor & Cliff, “Cuba and the insurrection against Spain,” 336; quote is by W.F. Brunner, USMHS Sanitary Inspector, from US Marine Hospital Service, *Public Health Reports* (Washington: GPO, 1897), 1151. By the end of November, 1,190 out of the 1,700 civilians sent to Los Fosos died from disease (ibid.).

Eastern provinces. It was the same story with regard to disease, the unacclimated Spanish troops joining the starving peasants in a feverish embrace of death.⁸¹⁴

In addition to smallpox, conditions were rife for epidemic outbreaks of yellow fever and enteric fever (typhoid), while measles, dysentery, malaria and tuberculosis rates significantly increased with the increasing population. Approximately 218,000 Cuban civilians died between 1895 – 98, some from undocumented causes; however, at least 4200 died from smallpox and 2600 from typhoid between February 1895 and March 1898.⁸¹⁵

The impact was by no means limited to Cuban civilians. Davis went on to say “The government's report for the year just ended gives the number of deaths in three hospitals of Matanzas as three hundred and eighty for the year, which is an average of a little over one death a day. As a matter of fact, in the military hospital alone the soldiers during several months of last year died at the rate of sixteen a day.”⁸¹⁶ When Spain moved 50,000 troops from the metropole to the island in June 1895, up to a fifth of the troops fell sick from yellow fever by August.⁸¹⁷ Since yellow fever was endemic in the low-lying coastal regions of Cuba, it was primarily the imported Spanish soldiers that died from yellow fever, while the civilian deaths from disease accounted for most of the smallpox and typhoid fatalities. Smallman-Raynor & Cliff document 7,211 deaths from yellow fever between 1895 and early 1898.⁸¹⁸ Since military personnel were hospitalized for wounds and sickness, disease could spread to the wounded as well.⁸¹⁹

⁸¹⁴ Murat Halstead, *The Story of Cuba: Her Struggles for Liberty...The Cause, Crisis, and Destiny of the Pearl of the Antilles*, 6th ed. (Akron, OH: The Werner Co., 1897), 56

⁸¹⁵ Smallman-Raynor & Cliff, “Cuba and the insurrection against Spain,” 340.

⁸¹⁶ Davis, *Cuba in War Time*, 44, 47.

⁸¹⁷ Thomas, *Cuba*, 321.

⁸¹⁸ Smallman-Raynor & Cliff, “Cuba and the insurrection against Spain,” 340.

⁸¹⁹ Thomas, *Cuba*, 342.

The Spanish effort in Cuba also had to compete against a new uprising in the Philippines for personnel and funding. Both colonial outposts demanded increasing levels of personnel and funds while both consumed soldiers, many of whom died as quickly as they could be replaced.⁸²⁰ The Spanish government was also dismayed by the high attrition rates from yellow fever, while under increasing pressure from the United States to come to a resolution in Cuba. Significant reforms were offered to Cuba in February 1897 giving significant local autonomy within the Spanish empire; the McKinley administration called them “as much as could be asked for and more than could be expected.”⁸²¹ Although by summer 1897 Weyler could claim military success, a governmental change back in Spain caused by the assassination of the Prime Minister Cánovas led to the recall of Captain-General Weyler from Cuba.⁸²² The new Spanish government provided further concessions to Cuba and Puerto Rico in January 1898, offering universal male suffrage and home rule. This led to widespread desertions from the Cuban Liberation Army and a feeling both in Cuba and in Spain that unilateral Spanish rule was ending. The Spanish government admitted to the public the horrendous losses incurred in quelling the rebellion – of 200,000 officers and men sent to Cuba since 1895, only 53,000 were still on duty in 1898, with 35,000 on other duties and 26,000 in the hospital sick. The remaining 96,000 were casualties of the war – dead from disease, not enemy action.⁸²³

Weyler later claimed that he could have successfully eliminated the rebels from the eastern provinces as he had in the west. However, this appears highly unlikely. By early 1898 an effective standstill was reached between the forces of Spain and the Cuban rebels. Neither could

⁸²⁰ Ibid., 347. Thomas is incorrect in his statement that the Spanish army in the Philippines was worn down by yellow fever; the disease did not exist on the islands. Nevertheless, disease took its toll on the army in the Philippines just as it had in Cuba.

⁸²¹ Ibid., 348, citing Dupuy de Lôme to Duque de Tetuán, *Documentos presentados a las Cortes en la Legislatura de 1898 por el Ministro de Estado*, 391.

⁸²² Thomas, *Cuba*, 350; he cites evidence that placed Cuban rebels behind the assassination.

⁸²³ Ibid., 353.

destroy the other militarily or politically. Spain could not reestablish a prosperous colony that contributed to its coffers rather than consumed pesetas like water. On the other hand, the Cubans could not defeat the Spanish forces as long as Spain remained determined to suppress the rebellion and retain her colony.⁸²⁴ But the Americans could, so Cuban rebel hopes began to focus on American intervention for a free Cuba.

The Philippine Rebellion

The Philippine Islands were discovered and claimed for Spain by Magellan in 1521 during his circumnavigation of the globe. They are named after the Prince of Asturia, who later reigned as Philip II. In 1565 Miguel Lopez de Legaspi brought Spanish rule to the islands by force of arms. Despite having conquered the islands from the native inhabitants by force, the Spanish established an official mythology that brought the islands to Spain by divine favor rather than the right of conquest. The first Spanish history of the Philippines (1788) claimed that the dominion of the Spanish monarchs over the Philippine Islands was prophesized in Isaiah. This belief in divine right, often tied to the *Reconquista*, helped rally the Spanish public behind the suppression of rebellion as well as resistance to granting independence to colonial possessions.⁸²⁵ During the 17th and early 18th centuries, the Philippines were an essential trading point for exchanging Mexican silver dollars for Chinese silks and other products, having been awarded exclusive

⁸²⁴ Trask, *War with Spain*, 23. On the other hand, Millis (*The Martial Spirit*) was much more positive about Weyler's possibilities of success, especially with Canovas' firm support. On Weyler's claim, Millis comments that "It is possible that he might have done so, and thus automatically have solved the problem. But fate intervened." Millis, *The Martial Spirit*, 80.

⁸²⁵ The theory of divine right over the islands is found in Juan de la Concepcion, *Historia General de Philipinas* (14 vols, Manila: 1788), Vol 1, Chapter 1, Part 1, as cited in John Foreman, *The Philippine Islands* (London: Sampson Low, Marston, Searle & Rivington, 1890), 3. Trask discusses the role of the *Reconquista* in Spanish resistance to yielding any of its overseas possessions in *The War with Spain in 1898*, 44. Interestingly enough, Walter Millis attributed McKinley's annexation of the Philippines for the United States "in direct response to Divine command" as part of "the last major expression of romanticism in America" in his forward to the 1965 edition of his history of the war, first published in 1931 (Millis, *The Martial Spirit*, xiv).

marketing rights with Mexico. A yearly galleon crossed the sea in either direction, generating vast wealth for the owners and Spanish officials in the Philippines despite frequent attacks on the vulnerable ships. In 1762, the British attacked and seized both Manila and Havana, demonstrating the vulnerability of the overseas Spanish empire. Both Cuba and the Philippines were returned to Spain after the war, but the exclusive market had been broken open and the galleon trade eventually ended after 50 years of declining profits.⁸²⁶

Catholic missionaries successfully converted most of the native urban population on the northern islands, but the southern islands were converted to Islam by missionaries from Malaya, Java, and Sumatra. However, most converts to both religions actually practiced a syncretized form of religion that combined traditional native beliefs with the practices of the conversion religion. Many rural tribes retained their social customs and religion, only nominally under control of the Spanish government.⁸²⁷ Even the Catholic natives were allowed to retain their traditional social and economic systems provided they converted to Christianity. Christianity tied the islands together and to Spain, rather than imported Spanish customs and systems. Spanish government officials and the small number of Spanish soldiers remained in the major urban centers, while true control of the country resided in the Catholic monastic orders, which received their instructions from their home orders in Rome rather than from the Spanish government. These orders resisted yielding any power to Christianized natives, in particular refusing to ordain Filipino priests. The wealthy merchant class created by the opening of overseas trade resented their treatment as second-class citizens under a caste system that retained power to Spaniards born in the home country or descendents of pure-blooded Spaniards born in Spanish possessions

⁸²⁶ Stanley Karnow, *In Our Image: America's Empire in the Philippines* (New York: Ballentine Books, 1989), 55-58; Francisco X Baranara, S.J. and Alexander Laist, *Handbook of the Philippine Islands*, translated from the *Compendio de Geografia* (Manila: William Partier, 1899), 15-6.

⁸²⁷ Karnow, *In Our Image*, 40.

overseas. Young educated Filipino elites rebelled against this discrimination, much as French educated Vietnamese would revolt against their French masters a generation or two later.⁸²⁸

One of these native elites was José Rizal y Mercado, born in a rich family located in Calamba, in Luzon south of Manila. He created a successful life in Europe while studying at the University of Madrid, with degrees in medicine, philosophy, and literature. However, a childhood incident in Luzon when he was struck unjustly by a Spanish policeman gave him a lifelong resentment of the Spanish colonial system; he believed that only a policy of integration where Filipinos had rights equal to native-born Spaniards, including representation in the *Cortés* (Spanish parliament), would make Filipinos content to be subjects of Spain. In 1887 he published a novel in Europe called *Noli Me Tangero* (*Tough Me Not*), the “Philippine equivalent of *Uncle Tom’s Cabin*” which, despite its “purple prose, banal plot, and [a] preachy quality,” accurately represented the conditions in Spanish overseas colonies. When smuggled into Manila, it quickly made Rizal an instant celebrity among Filipinos. A sequel translated as *The Subversive* caused himself and his family to be banned to Hong Kong by Spanish authorities. He returned to Manila in 1892 under a more liberal Governor Eulogio Depujol. There, he founded a secret society called the Philippine League, which advocated moderate reforms. When rebellion broke out in Cuba in 1896, Rizal, a physician, volunteered to serve in response to a Spanish request for doctors. However, he was arrested en route and brought back to Manila for trial as a result of a rebellion which had just been started by Andres Bonifacio, a radical reformer. Despite having rejected Bonifacio’s earlier request for support, Spanish authorities charged Rizal as the mastermind of the revolt. In his defense, Rizal pledged loyalty to Spain and publicly rejected Bonifacio’s actions, calling them “absurd and savage.” He was found guilty by a military court

⁸²⁸ Ibid., 48-49, 63-67. He notes later that an early martyr of the Philippine revolution, Jose Rizal (see later in this section) was born in the same generation as Ghandhi and Sun Yat Sen (72).

and was executed on December 30, 1896.⁸²⁹ An official investigation of Rizal's Philippine League (directed by Maj. Gen. George Davis, commanding the US Army's Division of the Philippines (military government of the island) in 1903) concluded that the League was formed to accomplish reforms "by political agitation rather than force of arms. It was based on opposition to the friars... ." ⁸³⁰

Bonifacio's movement was called a lengthy Tagalog term that is normally referred to simply as the *Katipunan* or by the initials *KKK*.⁸³¹ It was also a secret society that deliberately appropriated symbols and slogans from the Freemasons, the Catholic Church, and the Chinese Triad gangs. These appropriations led some Spanish contemporary writers to claim it was derived from Freemasonry; the Davis investigation and later historians have concluded it merely borrowed symbology to make it appear more secretive and potent. The *Katipunan* was suspected of plotting to massacre all Spaniards on the night of August 20, 1896. In response, the archbishop of Manila goaded Spanish vigilantes to make widespread arrests of Filipinos suspected of involvement in the plot; this triggered the *Katipunan* revolt prematurely, starting with an attack on the village of Caloocan (near Manila) by a largely unarmed mob on August 26th. Bonifacio exploited the panic by drawing up a list of rich and influential Filipinos who had rejected his ideas as too radical, and then leaking the list to the Spanish police. The police cooperated with an orgy of mass arrests, widespread humiliation of the Filipino suspects, and

⁸²⁹ Ibid., 68-72.

⁸³⁰ Department of War, *The Philippine Insurrection, 1896-1898: An Account, From Spanish Sources Principally, Prepared by Direction of Maj. Gen. George W. Davis, U.S. Army, Commanding the Division of the Philippines*, by Maj. John S. Mallory, First U.S. Infantry (Manila, P.I., July 1, 1903), 399 [referred to hereafter as the *Davis Investigation*].

⁸³¹ *Kataastaasang Lagalanggalang Katipunan ng mga Anak ng Bayan* (Karnow, *In Our Image*, 73).

even some extrajudicial killings. The unfortunate victims had little choice but to join Bonifacio's rebellion.⁸³²

Bonifacio declared war on the Spanish on August 29, 1896, and was joined by thousands of sympathizers. Bonifacio himself proved to be an inept military leader, but one of his lieutenants emerged as an inspirational and effective leader: Emilio Aguinaldo y Famy, who quickly became the leader of a national rebellion. Aguinaldo issued a call to arms in his native Cavite province, managing to seize the entire province within days, excepting the arsenal and fort at the town of Cavite. Governor-General Ramon Blanco (later the commander of Cuba during the war) attempted to retake the province but was humiliatingly defeated by Aguinaldo. The Spanish friars instigated a change in leadership, leading Blanco to be replaced by General Polavieja in December, 1896, who instructed his forces to "wash all offenses with blood." Polavieja, a veteran of the earlier Cuban rebellions, brutally suppressed any signs of dissent, assisted by the reinforcement of troops from Spain. By the spring of 1897 Polavieja had approximately 25,000 troops from Spain, allowing him to recapture most of Cavite province.⁸³³

The Queen Regent of Spain (Maria Teresa) found herself besieged by requests for additional troops to suppress rebellions in both Cuba and the Philippines. When Polavieja asked her for either another 40,000 troops or the authority to negotiate, she replaced him with General Primo de Rivera, who had been a previous governor 13 years before. The Filipino rebels were distracted by a fight over control of the revolution between Bonifacio and Aguinaldo, the latter having awarded himself the title of "generalissimo." Aguinaldo eventually succeeded in gaining control, but weakened the rebellion in the process. However, Aguinaldo managed to withdraw his troops from Cavite and established a strongpoint north of Manila, joined by thousands of

⁸³² Ibid., 73-4; *Davis Investigation*, 400-401.

⁸³³ Karnow, *In Our Image*, 74-5; *Davis Investigation*, 401-406. The quote is given in Karnow without attribution.

rebels from Cavite and elsewhere. Governor-General Primo de Rivera repeated attempts to dislodge him failed, while insurgent groups in other areas of Luzon continued to plague Spanish forces. By October 1897 many of the troops sent earlier from Spain were either dead or permanently disabled from disease and the rigors of combat. Although Aguinaldo's forces were also attacked by disease (smallpox and leprosy), as long as he remained a 'force in being' the revolution stayed alive. Furthermore, Aguinaldo used the opportunity to proclaim a Philippine Republic, with himself as President.⁸³⁴ By the end of 1897, Primo de Rivera was forced to confront the Queen Regent with the same demands as Polavieja, either send reinforcements to escalate the war or negotiate. However, the assassination of Canovas in August had put a Liberal government in charge in Spain, so this time Maria Christina authorized negotiations. By the end of December, a deal had been struck: In return for 800,000 pesos (half up front), Aguinaldo agreed to disarm his force and go into exile to Hong Kong. Spain declared victory, but Aguinaldo promptly reneged on the agreement. He quickly discarded his earlier promise not to rebel against Spain and sought to use the Spanish funds to buy weapons and ammunition for a return to the Philippines. In the Philippines, Spanish authorities received arms from most of the insurgents in return for payments from the remaining 400,000 pesos. At the time, Aguinaldo claimed that the Spanish agreed to significant reforms, and told that story to the rebels remaining on the islands, while the Spanish denied that any such agreement was made. The lack of reforms caused a renewal of rebellion during the first few months of 1898.⁸³⁵

This was the situation that George Dewey would discover when he arrived in the Asian theater, taking command of the US Asiatic Squadron on January 1, 1898. These prior events

⁸³⁴ Karnow, *In Our Image*, 76; *Davis Investigation*, 422. A "force in being" is a military force that exerts control of a campaign without actually engaging in combat. Both Washington and Lee used this strategy at times during the American Revolution and the American Civil War. The Philippines could not be pacified as long as Aguinaldo's force remained intact.

⁸³⁵ Karnow, *In Our Image*, 75-77; *Davis Investigation*, 423-426.

would have a significant impact on the course of the war in the Philippines – both the war between Spain and the United States and the later “Philippine Insurrection” between Aguinaldo’s insurgents and the United States.

The Road to War – The Cuban Question

The year 1898 found the future of Cuba in the hand of the rebels, led by Maximo Gomez. Would they accept the concessions of the Spanish government, or would they continue the rebellion? Although there were riots in Havana on January 12th, 1898, these were quickly suppressed by the new Captain-General Ramon Blanco; Cuba was relatively quiet thereafter and Puerto Rico remained peaceful throughout. The riots, however, provided Consul Fitzhugh Lee a basis for a frantic report of an anti-American conspiracy in Havana, asking for a naval force to be made available on call.⁸³⁶ At the time, no one knew that this request would ultimately create the spark that would grow into a war between Spain and the United States. On January 24th, McKinley decided to dispatch the *USS Maine* on the pretext of resuming normal naval visits to Cuba that had been cancelled during the previous Administration. Secretary of the Navy Long justified the decision by noting that “not only because our vessels ought to be going in and out of it [Havana] like those of every other nation, it being a friendly port, but [also], in view of the possibility of danger to American life and property, some means of protection should be at hand.”⁸³⁷

While the *Maine* remained at Havana, another incident would worsen relations between the United States and Spain. The Spanish Minister to the US, Dupuy de Lôme, wrote an indiscreet letter to the Spanish politician and newspaper editor Jose Canalejas criticizing McKinley, calling him “weak and catering to the rabble, and besides a low politician, who desires to leave a door

⁸³⁶ Thomas, *Cuba*, 356. Thomas says the rumor was “not substantiated, nor substantiable” (ibid.).

⁸³⁷ Long diary, 24 January 1898, as quoted in Trask, *War with Spain*, 24-25 (parenthetical words in Trask quote). Long provided more detail in his history *The New American Navy* – he was concerned about possible anti-American demonstrations and wanted “an asylum to American citizens should they appear to be in danger.” Long, *New American Navy*, vol. 1, 134-135.

open to me and to stand well with the jingoes in his party.”⁸³⁸ The letter was intended as a private communication, but was stolen and released to the U.S. press by the Cuban Junta in New York on February 9, 1898. Dupuy immediately submitted his resignation to his government, forestalling inquiries from both Asst. Secretary of State Day and US Minister to Spain Woodruff. The incident might have died down if not for the explosion aboard the *USS Maine* on February 15, 1898, sinking the ship in the Havana harbor. The initial *New York Times* report simply stated that “THE MAINE BLOWN UP: Terrible Explosion on Board the United States Battleship in Havana harbor ...As yet the cause of the explosion is not apparent,”⁸³⁹ but Hearst’s *New York Journal* reported that “The Warship Maine was Split in Two by an Enemy’s Infernal Machine.”⁸⁴⁰ Both Spain and the United States launched inquiries into the event, reaching opposite conclusions: the Spanish report concluded that the *Maine* sank from an internal explosion, likely from spontaneous combustion of coal dust,⁸⁴¹ while the US report concluded that the damage was caused “only by the explosion of a mine situated under the bottom of the ship at about frame 18, and somewhat on the port side of the ship.”⁸⁴²

⁸³⁸ “Insults of De Lome May Hasten Action in Regard to Cuba. Sneers At M’Kinley Found,” *The Grand Rapids Press* (published as *The Evening Press*), Feb. 9, 1898, 1. Also “DE LOME ON THE PRESIDENT: Spanish Minister Alleged to Have Insulted ...,” *New York Times*, Feb 9, 1898, 1.

⁸³⁹ “THE MAINE BLOWN UP: Terrible Explosion on Board the United States Battleship in Havana harbor,” *New York Times*, Feb 16, 1898, 1.

⁸⁴⁰ Quoted in Louis Fisher, “Destruction of the Maine (1898),” The Law Library of Congress, August 4, 2009, <https://www.loc.gov/law/help/usconlaw/pdf/Maine.1898.pdf>, accessed 2 July 2015, 2.

⁸⁴¹ “The divers, when examining the hull of the *Maine*, could not see its bottom, as it was buried in the mud, but they examined the sides and the rents in them outwards are an infallible sign that the explosion was internal.” Letter from Juan Du Bosc, Spanish Acting Chargé d’Affaires to John Sherman, the American Secretary of State, 28 March 1898. US State Department, *Foreign Relations of the United States 1898* (Washington: GPO, 1901), 1044-45.

⁸⁴² The cause of the sinking of the *Maine* was controversial in 1898 and repeated investigations in the years since have only deepened the controversy. Professor Alger of the Ordnance Bureau opined the following in February 1898: “we know no torpedo such as is known to modern warfare can of itself cause an explosion of the character of that on board the *Maine*. ... When it comes to seeking the cause of the explosion of the *Maine*’s magazine, we should naturally look, not for improbable or unusual causes, but those against which we have had to guard in the past. The most common of these is through fire in the bunkers.” (*New York Times*, Feb. 18, 1898). George W. Melville, the Navy’s Chief Engineer, thought that the explosion occurred in the magazine (H. G. Rickover, *How the Battleship Maine Was Destroyed* (Annapolis, MD.: Naval Institute Press, 1995), ix). A 1911 Army Corps of Engineers inquiry agreed with the 1898 board, concluding that the ship’s hull showed signs of being bent inward. In 1974, Adm. Hyman Rickover created a team of experts that examined the evidence from previous inquiries but concluded

Despite some initial reports that attributed the sinking of the *Maine* to an internal explosion, the results of the Board of Inquiry (released March 28, 1898) were emblazoned in headlines across the nation; the popular rallying cry became “Remember the *Maine* and the hell with Spain.”⁸⁴³ Anti-Spanish sentiment combined with prior sympathies for the Cuban rebels to generate intense public opinion in favor of Cuban intervention. The journal *The Advocate of Peace* declared in its April 1898 issue, “The feeling in favor of armed intervention, ostensibly to stop the inhumanities in Cuba, was blown into a white heat by the destruction of the *Maine*. It has been restless and aggressive in Congress and out of it.”⁸⁴⁴ The march to war had begun in earnest.

Both the McKinley Administration and the Spanish government sought to avoid a conflict through negotiations, which began shortly after the *Maine* affair. Public opinion drove both governments toward war even as the nations' leaders sought peace. The perceived Spanish perfidy over the *Maine* enraged American citizens, which was reflected and amplified by Congress, ever mindful of the 1898 midterm elections. The Spanish citizenry, on the other hand, was bound to the national myth of the *Reconquista*, the belief that Spain's overseas empire was

instead that the source of the explosion was internal, not external (ibid, 125). The National Geographic Society commissioned a computer simulation in 1998 to determine how the explosion could have occurred; they concluded that “a simple mine of a wooden keg filled with 100 pounds of black powder, if ignited either by contact or by a wire from shore, ‘could have sunk the *Maine*,’” although “the results of this analysis ‘cannot be considered conclusive, as there is no direct evidence supporting several assumptions included in the analysis.’” (Fisher, “Destruction of the *Maine* (1898),” 4). See also Thomas B. Allen, “A Special Report: What really Sank the *Maine*?” *Naval History* 12, No. 2 (1998): 30-44. The argument made before the Spanish Treaty Claims Commission (established by the peace treaty between the U.S. and Spain to settle claims coming from the war) was that “That such explosion and the resultant damages were caused by an exterior explosion: that the Government of Spain did not assure safety and security to the said battleship: that the explosion and resultant damages were directly caused by the wrongdoing and negligence of Spain and its officers and agents: and that the Government of Spain was and is responsible and liable therefor.” Charles Henry Butler, *The Responsibility of Spain for the Destruction of the United States Battleship Maine* (New York: The Evening Post Job Printing House, 1902), 2. Secretary Long also stated the position of the American government: regardless of who was actually responsible for the sinking of the *Maine*, “Spain’s international duty required her to protect the *Maine* from outside injury.” Long, *New American Navy*, vol. 1, 140.

⁸⁴³ Allen, “What really Sank the *Maine*?” 30.

⁸⁴⁴ “The Struggle for Peace,” *The Advocate of Peace* 60, No. 4 (April, 1898): 81.

God's reward for the expulsion of the Moors from Europe in the fifteenth century. Spanish national pride resented every American criticism of its Cuban policy and the concept of Cuban independence from Spain was entirely out of the question. The Spanish government feared revolution and the end of the monarchy if it relinquished its hold on Cuba without a fight. America's minister to Spain, Woodford, was told that any action to surrender its overseas empire would result in revolution. The Queen Regent Maria Christina was determined to pass on her throne to her minor son upon his majority; "She would prefer to abdicate her regency and return to her Austrian home rather than be the instrument of ceding or parting with any of Spain's colonies."⁸⁴⁵ The loss of the Cuban colony would also strike a great blow at the Spanish economy; even the Cuban elite that remained close to Spain objected to independence for financial reasons.⁸⁴⁶ The purchase of Cuba by the United States was also opposed by the Queen Regent, the government, and the people of Spain for the same reasons they were opposed to independence. Interestingly, McKinley never bothered to ask the Cubans if they were interested in being purchased.⁸⁴⁷

In the United States, the McKinley Administration attempted pursue a diplomatic solution to the Cuban question. When it was necessary for McKinley to forward the results of the *Maine* Board of Inquiry to Congress, he did so without comment. Congress, on the other hand, was increasingly restive over Spanish actions in Cuba. On March 17, 1898, Senator Proctor of Vermont gave a rousing speech reporting on a fact-finding mission recently completed in Cuba. In addition to cold-blooded comments about how easy it would be for the United States to defeat

⁸⁴⁵ Minster Woodford to President McKinley, March 19, 1898, *Foreign Relations, 1898*, 693. See also Trask, *War with Spain*, 44, 57.

⁸⁴⁶ James W. Cortada, "Economic Issues in Caribbean Politics: Rivalry between Spain and the United States in Cuba, 1848-1898," *Revista de Historia de América*, No. 86 (Jul.-Dec., 1978): 247-8. US investors in Cuba were likewise against war for economic reasons (Thomas, *Cuba*, 365).

⁸⁴⁷ John Offner, "Why Did the United States Fight Spain in 1898?" *OAH Magazine of History* 12, No. 3, The War of 1898 (Spring, 1998): 21.

Spain militarily and how business with Cuba would profit, he spoke passionately about the humanitarian crisis on that blood-soaked island, especially the suffering of the Cubans in reconcentration camps. Asst. Secretary of State Dawes prophetically noted in his diary, “War will be difficult to avoid”; if it should occur, “it will be because starvation and suffering in Cuba is such that the United States orders it stopped on the grounds of humanity and outraged justice, and that order of intervention is resisted by Spain.”⁸⁴⁸

As Spain pursued various delaying tactics McKinley continued to pressure Spain by preparing for a war he still hoped to avoid. On March 7 he introduced the “Fifty Million Dollar Bill” that appropriated \$50 million “for the National defense and for each and every purpose connected therewith to be expended at the discretion of the President” – a rare blank check given for defense and supported by an overwhelming vote of 311 to 0 in the House and 76 to 0 in the Senate. The bill had its desired effect on Spain; Woodford reported, “It has not excited the Spaniards – it has stunned them. To appropriate fifty millions out of money in the Treasury, without borrowing a cent, demonstrates wealth and power. Even Spain can see this.” On the other hand, it could make war more likely: “The vote of fifty millions by the American Congress ended all hope of autonomy, as it would certainly encourage the rebels to persevere.”⁸⁴⁹ \$30 million under the bill was used by the Navy Department to prepare for war, \$18 million of that used to purchase ships both domestically and internationally – a total of 131 ships either purchased or transferred from other government agencies, from revenue cutters to protected cruisers.⁸⁵⁰

Yet the bill did not necessarily ensure adequate preparation for offensive operations, despite Spanish anxieties. For example Secretary of War Alger interpreted the “National defense”

⁸⁴⁸ Dawes diary, 19 March 1898, quoted in Trask, *War with Spain*, 36.

⁸⁴⁹ Woodford to McKinley, *Foreign Affairs*, 1898, 684.

⁸⁵⁰ Trask, *War with Spain*, 82-83; Long, *New American Navy*, vol. 1, 151-152.

purpose of the bill literally, believing it limited his expenditures to defensive purposes only. Under his guidance, the bulk of the money was spent on coastal defenses and almost none went to the active Army in preparation for overseas deployment. Only \$20,000 went to the Army Medical Corps; that sum was used primarily for planning.⁸⁵¹ After the war, he defended his lack of preparation on Congressional wording: “If the wording of the act of Congress had permitted the War Department to make use of some portion of the \$50,000,000 for offensive preparations, much could have been accomplished between March 9th and April 23d in the way of getting ready for the impending conflict.” He failed to explain why the Navy Department had succeeded in using the appropriation for more offensively-minded preparations.⁸⁵²

Over the next two months (March and April, 1898), the Spanish government attempted to delay action in Cuba until the start of the rainy season (April – September), when they could plead for additional time given the difficulties of operations during that season.⁸⁵³ The McKinley Administration attempted to achieve diplomatic solution to the conflict, based on three conditions expressed in a March 27 message to Woodford: (1) An armistice in Cuba until October 1st, during which time negotiations between the Spanish government and the Cuban insurgents will be mediated by the President of the United States; (2) immediate revocation of the *reconcentrado* policy, with relief to the affected Cuban citizens provided by the United States, and (3) if peace terms are not reached by October 1, a final arbitration of the Cuban crisis will be

⁸⁵¹ Cirillo, *Bullets and Bacilli*, 8. \$15 million of the \$19 million allocated to the Army went to coastal defense (Cosmas, *An Army for Empire*, 77).

⁸⁵² Alger, *Spanish-American War*, 14.

⁸⁵³ This is, in part, due to the increased likelihood of disease, which hit the unacclimated Spanish soldiers the hardest. It is possible that some in the Spanish government may have also considered the disease effect on a possible US expeditionary force during the season, which might prevent any armed US intervention before the fall. Woodford told Secretary Sherman that “With the beginning of the rainy season effective movements by the Spanish regular forces in Cuba will be impossible. The Spanish Government will probably base argument on the then condition of military movements as reason for further delay.” Woodford to Sherman, Feb. 28, 1898, *Foreign Relations*, 1898, 665-6.

conducted by the President of the United States.⁸⁵⁴ It is likely that McKinley intended that Spanish acceptance of the third condition would effectively force them to accept the reality of Cuban independence.⁸⁵⁵

Congressional pressure on McKinley to act peaked in late March and early April. Trask, in his book *The War With Spain in 1898*, cites two anecdotes reflecting this pressure. An unidentified Senator told Asst. Secretary Day “...don’t your President know where the war-declaring power is lodged? Tell him, by _____, that if he doesn’t do something Congress will exercise the power,” while in the House Speaker Reed explained his failure to dissuade his colleagues with the comment, “Dissuade them! ...He might as well ask me to stand out in the middle of a Kansas waste and dissuade a cyclone!”⁸⁵⁶ It was clear that both Congress and the American public would force McKinley’s hand unless he acted to intervene or unless the Spanish government agreed to all terms regarding Cuba.

Spanish efforts to avert the crisis were divided between two strategies. The first strategy was to attempt to unite the other Great Powers of Europe (Austria, France, Germany, Great Britain, and Russia) diplomatically to pressure the United States to allow Spain to resolve her own problems with her American colonies. The most important was Great Britain, the sole power with a navy that could guard Spanish colonies in the Caribbean. However, Britain’s Foreign Minister (and Prime Minister) the Marquess of Salisbury told Queen Victoria, “any communication from this country to the United States, in the way of remonstrances, might arouse susceptible feelings and produce a condition of some danger, without any corresponding

⁸⁵⁴ Asst. Secretary of State Day to Woodford, *Foreign Relations, 1898*, 711-12.

⁸⁵⁵ Ernest R. May, *Imperial Democracy: The Emergence of America as a Great Power* (New York: Harper & Row, 1961), 152-154.

⁸⁵⁶ Trask, *War with Spain*, 43, citing Margaret Leech, *In the Days of McKinley* (New York: Harper & Brothers, 1959), 184-5 and the unpublished recollections of Vice-President Hobart’s wife Jennie in *Memories* (n.p. 1930), 61.

advantage.” He also stated that although he would not stop the other great powers from collective action, he thought it would strengthen rather than weaken the interventionists in the United States.⁸⁵⁷ The reactions of the other powers varied but primarily expressed a general commitment that the government concerned would join a joint effort toward reconciliation between Spain and the United States – provided that all of the other governments similarly agree. However, the Minister to Spain under President Cleveland, Hannis Taylor, had pointed out the difficulty in any joint action between the powers: “The interests of Europe are so diverse, and in many respects so mutually hostile, that it would be very difficult to organize a coalition against us.”⁸⁵⁸

The other Spanish strategy attempted to placate the United States by yielding on some of the points demanded by McKinley but holding firm on retaining Cuba as its possession. It had previously recalled General Weyler in October 1897 and offered home rule to Cuba the following month. The Spanish reforms and an autonomous Cuban government were accepted by many reform-minded Cubans, although the extent of Cuban support for the autonomous government is debated between historians.⁸⁵⁹ As the danger of war became more apparent, the

⁸⁵⁷ Marquess of Salisbury to Queen Victoria, April 1, 1898, in *The Letters of Queen Victoria, Third Series. A Selection from Her Majesty's Correspondence and Journal Between the Years 1886 and 1901, Volume 3, 1896-1901* (London, 1932), 239 cited in Trask, *War with Spain*, 47..

⁸⁵⁸ Trask provides this quotation as part of his discussion on the diplomatic efforts of Spain to engender support from the European powers in *The War With Spain in 1898*, 46. The original was found in Orestes Ferrara, *The Last Spanish War: Revelations in "Diplomacy"* (New York, 1937), 97. The reactions of the other European governments are in Trask, *War with Spain*, 47.

⁸⁵⁹ Louis A. Perez Jr. argues, “Beyond a commonly shared notion that independence involved minimally separation from Spain, the final structure of “Cuba Libre” remained vaguely if not often incompatibly defined by the various sectors of the separatist movement.” (Pérez, “Cuba between Empires,” 473) Some wanted annexation by the United States; some wanted a temporary protectorate under the United States that would ultimately result in independence; and some wanted immediate and total independence. Rafael E. Tarragó argues, “Given the alternatives, the decision by Cuban nationalist reformists to cast their lot with the Spanish government seems justified, because they wanted Cuba to become a modern autonomous state -neither a possession of the United States nor an independent but militarized and unstable Hispanic republic.” (Tarragó, “The Road to Santiago,” 80). Hugh Thomas makes clear in *Cuba* that the rebel generals all sought immediate independence while the autonomous government in Cuba declared in a message to McKinley on April 7, 1898 that “Even though there are some Cubans now in arms, there are an immense number who accept autonomy and are disposed to work with zeal, under this form of government, to re-establish peace and prosperity ... The Cuban people are an American people and have as a result a perfect right to govern themselves...” (Thomas, *Cuba*, 377) Captain Sigsbee of the *USS Maine* reported to Secretary Long in 1898 (before his ship blew up) that “Autonomy appears to be truly acceptable only to Spaniards who have raised families

new Spanish Minister Polo de Bernabé announced on March 31 that the reconcentration order had been cancelled in the “western provinces” of Havana, Matanzas, Santa Clara and Pinar del Rio.⁸⁶⁰ The Spanish ministers for foreign affairs and for the colonies also told Minister Woodford the same day that the *Maine* destruction would be submitted for arbitration, Spain would accept any assistance from the US government to aid the reconcentrados, and would “not, on its part, find it inconvenient to accept at once a suspension of hostilities asked for by the insurgents from the general in chief, to whom it will belong in this case to determine the duration and the conditions of the suspension.” However, Woodford noted that these concessions did not meet McKinley’s requirements and “does not mean immediate or assured peace. It means, when read with the other, continuation of this destructive, cruel, and now needless war.”⁸⁶¹

For the putative peacekeepers, time was running out. Secretary of State Sherman warned Woodford on April 4 that he and his staff needed to be prepared to depart Spain on a moment’s notice, as “Congress may very possibly take decisive action middle or end of this week.” The next day, Woodford asked McKinley if an immediate six month suspension of hostilities in Cuba by the Spanish would prevent “hostile action” by Congress. McKinley responded through Asst. Secretary Day that he “highly appreciates the Queen's desire for peace. [But] He can not assume to influence the action of the American Congress beyond a discharge of his constitutional duty in transmitting the whole matter to them with such recommendation as he deems necessary and expedient.”⁸⁶² On April 10, Captain-General Blanco declared an armistice in effect. At this point

in Cuba and whose lives and businesses are linked with the island. The insurgents demand independence, and the Spaniards who are in Cuba to make money, and in the expectation of returning to Spain, are irreconcilably in favor of the old order of things.” Sigsbee to Long, Feb. 8, 1898, *Foreign Relations, 1898*, 673.

⁸⁶⁰ Polo de Bernabé to William Day, March 31, 1898, *Foreign Relations, 1898*, 725. The definition of “western provinces” was provided in a follow-up message between the two also dated March 31 (*ibid.*).

⁸⁶¹ Woodford to Day, March 31, 1898, *Foreign Relations, 1898*, 726-7.

⁸⁶² Sherman to Woodford, April 4, 1898, *Foreign Relations, 1898*, 733; Woodford to McKinley, April 5, 1898, *ibid.*, 734-5. As a face-saving measure, the Queen Regent proposed issuing the suspension proclamation “at the request of the Holy Father in this Passion Week and in the name of Christ” Day to Woodford, April 5, 1898, *ibid.*, 735.

the Spanish had met (at least partly) two of the three points McKinley had demanded on March 27 – the end to reconcentration (across the entire island, not only the western provinces)⁸⁶³ and an armistice (although Spain refused to allow it to continue through the rainy season). However, Spain had refused to budge on arguably the most critical of the three demands – an arbitration that would result in eventual Cuban independence.

McKinley finally took the step he had done his best to avoid since the *Maine* disaster created a massive public demand for US intervention in Cuba. On April 11 he sent a message to Congress asking it “to authorize and empower the President to take measures to secure a full and final termination of hostilities between the Government of Spain and the people of Cuba, and to secure in the island the establishment of a stable government, capable of maintaining order and observing its international obligations, insuring peace and tranquility and the security of its citizens as well as our own, and to use the military and naval forces of the United States as may be necessary for these purposes.”⁸⁶⁴ In his message, McKinley discussed the various types of intervention that the United States could pursue in order to bring about a swift end to the Spanish-Cuban war: “Recognition of the insurgents as belligerents; recognition of the independence of Cuba; neutral intervention to end the war by imposing a rational compromise between the contestants, and intervention in favor of one or the other party.” The virtues of the different approaches were briefly argued, with a final recommendation in favor of the “neutral intervention.”⁸⁶⁵ Congress debated the recognition of the Cuban insurgents as the government of a free and independent Cuba; a resolution for recognition passed the Senate but failed in the House by a close vote of 178 to 156. A compromise that required Spain to immediately withdraw

⁸⁶³ Order issued by Governor-General and Captain-General Ramon Blanco in Habana, Cuba, March 30, 1898, transmitted by Minister Polo de Bernabé to William Day, April 5, 1898, *Foreign Relations, 1898*, 738.

⁸⁶⁴ Message from the President to the Congress of the United States, April 11, 1898, *ibid.*, 760.

⁸⁶⁵ *Ibid.*, 755. This section is actually a quote from a previous message to Congress the previous December.

its forces and government agents from Cuba passed instead, with the significant addition of an amendment by Senator Teller of Colorado, which declared that the United States rejected any outcome that involved US annexation of Cuba.⁸⁶⁶

Senator Lodge, long a proponent of Cuban intervention, regarded the war vote as inevitable. Once the President had “exhausted diplomacy” Congress had but “one weapon—the war power; and when a President calls in Congress in a controversy with another nation, his action means that Congress, if it sees fit, must exercise its single power, and declare war. On this sound ground, which is constitutionally the only ground possible under such conditions, Congress proceeded to act.”⁸⁶⁷ Regardless of its inevitability, America was going to war.

⁸⁶⁶ Trask, *War with Spain*, 52-56.

⁸⁶⁷ Lodge, *The War With Spain*, 36.

CHAPTER 8

AMERICA GOES TO WAR

For an army or navy, mobilization consists of raising men and materiel and transforming them into fully manned and equipped military units. Mobilizing men consists of bringing peacetime forces together into larger unit formations, recruiting new personnel for an expansion of the peacetime force (Regulars) as provided by law, calling up and federalizing reserve forces,⁸⁶⁸ and calling up and inducting volunteers. These men are then added to or formed into combat units to complete mobilization. Training is the process of making the personnel mobilized into combat-ready soldiers, proficient with both individual drill and serving as part of larger units. Both officers and men required training, but most officer training consisted of learning how to operate as part of a brigade, division, and corps. Deployment is the process of moving combat units from base to a combat zone. For materiel, mobilization involves the issuance of arms, ammunition, supplies and equipment from warehouses to units and the purchase of new materiel from government arsenals or civilian contractors. Some materiel may also be transferred from other government agencies to the War Department (or Navy Department for naval materiel⁸⁶⁹).⁸⁷⁰ Once war loomed on the horizon, it was necessary for the United States to transition from the small, peacetime force whose ground component (army) was one of

⁸⁶⁸ In 1898 this was done on an individual basis, but the reserve (National Guard) unit maintained its identity and leadership if enough of its men volunteered.

⁸⁶⁹ 23 ships were transferred to the navy from other government agencies for the war.

⁸⁷⁰ FM 1-02, *Operational Terms and Graphics* defines mobilization as “The process by which the Armed Forces or part of them are brought to a state of readiness for war or other national emergency. This includes activating all or part of the Reserve Components as well as assembling and organizing personnel, supplies and materiel” while demobilization is defined as “The act of returning the force and materiel to a premobilization posture or to some other approved position.” (1-57; 1-128). In 1898, mobilization included recruiting volunteers and creating new volunteer regiments, brigades, and divisions, a practice dropped in the 20th century.

the smallest in the developed world⁸⁷¹ to a wartime force capable of confronting and defeating the forces of Spain in locations spanning the globe. Navy ships needed to be concentrated into squadrons that could accomplish specific missions such as defending the American eastern seaboard, blockading Spanish possessions, and defeating Spanish fleets in the Caribbean and Southeast Asia. The Army needed to pull troops dispersed in small posts across the nation into concentration points where regiments could be combined to form brigades, divisions, and corps. Both the Army and Navy needed to be significantly expanded in order to counter tens of thousands of Spanish troops located in the major overseas colonies of Cuba, Puerto Rico, and the Philippines and defeat Spanish fleets in the Caribbean, the Philippines, and potentially off the coast of Spain itself. Acquisition of ships and materiel became possible after the passage of the “\$50 Million Dollar Bill” provided the funds to the services. Expansion of the Army and Navy as well as the activation of reserve forces required legislative action.

⁸⁷¹ Commanding General Miles noted that the 25,000 man Army was “not even sufficient to have properly guarded our seacoasts, in the event of a war with a strong naval power.” Miles, “The War with Spain. – I,” 515.

Mobilization – Navy

The destruction of the *USS Maine* on February 15, 1898 made the prospect of a war with Spain likely. The Navy used the “\$50 Million Dollar Bill” to purchase or lease 103 warships and auxiliary vessels, adding to 28 vessels transferred from other government departments.⁸⁷² In March 1898, Secretary Long formed the Naval War Board to provide him advice on naval strategy and operations. The Board included Captain Alfred Thayer Mahan, who quickly became the dominant member. The Navy began to concentrate forces in positions suitable in case of war. The North Atlantic Squadron under Rear Admiral Sicard was kept at Key West, Florida, where it had been engaged in winter exercises. Captain Sampson was promoted to Rear Admiral and assumed command of the squadron on March 26, after Sicard’s retirement for health reasons. A Flying Squadron was organized in Hampton Roads under Commodore Winfield Scott Schley, with the initial mission of protecting the eastern seaboard against a possible attack by a Spanish fleet under Admiral Pascual Cervera, still anchored in Spain. Commodore John Howell was recalled from Europe to command the Northern Patrol Squadron, which assumed responsibility for the defense of the seaboard from Delaware to Maine. Finally, an Auxiliary Naval Force was formed centered on eight old iron monitor-class ships for the defense of several US ports.⁸⁷³

A major concern of the Navy Department was the expansion of the Navy to man the expanding fleet. The peacetime navy had 1,232 officers (both line officers and others such as engineer, medical, chaplain, and pay officers) and 11,700 enlisted men. “Bright, eager, experienced men” were offered volunteer or acting commissions and others were enlisted to

⁸⁷² The purchase of warships overseas was also conducted to keep them out of Spanish hands. Trask, *War with Spain*, 82

⁸⁷³ Hayes, “War Plans and Preparations” unnumbered. See also Chadwick, *Relations*, vol. 1, 8-19.

bring the navy to a wartime strength of 2,088 officers and 24,123 enlisted men. In addition more than 4,200 naval militiamen were federalized. Many of these were much better prepared than their National Guard counterparts; impressively Long later reported that “the New York naval brigade reported, uniformed, armed, equipped, and ready for duty, within six hours, and the Massachusetts naval brigade in similar condition within eight hours.” Naval militia were also used to create the auxiliary naval force of 41 vessels including the eight monitors.⁸⁷⁴

On February 25, 1898, Secretary Long had the misfortune of taking the day off, leaving Roosevelt as Acting Secretary. Roosevelt promptly exploited this fact, issuing various orders to the fleet; Long noted in his diary that “He has gone at things like a bull in a china shop... .” When Long returned the next day he reviewed the orders, canceling some but allowing others to stand. An important order that was retained instructed Commodore Dewey to concentrate at Hong Kong, keep his ships coaled and ready for action, and “in the event of declaration of war [with] Spain, your duty will be to see that the Spanish squadron does not leave the Asiatic coast, and then offensive operations in Philippine Islands.” Although Roosevelt may have rushed matters, this instruction was simply a reflection of current Navy planning in case of a war with Spain.⁸⁷⁵

By April 15, Long reported that “the Navy of the United States was ready for the outbreak of hostilities. The North Atlantic fleet at Key West covered Cuba; the Flying Squadron at Hampton Roads stood ready to defend our own coast, or to threaten that of Spain, and the Asiatic Squadron at Hongkong only awaited information of the outbreak of hostilities.”⁸⁷⁶ The Naval

⁸⁷⁴ Long, *New American Navy*, vol. 1, 159-160.

⁸⁷⁵ Long Diary, 26 February 1898, pp. 169, as cited in Trask, *War with Spain*, 80. Roosevelt to Dewey, February 25, 1898, Department of the Navy, *Appendix to the Report of the Chief of the Bureau of Navigation, 1898* (Washington: GPO, 1898), 23.

⁸⁷⁶ Department of the Navy, *Report of the Secretary of the Navy for the Year 1898* (Washington: GPO, 1898), 5.

War Board recommended the strategies that were to be used in the war against Spain: First, to conduct naval operations against the Spanish West Indian colonies of Cuba and Puerto Rico, to blockade the islands and prepare for direct action against Cervera's fleet when it arrives in the Caribbean. Once the Spanish fleet in the Caribbean was defeated, ships might be detached for operations against the coast of Spain. Second, to conduct naval operations in the Philippine Islands to neutralize or destroy the Spanish Asiatic fleet and to seize and hold the capital at Manila. Third, to support Army land operations against Cuba and Puerto Rico once the Army has had time to mobilize, train, and equip an expeditionary force against the two islands. The Flying Squadron and Northern Patrol Squadron combined with Army coastal defenses would protect the US coastline in the event Cervera attempts operations against the homeland rather than against US naval forces in the Caribbean.⁸⁷⁷

Upon declaration of war, Sampson's North Atlantic fleet was ordered to blockade the northern coast of Cuba and on April 24th Dewey's Asiatic Squadron was ordered to "Proceed at once to the Philippine Islands. Commence operations at once, particularly against the Spanish fleet."⁸⁷⁸ The first major engagement of the Spanish-American War was about to begin.

⁸⁷⁷ Trask, *War with Spain*, 89.

⁸⁷⁸ *Report of the Secretary of the Navy for the Year 1898*, 5-6.

Mobilization - Army

As discussed previously, the Army did little preparation for the war under the \$50 Million Dollar Bill. Mobilization had to wait for the weeks just prior to the formal declaration of war. The Navy had the advantage of being able to quickly expand the fleet through purchase provided the funds are available (which they were in the \$50 Million Dollar Bill).⁸⁷⁹ Expansion of the Army for wartime service required Congressional action, as the entire Army consisted of approximately 28,000 men spread across small posts throughout the country. Formations were of regimental size or smaller, leaving field grade and junior officers (who joined after the Civil War) without any experience in being part of brigade, division, or corps-sized units.⁸⁸⁰ Even the senior officers with experience in the previous war had not commanded these larger-sized units for decades. State militias had about 114,000 officers and men, who were generally poorly trained and equipped.⁸⁸¹ The conflict between National Guard officers and Regular Army officers has been discussed previously. The National Guard Association insisted that the Guard units be called up as units, under their own officers – providing Guard members and officers a chance at martial glory without the stigma of serving under West Pointers. This brought them into conflict with the Regular Army establishment, which was committed to the traditional notion of using Guard units “as a home defense force and a pool of recruits and replacements for the field armies.” These contrasting views were irreconcilable prior to the start of the war and

⁸⁷⁹ In addition to purchasing ships from other countries, the Navy converted merchant ships and ships provided by other governmental agencies. Trask, *War with Spain*, 82-83.

⁸⁸⁰ Regiments in 1898 were composed of about 1,000 men when at full strength. Brigades typically had 2 to 3 regiments, divisions had 2 or 3 brigades, and Corps had multiple divisions (numbers could vary when deployed, as these were all considered to be temporary organizations in the 19th century).

⁸⁸¹ Trask, *War with Spain*, 145-6; Cosmas, *An Army for Empire*, 1, 5.

were to significantly impact mobilization at the start of the war.⁸⁸² Legislation was necessary to expand the existing Regular force and to define under what conditions Guard units and individual volunteers would be called into federal service for the war.⁸⁸³

The first attempt to create legislation for expanding the Army for wartime service was introduced by Representative John Hull (R-Iowa), Chairman of the House Committee on Military Affairs on March 17, 1898. The Hull Bill called for an expansion of the Army from 28,000 to 114,000 troops through recruitment of volunteers for Army service. A coalition of southern Democrats and Populists that were strong supporters of their state Guard units blocked the bill on the basis that it would not allow these units to serve in operations against Spain, denying their officers and men the glory (and political power) resulting from service in a widely popular war. General Miles offered his own plan for Congressional consideration on April 9. It called for expansion of the Army to 62,000 to form a core of troops for overseas deployment, augmented with 50,000 US volunteers. An additional 50,000 men from Guard units would be used to man coastal defenses. This plan, he believed, would permit fielding an expeditionary

⁸⁸² Cosmas, *An Army for Empire*, 43-44. Despite the uncertainty over federalization of Guard units, the War Department increasingly provided assistance to the National Guard in the 1880s and 90s, ordering Regular officers to Guard encampments to inspect and assist the units, as well as providing older Springfield rifles starting in 1897 as the Regular Army transitioned to the Krag-Jorgenson (*ibid*, 46).

⁸⁸³ Although some legislation on the role of the militia had been enacted during the nineteenth century, the 1792 Militia Act was still the foundation of government service. Unfortunately many of the provisions were out of date. Francis Greene noted in 1892 that "This law [1792 Militia Act] requires every able-bodied male citizen between eighteen and forty-five years of age to "be enrolled in the militia." The enrollment is to be made by the captain of every company sending notice "by a proper non-commissioned officer" to "every such citizen residing within the bounds of his company." After his enrollment the citizen is to "be constantly provided with a good musket or fire-lock, of a bore sufficient for balls of the eighteenth part of a pound, a sufficient bayonet and belt, two spare flints," and many other articles which can now be obtained only by loan from a museum of antiquities. .. It is thus seen that under the law of the United States as it exists to-day—which, however, is in direct conflict with the law of the State—the captain of any militia regiment in New York can enroll all the able-bodied citizens of that city in his company, and call upon them to attend muster and drill, duly provided with flint-locks and powder-horns." Francis V. Greene, "The New National Guard," *Century Illustrated Magazine* XLIII, No. 4 (Feb., 1892): 484. See also Cosmas, *An Army for Empire*, pp. 6-7; Graham Cosmas, "From Order to Chaos: The War Department, the National Guard, and Military Policy, 1898," *Military Affairs* 29, No. 3 (Nov. 1, 1965): 105-121.

force of 100,000 men.⁸⁸⁴ This too, was dead on arrival, as it failed to offer National Guard units and officers the chance for glory through overseas deployment.

Given the power of pro-Guard politicians to block fielding an all-Regular force, The War Department began a series of negotiations with these politicians to define a politically acceptable process for fielding an army for war. The final plan that emerged from these negotiations called for an initial call-up of soldiers that would be restricted to National Guard troops, who could volunteer as individuals or as entire units, under a quota system based proportionally on state population. If Guard units volunteered as intact units, they could keep their own officers but would serve as federal forces under War Department control. The command and officer structure was carefully defined to permit both an opportunity for Guard officers to serve in their respective ranks as well as to provide some quality control through efficiency boards that would review Guard officer qualifications. Staff and general officers would be commissioned by the President but state governors had control over company and field-grade officers (colonel and below). In addition, three regiments of volunteer cavalry were authorized for direct recruitment under federal control. This compromise plan was adopted into law on April 22. The First Cavalry Regiment of US volunteers later became famous as Roosevelt's "Rough Riders." An initial problem with mobilization then occurred when President McKinley issued his call for volunteers under this law. The War Department had planned for a force of 60,000 men; McKinley instead called for 125,000 men – a number large enough to permit enrollment of the entire National Guard if they chose to volunteer. It was also a number that exceeded War Department expectations or capacities to effectively accommodate. After the National Guard lobby had been

⁸⁸⁴ Trask, *War with Spain*, 151; Cosmas, *An Army for Empire*, 82-89; 91.

appealed, Congress then passed an additional bill that expanded the Regular Army to 64,719 men, to include a 20% pay increase for wartime service.⁸⁸⁵

While Congressional negotiations for volunteer service were underway, the War Department acted to mobilize the Regular Army and concentrate them in four Southern locations: New Orleans, Mobile, Tampa, and Chickamauga National Park in Georgia near the Tennessee border. The three ports were intended to be possible embarkation points for movement to hostile shores in the Caribbean, while Chickamauga was to serve as a training camp with direct rail communication to Atlantic ports for further deployment overseas. The Southern locations were also chosen to allow troops to acclimate to tropical climate conditions before deployment.⁸⁸⁶

Recruitment under the two bills was largely successful. Recruitment for the regular army was somewhat inhibited by many men's preference for volunteer service rather than Army enlistment; nevertheless the Army managed to expand to 58,688 men by August 1898 (however, most of these men were recruited too late to actually serve during the brief war). Most of the National Guard units enrolled en masse with a few notable exceptions like the 7th New York Infantry, officered and partly manned by New York's social elite, who refused to put themselves under the orders of West Pointers, who they considered socially inferior. President McKinley then ordered a second call for 75,000 volunteers on May 25, 1898. Most of the volunteers would be used to fill gaps in the Guard units, but some of the men recruited went into additional federal regiments authorized by a Congressional bill passed on May 11th, which called for three regiments of volunteer Engineers and ten infantry regiments comprised of men assumed to be immune to yellow fever. Four of these regiments were manned by black volunteers, who were considered to be immune from yellow fever as a result of their race. The remaining six were to

⁸⁸⁵ Trask, *War with Spain*, 151-153; Cosmas, *An Army for Empire*, 93; Cosmas, "From Order to Chaos," 117-119.

⁸⁸⁶ Cosmas, *An Army for Empire*, 92; Trask, *War with Spain*, 151.

be filled by whites who had survived a previous attack by yellow fever, thus acquiring immunity.⁸⁸⁷ Unfortunately, none of these regiments proved to be immune in the field; blacks without previous exposure were no more immune than their white counterparts who lied about their previous exposure in order to serve during the war.⁸⁸⁸

According to Cosmas, McKinley called up the additional 75,000 men in order to ensure that there would be an adequate force for the Cuba and Puerto Rico expeditions in addition to the men sent to seize the Philippines. The order came as a surprise to the Army staff bureaus, who saw no need for additional manpower and had no plans for nor capacity to arm and equip the men. In the end, many of the units responding to the second call never left their state camps.⁸⁸⁹ They did, however, tax the already overburdened mobilization. President McKinley can be faulted for calling up additional forces without coordinating with the War Department exactly when and how they would be accommodated in the mobilization process. An exception to that, however, were the presumed immune regiments, which should have been included in the initial planning and been made available for deployment as part of the initial Cuban invasion force.

Another hindrance to Army mobilization was the antiquated command and control structure of the Army and War Department. The Army was nominally led by the Commanding General of the Army, the senior general in the service. He commanded all of the line troops (not staff) in the Army's infantry, cavalry, and artillery regiments. All orders from the President in his role as

⁸⁸⁷ Trask, *War with Spain*, 155-156; Cosmas, *An Army for Empire*, 105-106, 126-128. Plans originally called for five of the regiments to be manned with black recruits, but this was later reduced to four. Cunningham, "The Black 'Immune' Regiments," 1.

⁸⁸⁸ The St. Louis Post-Dispatch questioned their immunity, stating that "The so-called 'immunes' who will take the place of Gen. Shafter's forces at Santiago are not in many cases, it is believed, really immune and it, therefore, is probable that some of them will fall victims to the climate." "ARE THESE SOLDIERS REALLY IMMUNES?" *St. Louis Post-Dispatch*, Aug 7, 1898, 1. Also see for example "IMMUNES NOT IMMUNE.: SIX CASES OF YELLOW FEVER IN THEIR REGIMENT," *Detroit Free Press*, Sept. 9, 1898, 1; "MORE YELLOW JACK: IT BREAKS OUT IN THE FIFTH 'IMMUNE' REGIMENT," *Louisville Courier-Journal*, Sep 9, 1898, 1; both referring to an outbreak in the Fifth Immune Regiment.

⁸⁸⁹ Cosmas, *An Army for Empire*, 128-129.

Commander in Chief to the line were supposed to pass through the Commanding General and the Military Departments (which divided up the United States geographically; each department commander exercised command over the troops in his department). The department commander had authority over the scattered garrisons in his department, but formations larger than a regiment could only be created *ad hoc* in peacetime for battling the Indians, serving as strikebreakers, or conducting training maneuvers – the Army’s missions during the peacetime era. If larger formations (division and corps) were created, they could be commanded either by the department commander of the region within which the formation operated, or they could be commanded directly by the Commanding General in Washington.

The Army’s administration was run by ten staff bureaus under the direct authority of the civilian Secretary of War (with two exceptions noted below). Each bureau was run by a brigadier general appointed to the senior staff position (such as Surgeon General or Adjutant General), who had staff officers under his direct command. Three bureaus were administrative – the Adjutant General, who managed personnel and all correspondence, to include all orders issued by the Commanding General or the Secretary of the Army; the Inspector General, who regularly inspected all Army installations to ensure that they were being run according to regulations, and the Judge Advocate General, the legal arm of the Army. The other seven were logistical – the Quartermaster General, who bought, stored, and issued all supplies to include horses and mules, rented areas for garrisons, depots, or maneuvers, and provided all transportation (rail and ship) through charters; the Subsistence Department, which bought and issued all foodstuffs; the Ordnance Department which built, tested, stored, and issued all weapons and ammunition and related materials; the Corps of Engineers who built forts, buildings, fortifications, etc. as well as managing national engineering projects such as river and harbor improvements and dams; the

Signal Bureau, which provided and maintained communications links through the use of signal flags, telegraphs, and telephones; the Pay Department, which managed the Army's finances and paid troops; and the Surgeon General, who ran the Medical Department which supervised Army and contract surgeons and hospital corpsmen as well as running hospitals and providing sanitation advice to line commanders. Except for the Adjutant General and Inspector General, who responded to orders from the Commanding General, the staff bureaus were independent of the uniformed commanders and responded only to orders from the Secretary of War. This split command structure created tremendous ambiguity over who actually ran the Army. Unlike today, where all uniformed officers are under the command of a civilian Secretary, neither law nor regulations defined the role of the Commanding General to the Secretary of War. Before the Civil War the Commanding General was generally assumed to be subordinate to the Secretary, but after the war General Grant's reputation and direct relationship to the President gave Commanding General Grant co-equal status, with both Secretary and General subordinate only to the President. This precedent clouded the relative status of the two offices after Grant left the army. In practice the ability of the Secretary to issue orders to both line and staff made the Commanding General somewhat powerless with little political influence. When Nelson Miles took over as Commanding General in 1895, he refused to subordinate himself to the civilian Secretary. His stubbornness got him nowhere, as Alger largely ignored him while running the Army. It did, however, poison the relationship between the two men which would have significant ramifications as the country prepared to go to war.⁸⁹⁰ This ambiguity also made the Adjutant General the most influential officer on the staff, as all orders ran through him; the

⁸⁹⁰ Edward Ranson, "Nelson A. Miles as Commanding General, 1895-1903," *Military Affairs* 29 No. 4 (Feb. 1, 1966): 182.

Adjutant General also ran the recruiting offices, mobilized troops, and oversaw the collection of military intelligence.⁸⁹¹

President McKinley was also stymied by the split command structure. Commanding General Miles and Secretary of War Alger were barely on speaking terms as a result of several years of internecine fighting before the war. Alger kept busy managing the various staff bureaus but quickly proved to be erratic and often incompetent in his attempts to command the department. For example, on May 8 he issued peremptory orders to Miles to take 70,000 men and seize Havana. Neither troops nor the arms and supplies to equip them were available; furthermore, the plan was not coordinated with the Navy Department, which would have to supply escorts and support for the landing and seizure of a beachhead in Cuba.⁸⁹² Miles attempted to provide the President with advice on strategy, but McKinley mistrusted Miles and increasingly ignored his advice as time went by.⁸⁹³ McKinley brought former Commanding General Schofield back to Washington to serve as his confidential military adviser, but his advice was often not sound and his very presence undermined Miles' position as Army commander. By June, Schofield found his position untenable and left the capital. McKinley increasingly began to rely on the advice of Henry Corbin, the Adjutant-General, who was perceived as neutral in the political squabbling that absorbed the War Department.⁸⁹⁴

The split command structure also made it more difficult for the War Department to respond to the mobilization of troops. The number of troops President McKinley called up for political reasons was much larger than the War Department had prepared itself for, while the prewar focus

⁸⁹¹ Cosmas, *An Army For Empire*, 10-18; Trask, *War with Spain*, 146-148.

⁸⁹² Trask, *War with Spain*, 165. Trask hypothesizes that Alger may have deliberately attempted to make Miles look bad by issuing the order.

⁸⁹³ Miles was vain and egotistical. He frequently disagreed with McKinley's policy decisions and constantly interfered with the operations of the staff departments. This further alienated him from the President and the War Department. Cosmas, *An Army for Empire*, 56; 137.

⁸⁹⁴ Cosmas, *An Army for Empire*, 133-134; Trask, *War with Spain*, 169-170.

of planning and appropriations on the Navy rather than the Army prevented any significant preparation by the War Department or the Commanding General. The staff bureaus were never provided advance notice of major policy decisions such as the timing and size of the volunteer troop call-up; this made it impossible to prepare for their arrival beforehand. In addition, regulations also made preparations a nightmare. For years, Congress had conducted economy drives to reduce the cost of the armed forces, and regulations focused more on fiscal accountability rather than flexibility or responsiveness. For example, the Army was forced to sell most of its large 6-mule wagons during the second Cleveland Administration in order to save money. There was no civilian demand for these large wagons, thus at the start of the war the Quartermaster Department had neither the wagons nor suppliers to purchase wagons from. The result was a transportation nightmare. The Army bought 3,000 lighter 4-mule wagons used by farmers but these lightweight wagons were poor substitutes for the rugged militarized versions that could haul more supplies than their flimsy civilian counterparts. The Army still had a significant shortage of wagons at the end of the war.⁸⁹⁵ After the war, the Dodge Commission concluded in its report to the President that “The economy of previous years, by which nearly every article of equipment not immediately needed by the Army was disposed of and no provision made for emergencies, rendered immediate effective expansion of the Army impossible.”⁸⁹⁶

The same was true for medical supplies. Inspector-General for the Seventh Army Corps Lt. Col. Curtis Guild Jr. expressed this in his report on the Second Division of the corps: “Insufficient appropriations year after year for the Army by Congress, leaving the War Department without proper reserve supply of material for instant issue at the outbreak of a war,

⁸⁹⁵ Cosmas, *An Army for Empire*, 134, 152-153.

⁸⁹⁶ *Dodge Commission Report*, vol. 1 (Report to the President), 119.

were never more glaringly displayed than in the delay to furnish the supplies for the sick. The responsibility for the condition of the sick soldiers, as for the lack of proper equipment, lies across the shoulders of the American people who have welcomed the sham "economy" of cheap politicians, and now that the stress of war has come blame the War Department because it can not immediately issue equipment and supplies which it has had no money to manufacture and accumulate for just such sudden needs."⁸⁹⁷ The state National Guard units were supposed to have medical supplies and equipment for their units, but 16 states had no supplies and most of the remainder had limited quantities; as a result most of the Guard units reported to the national encampments without necessary medical supplies.⁸⁹⁸

The states were supposed to supply the National Guard troops with their uniforms, equipment such as tentage, mess kits and the like, and arms. When many of the units arrived at their mobilization camps missing much if not all of their clothing, arms, and equipment, it made it almost impossible to provide adequate logistical support to these units during their first few weeks in camp.⁸⁹⁹ Quartermasters, ordnance officers, and others worked night and day to alleviate these shortages, but the negative impressions left by the initial shortages left the troops, the press, and the public the impression of widespread incompetence and inefficiency. Some of the inefficiency was real, resulting from overly cumbersome peacetime regulations.

⁸⁹⁷ Report of Seventh Corps Inspector-General Lt. Col. Curtis Guild Jr. to the Inspector-General of the Army, August 24, 1898, *Dodge Commission Report*, vol. 1 (Appendices), 418.

⁸⁹⁸ *Dodge Commission Report*, vol. 1 (Report to the President), 173.

⁸⁹⁹ For example, the Inspector General reported the following on May 22, 1898 after inspecting the First Division, First Corps at Camp Thomas: "The deficiencies arising from organizing and drilling regiments of recruits representing various States, such as men of certain organizations of infantry, artillery, and cavalry, being without arms, horses, or cannon, are doubtless well known, and the medical department is said to be without some of the simplest supplies." On May 29th, he noted the following for the Second Division: "two regiments without arms, and some other regiments have none for 80 to 40 per cent of men, and guards walk posts with wands. Many rifles, especially older models, even if not already unserviceable, can hardly be expected to last through a campaign. An issuing arsenal and repair shop seem needed. Lack of uniforms, especially underclothing, noted nearly everywhere..." Surgeon-General Sternberg requested that each state provide medical supplies from "the field medical equipment of your National Guard" but "unfortunately, many of the State medical departments had no such equipment." *Dodge Commission Report*, vol. 1 (Appendices), 275, 277, 681.

Another source of inefficiency came from the requirement that the brigadier general in charge of each staff bureau had to personally sign off on decisions made by his subordinates, which left these officers mired in detail with insufficient time to strategize and plan ahead. Surgeon-General Sternberg later admitted that he “not had time to consider important questions which I should at times have given several hours to. I devoted all the time I had.”⁹⁰⁰

The state National Guard units were also deficient with regard to personnel; most units had only half the number authorized for Volunteer formations. In addition, some men failed to demonstrate the enthusiasm for war service evinced by their officers and failed to enlist for wartime service or failed physical examinations at the time of induction. Rather than consolidate units to bring them up to wartime strength (which would make many officers superfluous as two or more combined units would need only one set of officers), states recruited untrained volunteers from civilian life. As a result, a major justification for the use of Guard units in the initial call-up was negated – the Guard in many cases did not provide cohesive units that had been trained not only in basic soldierly skills but also trained to work together as a unit.⁹⁰¹ The states and the federal government also fought over how the men were to be recruited in McKinley’s second call for 75,000 troops on May 26, 1898 (which the War Department regarded as unnecessary and was not prepared to support). State governors wanted to create new units which would allow them to commission even more officers – a major source of patronage. The Army (through Adjutant-General Corbin) insisted on filling gaps in the existing units before

⁹⁰⁰ *Dodge Commission Report*, vol. 6 (Testimony), 2846; part of the quote is also cited in Cosmas, *An Army for Empire*, 136.

⁹⁰¹ Cosmas, *An Army for Empire*, 119.

creating new ones. For once, the professionals won the argument – McKinley told the governors that they would have to fill existing units to full strength first.⁹⁰²

Recruitment for the Spanish-American War was not a problem for the government; if anything, the problems came from too many volunteers, not too few. The war was very popular, so there was not a problem inducting many more soldiers than the war would need (or that the War Department could handle). The average citizen had no idea what the risks of disease exposure would be despite the well-known reputation of Cuba as a pesthole of infectious disease – besides, there was always something that could ward off illness if properly adhered to. Private Post reported that the nostrum of choice was the red flannel bellyband: “Bellybands, most preferably of red flannel – red being regarded as a highly medicinal color – were the intended protection against the tropical ills: blackwater fever, yellow jack, black jack, Chagres fever, and a dozen other names of increasing horrendousness. Much interest also attached to the mechanisms of the abdomen, and it was thought that a bellyband which would keep all heat in, perhaps even from the dangerous airs of the nighttime, would help our brave soldier boys resist the Spanish miasmas of Cuba.”⁹⁰³ The abdominal belt, often referred to as a “cholera belt” even received official imprimatur; the British were issued cholera belts in various campaigns throughout the nineteenth century, to include the Third Anglo-Ashanti War, which had one of the lowest disease rates of any campaign in tropical regions. Some doctors swore by the belts into the early twentieth century, although fewer credited it with cholera prevention after Koch’s identification of the *vibrio cholerae* bacillus. The British 1907 *Manual of Sanitation*

⁹⁰² Cosmas, *An Army for Empire*, 128. This had been a big issue during the Civil War; after 1861 many state Volunteer units were significantly under strength after months or years of service due to casualties and desertions. State governors created new volunteer units to fill recruitment quotas (each with a full complement of officers) rather than use new enlistments to fill gaps in existing units from their states.

⁹⁰³ Charles Johnson Post, *The Little War of Private Post* (Lincoln, NE: Univ. of Nebraska Press, 1999; reprint Little, Brown, 1960), 6.

recommended the belt for the prevention of diarrhea and dysentery, and the 1898 *Notes on Military Hygiene* used by the American Army also recommended its use to prevent “bowel affections.”⁹⁰⁴ These home remedies along with reassurances by commanders that obeying sanitary and hygiene regulations will preserve health led the average soldier to show little concern for infectious disease.⁹⁰⁵ Fear of disease also did not keep the National Guard units from pushing for mobilization or state governors from pestering Secretary of War Alger to deploy units from their states overseas.⁹⁰⁶

This cavalier attitude about disease was most easily shown in the volunteers for duty in the immune regiments. One of the provisions of a law enacted May 11, 1898, mobilizing the Army for service in the war was the provision for ten volunteer regiments, the First through Tenth US Volunteer Infantry (Immune). These regiments were supposed to be manned with volunteers from the southern states who had previously been exposed to yellow fever, hence having immunity to it, or manned by black volunteers who were assumed to be immune due to their race.⁹⁰⁷ Men without any acquired immunity to yellow fever volunteered for service in the

⁹⁰⁴ Renbourn, “The History of the Flannel Binder and Cholera Belt,” 219-220. “Abdominal protectors, small aprons made of two thicknesses of flannel sewed or quilted together and worn next the skin over the bowels, materially lessen those bowel affections that depend upon abrupt changes of temperature. These are not issued, but there is no reason why they should not be in subtropical climates and elsewhere on occasion.” Woodhull, *Notes on Military Hygiene* (1898), 35.

⁹⁰⁵ Instructions such as the Surgeon-General’s Circular #1 (Appendix B, item 1) were issued to the troops as general orders.

⁹⁰⁶ The correspondence record is filled with requests from states for units from their state be selected to join the Puerto Rico expedition, manned with volunteer units. Typical is this message from Ohio: “Ohio cavalry now completely equipped; general impression prevails here and at Tampa that we are side tracked and will not be moved. Please have us ordered out with any expedition, anywhere, mounted or dismounted. Hayes just wired from Santiago that he expects us in Porto Rican expedition, with assistance and supplies for him. Are we going?” Lt Col Day to Corbin, July 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 283.

⁹⁰⁷ “The same act authorized the organization of an additional volunteer force of not exceeding 10,000 enlisted men possessing immunity from the diseases incident to tropical climates. For these so-called immune regiments the officers were to be appointed by the President, by and with the advice and consent of the Senate.” Alger, *The Spanish-American War*, 17-18. The law was implemented by War Department General Order #55. Although the original intent of the law was to raise five white and five black regiments, in the end six regiments (First through Sixth) were manned by whites and four (Seventh through Tenth US Vol. Inf.) by blacks. Unfortunately, the War Department failed to establish any criteria for immunity and many men signed up for service in these regiments who had never been exposed to yellow fever. See Cunningham, “The Black ‘Immune’ Regiments.”

immune regiments, as these were the only volunteer regiments recruited directly from civilian life that did not require prior service in the National Guard or good horsemanship (required of the three volunteer cavalry regiments). To the US government, however, these units were an integral part of the War Department's plans for an occupation force for Cuba, even before yellow fever was reported among the men outside Santiago. Shafter and the Army Medical Department also culled through their ranks to send doctors, nurses, and corpsmen to Cuba who had an acquired immunity to yellow fever.⁹⁰⁸ There were some issues of men protesting their assignment to duty at Santiago once the sickness in the camps became public knowledge, but anyone who actually refused to go could be court-martialed for desertion. This disconnect between what the soldiers knew and what their leadership knew proved to be as deadly to some as the gap between what the leadership knew about tropical disease and reality.⁹⁰⁹

One of the methods the British used to reduce their losses to disease during service in the Caribbean in the early 1800s was to recruit black men into their West Indian Regiments. These men, mostly freed slaves born in Africa, had an acquired immunity to yellow fever resulting from childhood exposure. The United States attempted to follow the British example in 1898 by raising immune regiments consisting of black volunteers as well as individuals immune to the disease from prior exposure. The immune regiments were organized later than the federalized reserve and were not deployed until after the surrender of Santiago de Cuba near the end of the war; indeed, only four of the ten regiments served during the war.⁹¹⁰

⁹⁰⁸ Shafter to Corbin, July 29, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 186; Corbin to General Graham, Aug. 6, 1898. *Ibid.*, 208.

⁹⁰⁹ Cosmas, *An Army for Empire*, 127, 262. The most prominent protest against deployment came from Senator Bacon of Georgia, who said quite plainly that his constituents lied about previous exposure in order to serve, and he thought it unfair that they should actually have to serve in Cuba. Sen. Bacon to Corbin, Aug. 5, 1898 in Alger, *The Spanish-American War*, 272-273.

⁹¹⁰ *Report of the Secretary of War, 1898*, 443. Two regiments were deployed from Savannah, GA and two from New Orleans.

Although some blacks were able to serve in the war when their segregated state militia units were inducted under the initial 125,000 man call-up of the National Guard, the four black immune regiments also provided African-Americans a way to show their courage and patriotism by volunteering for war.⁹¹¹ A history of the Ninth Volunteer Infantry (Immune), the only black immune regiment to serve in Cuba, has the following title for its first chapter: “The Purchase of Opportunity: The Army, a medium through which the Afro-American may acquire a place in American civilization.”⁹¹² It is both sad and stirring that black Americans were willing to make the ultimate sacrifice for their country at the same time Jim Crow was subordinating their place in American society. It was not until after the discovery of the cause and transmission of tropical diseases such as malaria and yellow fever that blacks were no longer sought for service based on a perceived genetic immunity. From the First World War onward, African-Americans were recruited based on their ability to fight, not their ability to withstand disease.

After the federalized Guard units had been mobilized and the volunteer regiments (cavalry, engineer, and immune) had been organized, the units were assigned to divisions and corps at various training and mobilization camps across the country. Approximately 25,000 men were assigned to the Fifth Army Corps in Tampa, Florida; these troops (mostly regulars) would later be deployed in the Cuban campaign. The Seventh Corps, 30,000 men under Maj. Gen. Fitzhugh Lee, were located in Camp Cuba Libre, Jacksonville, Florida. The Second Corps was in Camp Alger, VA near the nation’s capital. The First and Third Corps (60,000 men) were assigned to Camp George Thomas at Chickamauga National Park. The Fourth Corps contained the overflow

⁹¹¹ Of course the four black Regular regiments also demonstrated both courage and patriotism in their war service.

⁹¹² W. Hilary Coston, *The Spanish-American War Volunteer: Ninth United States Volunteer Infantry Roster and Muster*, 2nd ed. (Freeport, NY: Books for Libraries Press, 1971, reprint Middletown, PA: Published by the Author, 1899), 8.

of units mobilized for the Cuban deployment⁹¹³ but left behind when the Fifth Corps deployed; the units were split between Tampa, Miami, and Mobile. Finally, the Eighth Army Corps with 20,000 men was mobilized in San Francisco for deployment to the Philippine theater.⁹¹⁴ Many state volunteer units were organized too late for service in the war and remained behind in their respective state camps.⁹¹⁵

In the Spanish-American War, disease affected both the mobilization and the demobilization processes. Both Regulars and volunteers were mobilized in large camps across the American South in the hope that the units would acclimatize; this was intended to reduce their susceptibility to the miasmas and climactic conditions thought to induce disease as well as to get the men used to operating in conditions of high heat and humidity. One of the disease implications of any massive mobilization process of the nineteenth century was the occurrence of crowd diseases. Smallpox could be prevented through vaccination, but measles and mumps could not. Even smallpox vaccination had its drawbacks. Chief Surgeon Greenleaf reported that “the largest number of sick is from the results of vaccination, the arms of the men being so sore as to prevent them temporarily from performing duty. Next in order come measles and mumps, of which there has been an epidemic. These are diseases which are almost inseparable from the aggregation of large bodies of recruits. Following these are disorders of the air passages and bowels, viz: Of the former, bronchitis and a few cases of pneumonia; of the latter, diarrhea, with

⁹¹³ Two Corps were earmarked for the invasion of Cuba in May when plans called for a large force (up to 70,000 men) to be assembled in the port of Mariel, Cuba (after the port was seized by Shafter’s initial contingent) to be used for an attack on the main Spanish army at Havana. The additional men in the Fourth Army Corps were not needed for the smaller attack on Santiago. Cosmas, *An Army for Empire*, 115-117.

⁹¹⁴ Although a commander was appointed for a Sixth Corps, units were never assigned to the corps. Ibid., 112-113.

⁹¹⁵ Cosmas, *An Army for Empire*, 129; *Dodge Commission Report*, vol. 1 (Appendices), 256-258.

a few cases of dysentery. These are also inseparable from the changed conditions of life for the recruit, both as regards his exposure to the weather and the character and cookery of his food.”⁹¹⁶

Significant problems occurred as a result of the formation of corps before any decisions were made about the missions for these units, the size force needed to accomplish the missions, and a timeline for deployment. Miles regarded the corps as administrative organizations to mobilize, train, and prepare regiments and divisions for war. The corps commanders, on the other hand, saw themselves as leaders of formations that they would command in the war. As a result, these commanders kept a perpetual short-term time horizon anticipating deployment orders at any moment; this near-term focus prevented them from setting up the mobilization camps for months of occupation. For example, Brigadier General Royal Frank, commanding the First Division, Third Army Corps at Camp Thomas, explained why he had not moved his division from his assigned campsite, which was “a good site for a short time, but not, I think, for a large camp for any considerable period.” His troops remained in place during the typhoid epidemic in July and August, 1898. He later concluded, “they ought to have been moved sooner, but we had an idea that we were to be moved out at any time.” His chief surgeon testified, “every man expected, almost every day for three months, to be ordered away.”⁹¹⁷ Because these facilities were assumed to be temporary, units often did not seek out healthy ground for encampments with good water supplies and drainage. The result was the massive typhoid epidemic that swept across these training camps, accounting for most of the deaths from disease during and immediately after the war. The typhoid epidemics that broke out in these camps are discussed in Chapter 12, but the problems that led in part to the thousands of deaths from typhoid fever can be traced to the hasty and temporary measures spawned by a poorly planned and executed mobilization of

⁹¹⁶ Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613.

⁹¹⁷ *Dodge Commission Report*, vol. 3 (Testimony), 535, 542, 553; Trask, *War with Spain*, 159-160.

land forces, and the use of ill-disciplined volunteer soldiers.⁹¹⁸ Although regular regiments also had typhoid during the war, the rates were higher for volunteer troops than for regular troops. The Surgeon General attributed the difference to the poor sanitary conditions prevalent in the volunteer camps.⁹¹⁹

Mobilization of troops for deployment to Cuba also ran into significant difficulties. The War Department wanted to use Florida as the site for a port of embarkation due to its proximity to Cuba and Puerto Rico. Unfortunately, in 1898 Florida lacked fully developed ports and significant rail connections to the Army's supply depots, commercial sources of food and equipment, or the camps where personnel were concentrated. The best available port near the Cuban and Puerto Rican coasts was at Tampa. The port itself was suitable, having 21 feet of depth and the ability for up to thirteen steamers to simultaneously load from the main wharf. However, only a single line of track traversed the ten miles between the port and city of Tampa, creating a major bottleneck for the movement of men and supplies for embarkation.⁹²⁰ Furthermore, there was a significant shortage of ships and lighters (used to transfer men and supplies from ship to shore) available for purchase or lease. The Quartermaster Department was restricted by international law to use domestic shipping for military purposes. The US merchant fleet was limited; oceangoing passenger liners had too much draft to be used offshore Cuba or Puerto Rico, and the constantly changing strategy for the employment of ground forces prevented the Quartermaster-General from making any advance preparations or long-term commitments. The available ships were not equipped for transporting large numbers of men, and

⁹¹⁸ *Dodge Commission Report*, vol. 1 (Report to the President), 178-179.

⁹¹⁹ *Report of the Surgeon-General, 1899*, 270-271.

⁹²⁰ Cosmas, *An Army for Empire*, 183. In contrast, the Philippine expedition was embarked from San Francisco, which had ample facilities to concentrate the troops on land near the Golden Gate, warehouses to store supplies, and a major Pacific Ocean port from which to embark. Furthermore, large oceangoing passenger ships were available for lease to transport the troops in relative comfort for their 7,000 mile trip to the Philippines (*ibid.*, 182).

the attempts to install bunks, cooking and lavatory facilities were both rushed and incomplete. Once these ships were fully loaded, it was very difficult to offload any specific high-priority items; for example, most of the ambulances and hospital equipment were not offloaded in Cuba before the major battles on the outskirts of Santiago de Cuba; some were never offloaded and returned to the United States intact.⁹²¹

The actual process of unloading supplies arriving at the Port of Tampa and loading men and supplies onto the ships was a comedy of errors. Vast numbers of railcars carrying urgently needed supplies poured in to the bottleneck at Tampa. The congestion was so bad that railcars were shunted to sidings as far north as Columbia, South Carolina. Supplies arrived well before the bills of lading, which meant that quartermasters had to search dozens of boxcars to find particular items. Once they found the supplies the quartermasters at Tampa lacked the wagons to haul the materiel away. Troops competed for transportation to the port once the order was given for embarkation.”⁹²²

Theodore Roosevelt later explained how the Rough Riders made it to the port on time:

It was the evening of June 7th when we suddenly received orders that the expedition was to start from Port Tampa, nine miles distant by rail, at daybreak the following morning; and that if we were not aboard our transport by that time we could not go. We had no intention of getting left, and prepared at once for the scramble which was evidently about to take place. As the number and capacity of the transports were known, or ought to have been known, and as the number and size of the regiments to go were also known, the task of

⁹²¹ Cosmas, *An Army for Empire*, 179-183; *Dodge Commission Report*, vol. 1 (Appendices), 644-645, 709-710. In addition, after the war the Surgeon General reported that “It is probable, further, that on account of insufficient transportation all the supplies that were intended for General Shafter’s army were not actually loaded upon the transports accompanying his expedition...” (ibid., 686). See also *Cirillo, Bullets and Bacilli*, 13.

⁹²² Cosmas, *An Army for Empire*, 190.

allotting each regiment or fraction of a regiment to its proper transport, and arranging that the regiments and the transports should meet in due order on the dock, ought not to have been difficult. However, no arrangements were made in advance; and we were allowed to shove and hustle for ourselves as best we could, on much the same principles that had governed our preparations hitherto. We were ordered to be at a certain track with all our baggage at midnight, there to take a train for Port Tampa. At the appointed time we turned up, but the train did not. ... at six o'clock some coal-cars came by, and these we seized. By various arguments we persuaded the engineer in charge of the train to back us down the nine miles to Port Tampa, where we arrived covered with coal-dust, but with all our belongings.⁹²³

Later, the regiment secured passage on the steamship *Yucatan* by means of occupying the ship before the Second Infantry or the Seventy-First New York (also assigned to the same ship) could do so.

One of the problems encountered by the Cuban expeditionary force upon arrival in Cuba was the fact that the ships were not loaded with equipment and supplies in any rational fashion. Medical supplies needed soon after landing were buried deep in the holds of ships; many supplies, desperately needed after the battles of July 1st through 3rd, were offloaded later. Some supplies were found weeks later when the ship unloaded in Puerto Rico.⁹²⁴ The Dodge

⁹²³ Theodore Roosevelt, *The Rough Riders* (New York: Charles Scribner's Sons, 1899), 57-60.

⁹²⁴ "When the *Mobile*, which left Charleston July 22, was being unloaded, on August 5, at Ponce, five tons of ice and a large supply of medical and hospital stores, intended for the army at Santiago, were found on board." *Dodge Commission Report*, vol. 1 (Report to the President), 142. "Having once left their ships the latter were promptly ordered out of the small bays at Siboney and Daiquiri to permit the unloading of other ships. These partially unloaded ships, in obedience to their orders, then proceeded to sea from 5 to 15 miles, where they remained hove to indefinitely. Such orders were given the transports carrying the reserve and the first division hospitals. The one carrying the reserve hospital, in obedience to its orders, proceeded to join the naval blockading squadron off Morro Castle, where it remained five days and nights, the other transport disappearing, if I was correctly informed, for an entire week." *Dodge Commission Report*, vol. 1 (Appendices), 709.

Commission later concluded that “the vessels were not loaded systematically. A battery with its guns and horses would be placed on one vessel and its ammunition on another.”⁹²⁵

By June 8th, the Cuban expeditionary force, organized as the Fifth Army Corps under Maj. General William Shafter, was as ready to go as it would ever be. Deployment overseas was now up to the President in his role as wartime Commander in Chief.

⁹²⁵ *Dodge Commission Report*, vol. 1 (Report to the President), 135.

Potholes in the Road to War

The planning and mobilization processes of the Spanish-American War were fraught with errors; some minor, some not. The reasons are many. There was a significant rift between civilian and military when mobilizing for the war, starting at the top with President McKinley. Driven by political considerations and a desire to assuage the National Guard lobby, McKinley called for an initial volunteer mobilization of 125,000 men – enough to include every national Guard unit across the United States, but far more than what was needed and even more importantly far more than the War Department was capable of equipping, arming, housing, and training given the short notice resulting from the whirlwind buildup to war. Alger, in charge of the Army staff bureaus that were responsible for supporting this massive troop call-up, was evidently unaware of their limitations and failed to solicit the advice of the general officers heading up each staff department, or he failed to mediate between McKinley's vision of what was needed and the gritty reality of what was possible with respect to mobilizing the force. The ambiguous command structure for the Army with the overlapping responsibilities of the Commanding General and the Secretary of War was exacerbated by bad blood between the two incumbents in those offices. The schism between the Regular Army establishment and the National Guard Association was rooted in entirely different views of the value of the citizen-soldier and inseparable from the political battle between the Democratic and Republican Parties. The peacetime Army was too small and too unprepared for a major shift in its fundamental mission, that of engaging in a major war overseas against a foreign power. The final gap between the nineteenth century knowledge of epidemic disease and the reality of the disease environment

present in the overseas Spanish empire and in the crowded, makeshift encampments within the United States would kill thousands before the troops could be demobilized and sent home.

The planning process was equally flawed. Prewar planning is only as useful as the assumptions upon which to base the plans. Prewar plans for a war with Spain proved to be almost useless for the Army, as few of the planning assumptions held true for the Spanish-American War. One fundamental problem was that the plans were largely made by the navy for the navy, with the army relegated to a support role. In most plans, the Army either supports the Cuban rebels without a major offensive role, or it is used to seize and/or occupy a major port in consonance with a naval attack on the port. These plans assumed that the Army would be landed at a major port, without the need for landing across a shore or supporting a land operation without a constant stream of supplies offloaded at a port. The major problems encountered when projecting land forces overseas lie in the transportation of troops and supplies from US bases to the theater of operations, and the constant resupply of arms, men, and materiel needed to support an ongoing land campaign. The war plans all assumed seizure of a port to enable this movement and resupply; the Cuban campaign involved landing forces across a beach (the horses were literally pushed overboard in the hopes that they would swim to shore), with resupply limited to mule trains across “roads” that were little more than muddy trails.

However, the biggest problem revolved around disease. All of the plans consistently called for land operations to occur during the dry season; only naval operations would occur during the sickly rainy season. Kimball’s plan, for example, had noted, “It would be better strategically to delay the invasion rather than to make it in the yellow fever season”; in addition, the plan called “as brief a campaign as possible.”⁹²⁶ Yet the Cuban campaign violated all key elements of previous war

⁹²⁶ Kimball, “Plan Of Operations Against Spain.”

planning by other European powers – it was fought in the wrong place at the wrong time. The deficiency, however, was less with the plans (although there should have been contingency planning for cases where one or more planning assumptions are not met) than with the execution.

The difficulties encountered in the mobilization of materiel during the Spanish-American War primarily affected combat readiness, but some elements related to the effects of disease. The Army Medical Department lacked the necessary medicines; hospital equipment such as beds, bedding, mosquito netting, and clothing; ambulances, stretchers, and medical chests equipped for deployment with front line units; divisional hospital sets for deployment (including tentage, operating wards, mess facilities, etc. as well as beds, etc.); and they even lacked “delicacies” – food suitable for invalids. Much of this equipment was supposed to come from the National Guard units that were mobilized; few had the equipment they were supposed to have. The Medical Department was forbidden to purchase this equipment before war was declared; both the authority and appropriations were lacking.⁹²⁷ The Department was also provided absolutely no information about how many men were to be called up,⁹²⁸ and thus how many units needed to be equipped with medical supplies. The medical equipment for a vastly expanded Army needed to be purchased after the war actually started.⁹²⁹ Although Surgeon-General Sternberg cannot be

⁹²⁷ Alger did instruct Sternberg on March 12 to prepare for the order of large quantities of medical supplies, and Sternberg ordered the existing kits be sent to the supply depots for issue. However, Sternberg reported that “Up to the time that war was declared it was not practicable to take any immediate steps to obtain supplies, as it was not known until that date that the troops would actually be called out, nor were there funds available from which to make purchases. . . . Immediately upon the declaration of war, April 21, steps were taken to obtain medical supplies for the new Volunteer Army.” *Report of the Surgeon-General, 1898*, 103; Cosmas, *An Army for Empire*, 81.

⁹²⁸ Sternberg testified to the Dodge Commission that he found out how many men were to be sent to Camp Thomas from the newspapers; he received absolutely no notice, much less advance notice. *Dodge Commission Report*, vol. 6 (Testimony), 2845.

⁹²⁹ Surgeon-General Sternberg reported that “Up to the time that war was declared it was not practicable to take any immediate steps to obtain supplies, as it was not known until that date that the troops would actually be called out, nor were there funds available from which to make purchases. . . . Immediately upon the declaration of war, April 21, steps were taken to obtain medical supplies for the new Volunteer Army. For the more important articles, and those of highest cost, bids were invited at short notice, such, for instance, as medical and surgical chests, litters and slings, field operating cases, pocket cases, orderly and hospital corps pouches, etc. Orders were given and the manufacture expedited with the utmost dispatch. . . . On May 3, foreseeing that it would be impossible to have ready for issue to

faulted for obeying orders from the Secretary of War that forbid medical purchases before war was declared,⁹³⁰ he knew that any mobilization would involve state resources. There is no excuse for not finding out what states did and did not have in advance of the actual mobilization once the military services were placed on a war footing with the \$50 Million Dollar Bill appropriation. He did take action on some other matters, such as revising inventory lists, constructing a first aid packet for issuing to individual soldiers, and authorizing purchasing agents in some major depots to expand their workforce as workspace in preparation for increased duties.⁹³¹ However, when massive quantities of supplies were finally ordered at the start of the war, Cosmas notes that “Neither he [Sternberg] or his subordinates, however, worked out an efficient distribution system for such easily obtained articles such as bedding, surgical thermometers, hospital foods, and medicines,” the result was that “chronic shortages of everything from thermometers to bedsheets afflicted the sick among the troops.” This lack of logistical planning was consistent with other planning oversights that led to delays and errors in the transportation and provisioning of troops.⁹³²

President McKinley and Secretary Alger is largely responsible for the shortages in supplies caused by Alger’s interpretation of the appropriation as only “defensive” in nature. When the Navy Department used most of the funds to buy new ships without incurring Congressional wrath, it should have been clear that Alger’s interpretation of the bill was incorrect. President

the volunteer regiments, as soon as they were mustered in, the medical and surgical chests above referred to, as well as other articles of field equipment, although their preparation was pushed with the utmost dispatch, I telegraphed the governors of the several States for authority to utilize the medical equipment of the National Guard in the service of the State Volunteers until our army medical supplies were ready for issue. Most of the governors of the States who had field equipment responded promptly and satisfactorily, but, unfortunately, many of the State medical departments had no such equipment.” *Report of the Surgeon-General of the Army, 1898*, 102.

⁹³⁰ Sternberg later testified, “I spoke to the Secretary with reference to the situation of the Medical Department and as to whether I was justified in making purchases in view of the possibility of war, and the policy was that I should wait. I had no authority and, indeed, no money, until Congress had made the appropriation, for making any special preparations.” *Dodge Commission Report*, vol. 6 (Testimony), 2813.

⁹³¹ Craig, *In the Interest of Truth*, 217.

⁹³² Cosmas, *An Army for Empire*, 250.

McKinley is at fault for letting his subordinate spend virtually all of the funds on coastal defenses without any preparation for a land campaign that clearly would be called for if the United States made any intervention in Cuba. Even if the location, objectives, and timing of the campaign were still up in the air, there was never any question that some land forces would be used to seize and occupy some objective in Cuba, in support of Cuban rebels or as an independent military action.⁹³³

One of the more important defects of the mobilization was the length of time needed to call up and train troops, buy and issue equipment, arms, and ammunition. General Miles discussed this in his personal history of the war published in *Century*, advocating for a larger, well-equipped peacetime Army: “It is safe to say that, with an Army of 75,000 men properly equipped, at the time of the declaration of war, peace could have been secured without requiring a single volunteer to leave the country, and thus the necessity of the enormous volunteer army, and the expense and inconvenience incident to its organization and maintenance, could have been avoided.” If the Army had been fully mobilized in late March or in April, an expeditionary force could have been sent to Cuba before the rainy season. “The wet season, which would be especially dangerous to the lives of those not acclimated, and would render the movements of troops more difficult, was near at hand. *It was utterly impossible to organize an army and equip it properly before that season commenced.* With a properly equipped army ready for action before the bad season set in, we could have divided Cuba into two or more sections, occupying the greater portion of the country, placing the troops in healthful localities, thus enabling the

⁹³³ The Dodge Commission later concluded: “The commission has refrained from criticizing certain of the heads of bureaus for not having acted with foresight in preparing their various departments for active war before war was actually declared, because it has appeared that the national defense fund provided by the act of March 9, 1898, was not made available for use, except for the Navy and for coast defenses and the expenditures incident thereto, until after the declaration of war.” *Dodge Commission Report*, vol. 1 (Report to the President), 116. Although the author disagrees that the bureau chiefs could be excused from planning in advance, it is clear that their hands were tied with respect to purchases or other actions that required appropriations.

insurgents to organize and become thoroughly equipped, and simplifying the problem; and, with the Spanish Navy once cleared from the seas, and the coast thoroughly patrolled by our vessels, the Spanish forces must have yielded in a few months.” (italics added)⁹³⁴ Chadwick blamed the hasty mobilization on Alger, who had refused to use the money appropriated in the \$50 Million Dollar Bill to begin the mobilization of materiel.⁹³⁵ Millis reported that President McKinley tried to avoid sending volunteers to Cuba during the rainy season, thus negating (at least temporarily) the mobilization of the reserves and volunteers. Miles continued to protest against any plan that would send US forces into the Caribbean during the sickly season, but “the nation, on the other hand, was demanding blood, and the nation possessed more votes than General Miles.”⁹³⁶ In the end, military necessity overruled fears of disease, and both Regulars and volunteers were sent to Cuba to capture Cervera’s fleet or force it to sortie into the waiting arms of the naval blockading force.

Another defect of mobilization was directly related to disease – the ten Immune regiments. The statistical analysis of Civil War data summarized in the *Medical and Surgical History* failed to show any black immunity or resilience to malaria; colored troops “did not possess that insusceptibility to the malarial influence that has been sometimes claimed for them.”⁹³⁷ Cases of yellow fever were relatively few in number, resulting from specific outbreaks rather than any general epidemic. Charles Smart, the author of Part III (dealing with fevers and other non-diarrheal diseases) did not provide any judgments about relative immunities or lack thereof; consolidated statistics from the entire war period show that there were only a few reported cases

⁹³⁴ Miles, “War With Spain – I,” 523-524.

⁹³⁵ Chadwick, *Relations*, vol. 1, 50

⁹³⁶ Millis, *The Martial Spirit*, 166.

⁹³⁷ *The Medical and Surgical History of the War of the Rebellion (1861-65)*, Volume I, Part 1 (Washington: Government Printing Office, 1870); *MSHWR*, vol. 1 part 3, 12-13. Tables showing all forms of malaria and typho-malaria show “544.72 cases per thousand of mean strength among the white, and 8710.62 among the colored men” (Ibid., 84).

of yellow fever among colored troops. Since the incidence among whites was only one-quarter of one percent, no general conclusions can reasonably be drawn.⁹³⁸ One may argue that based on the incomplete science of disease, immunity, and transmission in 1898, the US's recruitment of black immune regiments, based on anecdotal historical evidence, was a well-meaning effort to minimize the suffering of soldiers and improve military performance in the field. Yet existing data should have alerted army and medical officials that the link between race and immunity was dubious. The lack of caution was matched with the recruitment of white volunteer immune regiments. The Army took no steps to verify that the recruits had prior yellow fever exposure; indeed, the process was later revealed to be a sham.⁹³⁹ The depths of the misunderstanding of yellow fever, immunity, and transmission were revealed in May 1898, when the New York Times reported, "It is not considered that it will be possible to get together 10,000 men who have actually had yellow fever, and that will not be attempted. The recruiting will be done chiefly in the Southern Coast States, however, and the effort will be to take in men who, if they have not passed through a yellow fever epidemic, have been thoroughly acclimated to a hot climate and are accustomed to outdoor life."⁹⁴⁰ Here one can readily see the disconnect between observed phenomenon and medical science. Lacking a comprehensive understanding of germ theory, immunity, and the transmission of disease, planners presumed that simple exposure to a location or climate likely made a person less susceptible to disease. Given the fact that individuals like Sternberg were aware that this might not be sufficient, one must conclude that medical professionals either did not or could not exert influence over these processes so that men in the

⁹³⁸ *MSHWR*, vol. 1 part 3, 675-683. On the other hand, the few epidemics that did occur in the Southern states resulted in cases and fatalities among both white and colored troops, belying any complete immunity on the part of black soldiers to yellow fever (*ibid.*).

⁹³⁹ "ARE THESE SOLDIERS REALLY IMMUNES?" *St. Louis Post – Dispatch*, Aug 7, 1898, 1; Sen. Bacon to Corbin, Aug. 5, 1898 in Alger, *The Spanish-American War*, 272-273.

⁹⁴⁰ "THE IMMUNE REGIMENTS: The President Has Named Six Colonels Who Will Command the Forces," *New York Times*, May 21, 1898, 2.

ranks would be protected from disease. The tragedy was compounded when Shafter requested that the immune regiments be sent immediately once yellow fever broke out among his troops; they were to be given the absolutely vital job of protecting the sick men of the Fifth Corps against a Spanish counterattack.⁹⁴¹

The behavior of the leadership with respect to the immune regiments is contradictory. On one hand, they were supposed to be immune (even if not all whites had actually been immune, the black troops supposedly were), so they could serve as a reliable force that would be unaffected when the Cuban force went through the “seasoning” process that the senior leadership expected.⁹⁴² Yet the troops were not sent until after the epidemic in Cuba had begun, and they were used primarily for guard duties or for patient care; they had been tasked strictly for garrison duties.⁹⁴³ It is possible that Shafter and the other Army leaders had less confidence in their abilities given the fact that they were volunteer units raised among men without much prior military service, but the same could be said about the two volunteer cavalry regiments (one of which was the Rough Riders), which were given prominent roles in the Santiago campaign. It is safe to say, however, that refusal to use the immune regiments as they could have been used risked the lives of the non-immune men who were used instead. It is interesting that Alger reprinted Georgia Senator Bacon’s letter protesting the use of the immune regiments in his memoirs, as Alger was defending his decisions regarding the relief of the Fifth Corps. It appears that Alger was trying to make a point about how unreasonable the public and their politicians

⁹⁴¹ Shafter to Corbin, July 23, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 172-173.

⁹⁴² Gen. Chafee testified that the army expected a 10 – 15% sick rate (*Dodge Commission Report*, vol. 4 (Testimony), 909); Gen. Wheeler testified that ““It was expected that the army would have to go through yellow fever. I expected it, and the experts were instructed to go to the officers at Tampa and give us information about yellow fever, and the army was given to understand that possibly 90 per cent of it would have to go through yellow fever,” but “disease only lasted about ten days, and therefore it would not be long before the entire army would be composed of immunes.” (*Dodge Commission Report*, vol. 3 (Testimony), 49).

⁹⁴³ Cosmas, *An Army for Empire*, 329.

were over the use of the regiments raised explicitly for duty in regions where yellow fever was endemic. “No attention,” he said, “could be paid to these communications.”⁹⁴⁴

⁹⁴⁴ Alger, *The Spanish-American War*, 272.

CHAPTER 9

WAR IN THE CARIBBEAN

The Spanish Fleet Arrives

U.S. naval strategy for the Cuban campaign unfolded as planned at the start of the war with Spain. By the end of April 1898 Sampson's fleet had established a naval blockade of Cuba, primarily along the northern coast of the westward part of the island. Sampson lacked enough ships to maintain a blockade around the entire island, which led President McKinley to wait to issue a formal notice of a blockade of the southern coast of Cuba until June 28th.⁹⁴⁵ It was hoped that the blockade would prevent the movement of foodstuffs from the provinces to the cities. The objective, in accordance with the December 17, 1896 war plan issued by the naval planning board, was to create hardship in Havana and force Spain to sue for peace. Yet the Spanish did not relent, stymieing the Navy's rosy projections and prompting a frustrated Theodore Roosevelt to callously opine, "Spaniards starve well." Spanish forces tightened their belts, civilian food prices skyrocketed, and Spain maintained its hold on the island.⁹⁴⁶ Now the Navy and U.S. planners had to reckon with a much longer conflict that would certainly entail an extended blockade and the use of ground forces. This in turn entailed making plans to maintain blockading ships far from their home ports, preparing the fleet for the hurricane season, and supplying and caring for

⁹⁴⁵ The north coast of Cuba was blockaded under a Presidential proclamation on April 22nd. Long, *New American Navy*, vol. 1, 226-228.

⁹⁴⁶ Cosmas, *An Army for Empire*, 114; Trask, *War with Spain*, 108. Long identified three desired outcomes of the blockade: (1) "exhaustion of the Spanish army in Cuba without injury to ourselves"; (2) "destruction of Spanish commerce"; and (3) forcing Spain to send and maintain forces to relieve their colonies "more than three thousand miles from an effective home base." Long, *New American Navy*, vol. 1, 229.

sailors on extended duty. More troubling, the longer the blockade lasted, the more likely the possibility that U.S. naval forces would have to engage the Spanish fleet in battle.

American anxiety over a naval war with a European power was well-founded,⁹⁴⁷ yet the Spanish were not sanguine about their own fleet's combat effectiveness. Admiral Pascual Cervera y Topete took command of the Spanish fleet in Cadiz on October 30, 1897; this fleet would be activated in case of a war with the United States. The Spanish plan of action called for Cervera to create a squadron for deployment in the Caribbean consisting of the battleship *Pelayo* and five armored cruisers – the *Carlos V*, *Cristobal Colon*, *Vizcaya*, *Almirante Oquendo*, and *Infanta Maria Theresa* along with three destroyers and three torpedo boats. Cervera was very pessimistic about Spain's chances in a war with the United States. On January 30, 1898, he wrote his cousin Juan Spottorno:

The relative military positions of Spain and the United States have grown worse for us, because we are reduced, absolutely penniless, and they are very rich, and also because we have increased our naval power only with the *Colon* and the torpedo-boat destroyers, and they have increased theirs much more. ... If the *Carlos V* is not a dead failure, she is not what she should be; everything has been sacrificed to speed, and she lacks power. ... The *Vizcaya* carries a 5.5-inch breech plug which was declared useless two months ago, and I did not know it until last night, and that because an official inquiry was made. How many cases I might mention! But my purpose is not to accuse, but to explain why we may and must expect a disaster.⁹⁴⁸

⁹⁴⁷ It was consistent with supposedly objective European evaluations of the strength of Spain's fleet. It wasn't until the war that everyone learned just how decrepit the Spanish fleet actually was. Chadwick, *Relations*, vol. 1, 39-40.

⁹⁴⁸ Cervera y Topete, "A Collection of Documents," 12-13.

He also wrote a confidential memorandum to the Spanish naval authorities in Madrid, drawing their attention to some very uncomfortable facts:

I think it is not idle in these critical times to make a study of the condition of this fleet... We must discount the *Alfonso XIII*, which has been under trials for so many years, and which we shall apparently not have the pleasure of counting among our available ships, which are therefore reduced to the three Bilbao battle ships, the *Colón*, the *Destructor*, and the torpedo-boat destroyers *Furor* and *Terror*. The three Bilbao battle ships are apparently complete, but you ... know only too well that the 5.5-inch guns, the main power of these vessels, are practically useless on account of the bad system of their breech mechanism and the poor quality of their cartridge cases, of which there are no more than those now on board. The *Colón*, which, from a military standpoint, is no doubt the best of all our ships, is still without her heavy guns. In this matter I have, at your instructions, communicated with General Guillen, in order to find a possible remedy, if there is one. The *Destructor* may serve as a scout, although her speed is deficient for that kind of service with this fleet. The torpedo-boat destroyers *Furor* and *Terror* are in good condition, but I doubt if they can make effective use of their 2.95-inch guns. As for the supplies necessary for the fleet, we frequently lack even the most indispensable. In this department we have not been able to renew the coal supplies...⁹⁴⁹

The Minister of Marine Segismundo Bermejo remained optimistic. He thought that Cervera had the strength to execute his plan, which called for Cervera to “destroy Key West” and then extend a blockade of the Atlantic coast “to cut off communications and commerce with

⁹⁴⁹ Ibid., 16.

Europe.”⁹⁵⁰ Cervera’s responded with even greater bluntness when confronted with this scheme: “it is seen that our naval force when compared with that of the United States is approximately in the proportion of 1 to 3. It therefore seems to me a dream, almost a feverish fancy, to think that with this force, attenuated by our long wars, we can establish the blockade of any port of the United States. A campaign against that country will have to be, at least for the present, a defensive or a disastrous one... .”⁹⁵¹ He issued one last warning on March 7: “It would be foolish to deny that what we may reasonably expect is defeat, which may be glorious, but all the same defeat, which would cause us to lose the island in the worst possible manner. But even supposing an improbability—that is, that we should obtain a victory—that would not change the final result of the campaign. The enemy would not declare herself defeated, and it would be foolish for us to pretend to overcome the United States in wealth and production. The latter would recover easily, while we would die of exhaustion, although Victorious, and the ultimate result would always be a disaster.”⁹⁵²

Despite these sober appeals, Cervera attempted to do his duty.⁹⁵³ He moved his squadron to the Cape Verde islands for a possible movement to Puerto Rico; the squadron was fully present by April 19th.⁹⁵⁴ There was serious consideration in late April by the Ministry of Marine of ordering Cervera to return to Spain, but the decision was made to order Cervera to the Caribbean, but with a wide discretion about where to go once he arrived. Cervera was finally

⁹⁵⁰ Bermejo to Cervera, Feb. 15, 1898. Ibid, 24.

⁹⁵¹ Cervera to Bermejo, Feb. 16, 1898. Ibid., 25.

⁹⁵² Cervera to Bermejo, Mar. 7, 1898. Ibid., 34.

⁹⁵³ On April 22nd, he responded to orders directing him to move to Puerto Rico with the following: “Though I persist in my opinion, which is also the opinion of the captains of the ships, I shall do all I can to hasten our departure, disclaiming all responsibility for the consequences.” Ibid., 55.

⁹⁵⁴ Trask, *War with Spain*, 60-67 covers the plans for the Spanish fleet and discusses the confrontation between Cervera and Bermejo.

ordered to proceed to Puerto Rico – the likely target for American forces from Spain’s perspective⁹⁵⁵ – on April 29.⁹⁵⁶

The U.S. was aware of the Spanish fleet’s departure and recognized its potential threat to operations. As Alfred Thayer Mahan, America’s premier naval strategist, was later to point out, the presence of Cervera’s fleet in Caribbean waters prevented any land actions against Cuba or Puerto Rico until it was located and either neutralized or blockaded in port. “Unless, and until, the United States fleet available for service in the Caribbean Sea was strong enough to control permanently the waters which separated the Spanish islands from our territory nearest to them, the admitted vast superiority of this country in potential resources for land warfare was completely neutralized. If the Spanish Navy preponderated over ours, it would be evidently impossible for transports carrying troops and supplies to traverse the seas safely; and, unless they could so do, operations of war in the enemy's colonies could neither be begun nor continued.”⁹⁵⁷ Henry Cabot Lodge expressed the importance of Cervera’s squadron as well: “The squadron, as it appeared on paper and in the naval registers, was, as a whole, powerful in armament, fast, and very formidable. There it was, then, loose on the ocean, and the question which at once arose and overshadowed all others was where Admiral Cervera and his ships were going, for they represented the Spanish sea power. When they were found and destroyed, the campaign on the Atlantic side would be over, and the expulsion of the Spaniards from the American hemisphere

⁹⁵⁵ The Minister of Marine Bernejo stated that the initial US target would be Puerto Rico. Trask, *War with Spain*, 65.

⁹⁵⁶ Ibid., 65-68, 111.

⁹⁵⁷ Alfred T. Mahan, *Lessons of the War with Spain and Other Articles* (Boston: Little, Brown, and Co., 1899), no page numbers. The Navy Department wired Sampson on May 1st that “Large army movement cannot take place two weeks, and small movement will not take place until after we know whereabouts four Spanish armored vessels, three destroyers.” Chadwick, *Relations*, vol. 1, 216.

could be affected at the pleasure of the United States. Until they were destroyed no movement could be safely or conclusively undertaken against either Cuba or Puerto Rico.”⁹⁵⁸

Rear Admiral Sampson, commanding the North Atlantic fleet, was confident that San Juan Puerto Rico was Cervera’s objective but he needed to concentrate his blockading force in order to defeat Cervera’s squadron. At the same time, the Flying Squadron under Commodore Schley remained at Hampton Roads, Virginia, to prevent any Spanish attack on the east coast. Sampson decided to take two ocean-going monitors – the *Amphitrite* and *Terror* – with him to help counter Cervera’s larger vessels. Unfortunately, these monitors required towing which significantly delayed his movement.⁹⁵⁹ He was also plagued with press boats; some of the press were determined to get a scoop regardless of the cost to the security of the American fleet or the secrecy necessary for Sampson to confront Cervera with a superior force. Chadwick provided a sample of the press reports published in a leading New York newspaper: “Cape Haitien, May 9.—Admiral Sampson's squadron of eight warships passed this harbor this morning going east. The appearance of the American fleet caused great excitement in the town... .” These reports reached Cervera at Martinique and were a factor in his decision not to proceed to San Juan.⁹⁶⁰

When Cervera reached the waters off Martinique, he discovered that there was no coal to be had, Cuba was blockaded, and Sampson was en route to San Juan. He had two major options: proceed to Santiago de Cuba, which was not blockaded but also lacked coal, or proceed to Havana, which risked an engagement with the American fleet blockading the port. He attempted

⁹⁵⁸ Lodge, *The War With Spain*, 73.

⁹⁵⁹ Lodge put the blame on Congress: “The squadron [Sampson’s] was composed of the most discordant types, and varied in speed from the twenty knots or more of the New York to the monitors' maximum of less than ten. The monitors, in fact, were nothing but a perilous incumbrance. Their low speed and limited coal capacity made it necessary to tow them, and they thus reduced the speed of the fleet to about seven knots. ... Thus burdened with ships fit only for the smooth waters of a harbor, and with a fleet-speed of seven knots, Admiral Sampson, thanks to the parsimony of Congress, set forth in pursuit of a powerful squadron of homogeneous armored cruisers, with a uniform contract speed of twenty knots.” Ibid., 75.

⁹⁶⁰ Chadwick, *Relations*, vol. 1, 220-221

to refuel before deciding, proceeding to Curacao in search of coal, arriving May 14.⁹⁶¹ However, the Dutch authorities in the port authorized the purchase of only 600 tons of coal, enough for Cervera to depart the port but his overall coal levels limited him to Caribbean ports in Cuba or Puerto Rico. In addition, under international law he had only 48 hours before he had to leave the Dutch port. San Juan was still not an option, and Havana and Santiago were still unattractive for the reasons just mentioned. Cienfuegos (a port on the southern coast south of Havana) was considered but rejected as it could easily be blockaded. He finally decided on Santiago as the best of the limited choices he had available.⁹⁶²

While Cervera was sailing to Martinique and Curacao, Sampson was still en route to San Juan. He received a telegram from Long on May 8 indicating that Cervera's squadron was near Martinique; Long said briefly if ungrammatically "Blockade Cuba and Key West will be in danger if skipped by you Spanish squadron."⁹⁶³ As Martinique was a day's sail from Puerto Rico, Sampson continued on course but he encountered further delays as ships broke down along

⁹⁶¹ Cervera's report to the Minister of Marine on May 12th explained his reasoning: "Having carefully studied the situation of the squadron, which is extremely critical, owing to the scant supply of coal, the governor of Martinique having refused to give aid in that direction, and it having been learned that there is no coal in San Juan, nor probably at Santiago, and in view of the bad condition of the boilers of the destroyers, those of the Terror being practically unserviceable, ... these officers seeing no other solution—on penalty of placing the squadron in a position where it will be unable to move and will hence become an easy prey for the enemy—except to go to Curaçao, in hopes of finding there the coal announced by the minister of marine in his telegram of April 26." Cervera y Topete, "A Collection of Documents," 73.

⁹⁶² Trask, *War with Spain*, 114-117; Chadwick, *Relations*, vol. 1, 250-261. Captain Concas of the *Maria Teresa* discussed the options: "The only harbors that we could enter were, first, San Juan, which we had to discard altogether because, as the United States admiral has said with good reason, he could have taken it whenever he pleased. Second, Havana, which we had to suppose to be well guarded, and it was, indeed, since the Americans themselves have since said that it was considered highly improbable that we should attempt to enter Havana, and it must be understood that it was better guarded by the squadrons at a distance than near by, because, in spite of the blockade, it would have been difficult to prevent ships, whether injured or not, from placing themselves under the protection of the batteries of the city, while an encounter at a distance from Havana meant the total destruction of our squadron. Third, Cienfuegos, which we also supposed guarded ... is a veritable rat-trap, very easy to blockade, and from which exit is more difficult than from any other harbor of the island. ... Later, when starvation stared us in the face at Santiago, the former harbor was thought of as a possible solution, but not on the day of our arrival at Martinique. There remained as the only solution, going to Santiago de Cuba, the second capital of the island, which we had to suppose, and did suppose, well supplied with provisions and artillery, in view of the favorable condition of the harbor entrance. Moreover, the southern coast of the island offered chances of sortie on stormy days and an open sea for operations, after we had refilled and made repairs." Chadwick, *Relations*, vol. 1, 257.

⁹⁶³ Chadwick, *Relations*, vol. 1, 222.

the way. He finally arrived at San Juan on May 12, where he sailed his squadron into the port in combat order, hoping to find and engage Cervera's ships. Sampson successfully navigated past the port's defenses and could have seized the city. However, as he later indicated in his report on the engagement, his choices were limited:

It was clear to my mind that the squadron would not have any great difficulty in forcing the surrender of the place, but the facts that we should be held several days in completing arrangements for holding it; that part of our force would have to be left to await the arrival of troops to garrison it; that the movements of the Spanish squadron, our main objective, were still unknown; that the flying squadron was still north and not in a position to render aid; that Havana, Cervera's natural objective, was then open to entry by such a force as his, while we were a thousand miles distant, made our immediate movement toward Havana imperative. I thus reluctantly gave up the project against San Juan and stood westward for Havana."⁹⁶⁴

On May 16, en route to Cuba, he received orders to proceed to Key West, where he arrived on May 18.⁹⁶⁵

The Navy Department then attempted to locate Cervera's squadron, using Schley's Flying Squadron as well as various fast auxiliary cruisers. Schley was ordered to the Cuban port of Cienfuegos but Sampson, receiving reports that Cervera was at Santiago, ordered him to reconnoiter Santiago to verify these reports. Schley first delayed obeying these orders, convinced Cervera was in Cienfuegos, and then went to Santiago only to quickly depart without actually

⁹⁶⁴ Ibid, 222-235.

⁹⁶⁵ Chadwick, *Relations*, vol. 1, 241. The flying squadron was also en route to Key West; it is likely that the Navy Department wished the fleet to rendezvous and recoil before beginning a search for Cervera's location. Secretary Long stated that "These orders were intended to improve the strategic position of the units into which our fleet was divided, they were certainly in the direction of concentration, which had been our policy from the outset of the war." Long, *New American Navy*, vol. 1, 240-241.

reconnoitering the port and verifying Cervera's presence or absence. This was a major blunder as Cervera had arrived in Santiago on May 19.⁹⁶⁶ He later ignored direct orders from both Secretary Long and Admiral Sampson to blockade Santiago. It was not until May 29 that Schley finally began to blockade the port. His disobedience of orders was to cause a tremendous public controversy after the war, blackening both his and Sampson's reputations.⁹⁶⁷

Cervera's decision to go to Santiago, and the eventual American blockade of the port, radically changed the course of the war in the Caribbean. It allowed the US fleet to concentrate off the port, maintaining the blockade of Havana and other ports with smaller ships, and it allowed the United States to delay if not avoid a land attack on Havana, where the Spanish forces were concentrated.⁹⁶⁸

One of the limitations of nineteenth century steamships was the tremendous amount of coal needed for extended movements. Cervera was severely limited by a lack of coal; even the United States blockading fleet needed an advance coaling station if it were to avoid a constant requirement to send ships back to the naval base in Key West. Coaling at sea was very difficult and required calm weather and seas. One of the tasks given to the blockading squadron was to cut cable communications from Cuba to Spain; the *St. Louis* was charged with doing so at Guantanamo, on the southeast tip of the island. Captain Goodrich, commander of the *St. Louis*, informed Sampson that the bay at Guantanamo would make a good coaling station and that it was weakly defended by the Spanish. A battalion of Marines was mobilized to seize a position on the bay that Cuban rebels had identified as "the only position on the bay which could be

⁹⁶⁶ A Cuban telegrapher loyal to the Cuban rebels reported that Cervera was at Santiago on May 19th. This report was forwarded to the Navy Department, who on May 20th instructed Sampson to send Schley to Santiago to verify the report. Trask, *War with Spain*, 121-122.

⁹⁶⁷ Ibid., 120-129. Chadwick has Schley's report verbatim in Appendix C of his history (Chadwick, *Relations*, vol. 1, 409-412).

⁹⁶⁸ Trask, *War with Spain*, 117.

successfully occupied and defended by a small force.” The marines successfully seized the position on June 10, the “first American force to establish itself permanently on land in Cuba.” In addition to being first, the marines also had only a 2% disease rate during their stay.⁹⁶⁹ Sampson had a secure coaling and refit base on the coast of Cuba, which remains in US possession to this day.⁹⁷⁰

Despite Schley’s inexcusable refusal to properly reconnoiter Santiago, the US Navy had done a creditable job in bottling up Cervera in Cuba by the end of May. The operations had been well planned, but command rivalries between Sampson and Schley delayed the execution of the plan for about 10 days. This in turn delayed any possible land operation, as the entire Cuban land campaign was designed around the need to neutralize Cervera’s squadron by besieging Santiago. This helped to push the Cuban campaign into June, and further delays caused by faulty intelligence and the Army’s lack of experience in planning and executing a major movement of troops via water to an overseas location caused the siege operations to slip into early July. By then the Cuban rainy season (with known miasmas and unknown mosquito hazards) was in full force, and the malarial fevers were the obvious consequence of these delays as we shall see. This decision, to conduct land operations during the Cuban summer, was a violation of the prewar planning.

⁹⁶⁹ Long, *New American Navy*, vol. 2, 6.

⁹⁷⁰ Lodge, *The War With Spain*, 104.

Planning for a Caribbean Land War

The U.S. Navy's inability to gain an early surrender of Cuba made land operations inevitable. Early planning for actions against Cuba was focused on the capital at Havana, the center of Spanish power on the island. Naval-only actions against Spanish ports were ruled out by the Secretary of the Navy on April 6:

The department does not wish the vessels of your squadron to be exposed to the fire of the batteries at Havana, Santiago de Cuba, or other strongly fortified ports in Cuba, unless the more formidable Spanish vessels should take refuge within those harbors. Even in this case, the department would suggest that a rigid blockade and employment of our torpedo-boats might accomplish the desired object, viz., the destruction of the enemy's vessels, without subjecting unnecessarily our own men-of-war to the fire of the land batteries. There are two reasons for this: First, there may be no United States troops to occupy any captured stronghold, or to protect from riot and arson, until after the dry season begins, about the first of October. Second, the lack of docking facilities makes it particularly desirable that our vessels should not be crippled before the capture or destruction of Spain's most formidable vessels.⁹⁷¹

It is significant to note that the plan deliberately avoided exposing troops to the deadly "sickly" season of the Cuban summer.

The McKinley Administration was initially reluctant to engage in a land campaign on Cuba. The Spanish Army in Cuba was estimated at 80,000, made up of veterans who had survived

⁹⁷¹ Long, *New American Navy*, vol. 1, 231.

years of combat and disease, in addition to 20,000 to 30,000 volunteer “guerillas.” Furthermore, as Secretary Alger noted, “As the rainy, or ‘sickly,’ season was due within a month, and was likely to last until the middle of September, it was determined that the wisest course would be to devote the summer to organizing, equipping, and drilling the volunteers, and to make such harassing incursions into Cuba as might seem to be practicable.”⁹⁷² Hopes were initially placed on the blockade, forcing the Spanish to surrender or starve. As the costs of the blockade grew in terms of ship maintenance, and it became clear that the Spanish could not be starved out, a limited reconnaissance-in-force was planned in conjunction with the Cuban insurgent general Gomez. Shafter was given orders on April 29 to take eight regiments of infantry and accompanying engineers, cavalry, etc. and proceed to Tunas on the southern Cuban coast, to “land your force, or such portion of it as you may deem/advisable, and penetrate far enough into the interior to form a junction, if practicable, with General Gomez’s forces. Issue to them all the arms, ammunition, and supplies that may be required, giving them all aid, support, and succor possible.” Shafter was advised to “select the most healthful location and avoid exposing your command to the yellow-fever or other epidemics of the island” for as short a time as possible – “but a few days.” This expedition was called off when the Administration received word of the sailing of Cervera’s fleet.⁹⁷³

On May 2 a board consisting of Alger, Long, Maj. General Miles, and Rear Admiral Sicard met in Washington to recommend the next step, which would be an attack on Havana with 40,000 to 50,000 men using the port of Mariel (20 miles west of Havana) as a landing point. The port would be seized using the Regular Army forces currently stationed at Tampa, followed by volunteer regiments as soon as they could be sent to Cuba. Cosmas states that political and

⁹⁷² Alger, *The Spanish-American War*, 41-42.

⁹⁷³ Alger, *The Spanish-American War*, 45-46; Trask, *War with Spain*, 162-163.

diplomatic issues dictated the early attack. Until the end of April it appeared that Spain would keep its fleet at home, hoping that other European nations would intervene before the notoriously undermanned American Army could be mobilized; “only quick, decisive ground action in Cuba” could prevent this from happening. In addition, the Navy was increasingly worried that an extended blockade would endanger their ships if it were extended into the summer hurricane season.⁹⁷⁴ The last reason for advancing the schedule was an assessment of the danger to the troops from disease. Surgeon-General Sternberg had sent a letter to the Secretary of War on March 25, warning about the hazards of Cuba’s tropical climate. It summarized the results of his research into yellow fever while a member of the Yellow Fever Commission of 1879. He noted that yellow fever was endemic to Cuba; in Havana the fever had an “Annual prevalence since 1761, the chief center of infection, and most dangerous to the shipping.”⁹⁷⁵ Chadwick, one of the senior naval planners of the war, was certain that the senior military leadership regarded a land campaign in Cuba as virtually impossible, given the historical record of British losses in the previous century. He cites Alger, who stated, “As the rainy or 'sickly' season was due within a month, and was likely to last until the middle of September, it was determined that the wisest course would be to devote the summer to organizing, equipping, and drilling the volunteers, and to make such harassing incursions into Cuba as might seem to be practicable.”⁹⁷⁶ Chadwick concludes his discussion by noting with some irony, “It was not foreseen that our home camps were to prove more deadly than Cuba and the Philippines in July.”⁹⁷⁷

⁹⁷⁴ Cosmas, *An Army for Empire*, 114.

⁹⁷⁵ Sternberg also reported that “The statistics published in this report to the United States National Board of Health date back to 1851, and conclusively prove the annual prevalence of yellow fever from that date to the present time, not only in Havana, but also in numerous other places in Cuba.” Surgeon-General Sternberg letter to the Secretary of War, March 25, 1898 (in Appendix B, item 1).

⁹⁷⁶ Alger, *The Spanish-American War*, 41-42, also cited in Chadwick, *Relations*, vol. 2, 4.

⁹⁷⁷ Ibid.

Both Secretary Alger and Commanding General Miles had noted the dangers of disease. Miles in particular relied on the advice of “Dr. James [actually Juan] Guiteras, of Philadelphia, a well-known authority on yellow fever.”⁹⁷⁸ However, on May 6, Guiteras told *The New York Times* that he had revised his opinion on the risk factors for acquiring the disease, telling the correspondent, “Good sanitary arrangements and proper care as to cleanliness of person and wholesomeness of diet will prove ample safeguards.” It was not necessary to stay to the high ground; just avoid places “where refuse has been permitted to accumulate for years.” Furthermore, the dangers from other diseases “have been magnified. Malarial fevers are not dangerous, and smallpox is on the decrease.”⁹⁷⁹ The *Times* reported a few days later that some of the President’s advisors “notably Surgeon General Sternberg” had also concluded the danger from yellow fever “has been exaggerated. It has been shown that the fever is to be feared only in the larger cities, and that so long as the camps are chosen with care and sanitary regulations observed the likelihood of infections is reduced to a minimum.” The paper concluded that Dr. John [sic] Guiteras had concurred in this view and his opinion “has had influence on his [the President’s] decision.”⁹⁸⁰ The former US consul at Matanzas, Cuba told the *Times* on May 24th that his experience led him to believe that “Field operations are perfectly practicable during the rainy season, if there is a proper observance of the ordinary rules of health.”⁹⁸¹ With all of these experts telling McKinley that the risks from disease of deployment during the Cuban rainy season had been overstated, the issue became not one of timing to avoid disease but timing on when the units would be prepared for embarkation at Tampa. Miles dissented from the plan, still

⁹⁷⁸ Miles to Alger April 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 8.

⁹⁷⁹ “Plans for Invading Cuba,” *New York Times*, May 6, 1898, 3.

⁹⁸⁰ “Big Army Going to Cuba,” *New York Times*, May 10, 1898, 2. See also Cosmas, *An Army for Empire*, 114-115.

⁹⁸¹ “No Danger of Disease,” *New York Times*, May 25, 1898, 2.

concerned about the risks from disease during the Cuban rainy season but McKinley, Alger and Long overruled him.⁹⁸²

The hand of Juan Guiteras in this revision of the plans is puzzling. Contract Surgeon Arthur Snyder stated that Guiteras predicted that “a more virulent type of yellow fever would appear in August and September, when the rains were heaviest, and that ‘men would die like sheep.’”⁹⁸³ All other references to Guiteras by Miles, Alger, etc. are in reference to warnings against sending troops during the yellow fever season, consistent with Snyder’s testimony. Even if he somehow changed his mind, the acquiescence of Sternberg for these contradictory reports is equally puzzling. Sternberg had just prepared a summary of the yellow fever threat. He knew just how deadly the disease could prove under epidemic circumstances, and none of his writings (to include Circular #1 for the guidance of the Army⁹⁸⁴) indicate that the disease can be avoided using simple sanitary measures. After being advised about this change in opinion McKinley changed his mind and decided on a Cuban intervention during the rainy season.⁹⁸⁵ Both Guiteras and Sternberg share the blame for this inexplicable advice. Both appeared to be overly influenced by the fomite theory of contagion. A disinterested observer might question why they assumed that the American army would not have the same experience as the Spanish army, perhaps assuming both were imbued with an Anglocentric attitude that attributed filthy habits to the Spanish peasant soldier, habits that the more disciplined American soldier would eschew.

⁹⁸² Cosmas, *An Army for Empire*, 116.

⁹⁸³ Arthur Snyder, *Experiences of a Contract Surgeon* (manuscript, Spanish-American War Veterans and Widows Survey, US Army Military History Institute, Carlisle Barracks), 33, as cited in Cirillo, *Bullets and Bacilli*, 92.

⁹⁸⁴ *Report of the Surgeon-General of the Army, 1898*, 139-140, also as item #3, Appendix B.

⁹⁸⁵ Sternberg’s biographer states that “By not steadfastly supporting Miles in his opposition to a summer campaign, the surgeon general actively assisted in shortening the War Department’s planning and execution timeline.” Craig, *In the Interest of Truth*, 219. Miles explained his dissent after the war: “It is with great reluctance that one hesitates to accept the command of an army of that magnitude in the field; yet, knowing the condition of the troops, the strength of the enemy, and the near approach of the sickly season in a district infested with yellow fever, I considered it my duty not only to the troops, whose lives must necessarily be sacrificed, but to the country, to explain fully to the highest authority the serious objections to such a movement at that time, and also to express my regret that I felt called upon to state such objections.” Miles, “War With Spain – I”, 523.

This seems unlikely, however; as a Civil War veteran Sternberg must have been well aware of the proclivities of the American volunteer soldier. It was during that war that Robert E. Lee described the volunteer soldier as “worse than children [at keeping clean], for the latter can be forced.”⁹⁸⁶ Sternberg failed to offer any explanation for his behavior after the war.⁹⁸⁷

One cannot help but be amazed at the ad hoc nature of all of the decisions made during the month. The nation had gone to war with Spain at the end of April, a move that had been anticipated since the *Maine* incident in February. \$50 million had been appropriated for war preparation, and yet the War Department made no plans or preparations for any land operations against Spain. Even after the war, no one seemed to realize the utility of contingency planning for possible alternative movements against Spanish possessions; instead, it was one plan after another being made and discarded, and only after the first had been abandoned did anyone begin to make a second plan. This had to have adversely affected the quality of decisions made, which may help explain the abrupt about-face Sternberg and Alger made on the virtues of a Cuban operation during the rainy season. It also helps to explain why the Army went to Cuba so poorly prepared for the conditions it would encounter once it arrived, as we shall see.

The orders for an immediate invasion of Cuba as per the board’s recommendations were issued on May 9th; Shafter was ordered to “move his command, under protection of navy, and seize and hold Mariel or most important point on north coast of Cuba and where territory is ample to land and deploy army.”⁹⁸⁸ This order encountered immediate resistance from the Navy Department. Long confided in his diary that “I learn to my utter amazement that it [an attack] is

⁹⁸⁶ Cunningham, *Doctors in Grey*, 167 cited in Sartin, “Infectious Diseases during the Civil War,” 581.

⁹⁸⁷ The Dodge Commission investigation focused on the shortages of personnel, equipment, and supplies and upon the stateside typhoid epidemics that claimed most of the lives lost during the war.

⁹⁸⁸ Corbin to Wade, Commanding Troops at Tampa, Florida, May 9, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 11.

to be made tomorrow, and not a word has been said to me about furnishing a convoy.”⁹⁸⁹ The movement was then postponed until the navy could arrange a convoy and finally canceled once Cervera was sighted off of Martinique.⁹⁹⁰ Although the army continued to build up forces in Tampa, the Army awaited news that the Navy had contained or destroyed Cervera’s squadron before any ground attack could be launched. Other difficulties surfaced on the Army’s side. The volunteer units coming into service were undermanned and most lacked the most basic equipment needed to go to war. The Ordnance Department also lacked ammunition to support more than a single hour of combat by 70,000 men. Despite these difficulties, the Administration still planned to attack Havana. Miles dissented, arguing that a frontal assault on the center of Spanish power would be unnecessarily costly. He also raised the issue of disease in his dissent. He argued that it would be better to place troops in “healthful localities,” organize and equip the Cuban rebels, and wait for the end of the rainy season before using troops for offensive action. He opined that once the US Navy controlled the seas around Cuba “the Spanish forces must have yielded in a few months.” He was once again overruled.⁹⁹¹

The schisms at the leadership level might well have been avoided if President McKinley had exerted more decisive leadership. Trask argues that the problems of mobilization and equipping the forces encountered by the War Department were partly due to McKinley’s failure to provide the Army with a single clear mission. Rather, the Army was expected to simultaneously accomplish two missions: a) prepare small expeditionary forces for immediate service in Cuba while b) also training, arming, and equipping hundreds of thousands of volunteer troops. One

⁹⁸⁹ Long diary May 10, 1898 as quoted in Trask, *War with Spain*, 166.

⁹⁹⁰ Alger, *The Spanish-American War*, 47-48.

⁹⁹¹ Miles, “The War With Spain – I,” 524-525; Trask, *War with Spain*, 166; Cosmas, *An Army for Empire*, 120-121. Miles’ public dissent was judiciously worded in a *New York Times* interview on May 24th: “the United States will in due time bring Cuba under its control by judicious methods and without a useless waste of life. The United States is too great, too strong, and too powerful to commit any foolish act in connection with the invasion. ...” “Gen. Miles on the Invasion,” *New York Times*, May 25, 1898, 2.

task might have been reasonably accomplished given the Army's pre-war size and structure, both were not. Trask also thinks the Army labored under the legacy of prewar planning that relegated it to only a limited supporting role in overseas conflicts – the War Department had anticipated preparing to equip a small regular force rather than a large volunteer army.⁹⁹² McKinley repeatedly pressed for a larger role for ground forces during the war, hoping that the intense pressure would force the Spanish to concede the conflict as quickly as possible. In doing so, he frequently ignored or overruled the advice given to him by Secretary Alger and General Miles.⁹⁹³

In April, May, and June the Spanish showed no inclination to give in. A well-placed American spy in Madrid reported that the Spanish people supported a war with the United States even if they should lose: “The people believe that this superiority of the Spanish navy over that of the United States is overwhelming and that they must defeat us. This opinion is shared also by many intelligent persons—in fact, I believe, by all Spaniards. They say they have nothing to lose; they could not be worse off with the war than without it, as they are about to lose Cuba anyhow; but they can do incalculable damage to our commerce, and seriously injure, if not destroy, our Navy, and although they would probably be beaten in the end, they will have taught us a salutary lesson for the future.”⁹⁹⁴

When Commodore Schley finally confirmed the presence of Cervera in Santiago de Cuba, all previous plans were set aside in order to focus on the Spanish naval force in the city. Alger reports that only two options were considered after May 29: an expedition against the city of

⁹⁹² Trask, *War with Spain*, 167-168. Cosmas also discusses the problems inherent with the dual approach in *An Army for Empire*, 132.

⁹⁹³ Despite the large call-up of troops and the early orders for an invasion of Cuba, Trask is certain that McKinley to minimize ground combat. His actions were intended to provide what we might refer to today as “shock and awe,” an overwhelming show of force to convince the Spanish that they could not win a war with the United States. Trask, *War with Spain*, 171-172.

⁹⁹⁴ Captain Severo Gomez Nunez, *The Spanish-American War. Blockades and Coast Defense*, Office of Naval Intelligence, War Notes No. VI (Washington: GPO, 1899), 29. Nunez was a Spanish captain of artillery serving in Cuba.

Santiago and the capture of Puerto Rico. The latter, however, was regarded as “of secondary importance,” so Alger directed Miles to come up with a plan to attack the city. On May 26, Miles proposed a plan that would require only a small regular force, as “the volunteer army is neither equipped nor instructed, or even supplied with ammunition sufficient to fight a battle.” It called for a landing at the small port of Daiquiri, fifteen miles east of Santiago. In coordination with General Gomez’s force of 8,000 rebel troops, the ground force could either attack Cervera’s ships with plunging fire from artillery or “at least assist our navy in entering the harbor, thereby destroying or capturing the Spanish fleet as well as the garrison occupying that vicinity.” He also recommended a force of 25,000 be used to capture Puerto Rico if Cervera left Santiago or was defeated by the navy before a land campaign could commence. In either event, the troops could then land on the northern coast of Cuba and march toward Havana, thus occupying much of the island. At that time the volunteer troops could be ready to occupy the rest of the island. His plan, Miles concluded, offered the best results during the rainy season “with the least exposure to fever.”⁹⁹⁵

McKinley chose to implement the plan to attack Santiago. He expected that once the city was taken, the force could then proceed to capture Puerto Rico. Shafter was chosen to command his troops in Tampa organized as the Fifth Army Corps while Miles would lead the attack on Puerto Rico, with Shafter’s Fifth Corps under his command. Long issued orders to Sampson to convey transports to the vicinity of Santiago, while keeping the blockade of Havana using “monitors and some small vessels.” Shafter was ordered on May 30 to “take your command on transports, proceed under convoy of the Navy to the vicinity of Santiago de Cuba, land your force at such place east or west of that point as your judgment may dictate, under the protection of the Navy,

⁹⁹⁵ Miles to Alger May 26, 1898. Alger, *The Spanish-American War*, 49-50, 59. See also Trask, *War with Spain*, 173-174.

and move it onto the high ground and bluffs overlooking- the harbor or into the interior, as shall best enable you to capture or destroy the garrison there; and cover the Navy as it sends its men in small boats to remove torpedoes, or with the aid of the Navy capture or destroy the Spanish fleet now reported to be in Santiago Harbor.” Shafter was given wide discretion on how he was to accomplish the mission, but the government “desires to impress upon you the importance of accomplishing this object with the least possible delay” in order to minimize the exposure time to tropical diseases.⁹⁹⁶ Shafter hurriedly attempted to get men, horses, and supplies loaded onto transports to execute those orders. Predictably, however, given the bottleneck between the city and port of Tampa he was still working a week later.⁹⁹⁷ Finally, on June 7 Shafter reported, “I expect to have 834 officers, 16,154 men on transports by daylight, and will sail at that hour.” Despite all of the rush, the next morning Alger wired, “Wait until you get further orders before you sail. Answer quick.” Shafter literally had ships underway but he stopped them before they reached the Gulf.⁹⁹⁸ The invasion was called off – at least for the moment.

The fog of war had thrown U.S. operations off schedule. The source of the delay was a report from the blockading fleet that said simply: “Spanish armored cruiser second class and Spanish torpedo-boat destroyer seen by *Eagle*, Nicholas Channel, Cuba. Destroy convoy.”

Embarrassingly, the report was inaccurate. The phantom Spanish fleet turned out to be three US

⁹⁹⁶ War Department to Shafter, May 30, 1898, *Correspondence Relating to the War With Spain*, 19-20. Miles attempted to persuade McKinley to attack Puerto Rico first, but this proposal was immediately shot down. Alger, *The Spanish-American War*, 60-61. See also Cosmas, *An Army for Empire*, 201-202.

⁹⁹⁷ Miles reported to Alger on June 2nd that “The working force at Tampa has been divided into three reliefs, each working eight hours during the twenty-four, nine ships being loaded at one time.” Miles to Alger, June 2, 1898, *Correspondence Relating to the War With Spain*, 22-23. Two days later he reported that “Several of the volunteer regiments came here without uniforms; several came without arms, and some without blankets, tents, or camp equipage. ... Stores are sent to the quartermaster at Tampa, but the invoices and bills of lading have not been received, so that the officers are obliged to break open seals and hunt from car to car to ascertain whether they contain clothing, grain, balloon material, horse equipments, ammunition, siege guns, commissary stores, etc. Every effort is being made to bring order out of confusion.” Miles to Alger, June 2, 1898, *Correspondence Relating to the War With Spain*, 25.

⁹⁹⁸ Shafter to Adjutant-General Corbin, June 7, 1898; Shafter to Alger, June 7, 1898. *Ibid.*, 31.

supply ships. The invasion, already tardy, was delayed by a week while the Navy investigated the phantom sighting. The soldiers remained on the sweltering ships during this delay, which undoubtedly weakened their physiques and may have made them more susceptible to disease after they finally arrived in Cuba.⁹⁹⁹ Shafter finally sailed for Cuba on June 14.¹⁰⁰⁰

While the Fifth Corps loaded and sailed for Cuba, Miles began to prepare for the seizure of Puerto Rico. Although he still wanted Shafter's troops involved, McKinley decided that it should be mounted using troops other than the Fifth Corps, drawing on volunteer regiments – 12,000 remaining at Tampa, 16,000 from the First Corps at Camp Thomas and 6,000 from the Second Corps at Camp Alger. Alger formally designated Miles to command an invasion of Puerto Rico on June 26th.¹⁰⁰¹

The final preparation for the land campaign in Cuba was to request the assistance of the Cuban insurgents in the vicinity of Santiago. Miles sent a message to Cuban General Garcia on June 2: “would be a very great assistance if you could have as large a force as possible in the vicinity of the harbor of Santiago de Cuba... It would also assist us very much if you could drive in and harass any Spanish troops near or in Santiago de Cuba, threatening or attacking them at all points, and preventing, by every means, any possible reenforcement [sic] coming to that

⁹⁹⁹ Alger later noted that if he had been able to sail on June 8th he would have had “one week more before the rains began.” Alger, *The Spanish-American War*, 73-74. See also Cosmas, *An Army for Empire*, 192-193, Trask, *War with Spain*, 186-187. The dispatches identifying the ships sent June 11, 1898 are reproduced in Chadwick, *Relations*, vol. 1, 371. The Dodge Commission received testimony that the troops were “physically worn-out” when they arrived at Santiago after being left upon the ships, although Shafter in his testimony said the troops were “in as magnificent shape when they landed as they could be.” Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3205-3206.

¹⁰⁰⁰ Alger tried to put the best face on the outcome in his history of the war. He said that despite the delay “all arrived off Santiago little the worse for the voyage. Had the expedition sailed from any other port it is doubtful whether there would have been much less confusion; besides, the transports would have been obliged to cross an open sea hundreds of miles farther, and subject to dispersion by storms or attacks by the ships of the enemy. The expedition from Tampa was a success and unmarred by loss of life or treasure.” Alger, *The Spanish-American War*, 82.

¹⁰⁰¹ The initial mission was simply “movement and operation against the enemy in Cuba and Puerto Rico.” It was intended to include Fifth Corps troops once Shafter successfully captured Santiago. Final orders issued on July 18th called for Miles to “hoist the American flag” upon landing in Puerto Rico – i.e., lay claim to the island. Alger, *The Spanish-American War*, 299-300, 302; Cosmas, *An Army for Empire*, 194.

garrison.” Garcia assented and sent men to Guantanamo and also attempted to block movement of Spanish troops from bases at Holguin and Manzanillo to reinforce Santiago.¹⁰⁰²

The die was cast. An American invasion of Cuba during the deadly rainy season had begun.

¹⁰⁰² Miles, “War With Spain – I,” 526-527.

CHAPTER 10

THE CUBAN INTERVENTION

The Spanish Situation

A major factor in the outcome of the war was the tremendous losses, not to mention the debilitating sickness, endured by the Spanish in the colonial wars fought in Cuba and the Philippines just prior to the start of the Spanish-American War. The disease environment was just as harsh to Spaniards recruited from the Spanish homeland as it was to the American troops sent from the United States. The wartime environment was equally harsh on civilians, especially in the reconcentration camps. In 1898, the Spanish Army had a total of 492,067 officers and men, distributed as follows: Spain, 152,284; Cuba (regulars and volunteers) 278,447; Philippines, 51,331; and Puerto Rico, 10,005. The forces in Cuba had been built up rapidly after the start of the rebellion in 1895. Initially, there are about 18,000 in Cuba; within the next two years over 187,000 officers and men were sent from Spain. During the buildup 2,141 men were lost to enemy action, 13,035 were lost to yellow fever, and another 40,000 from other causes, primarily disease. By February 1897 there were around 18,000 in hospitals in Cuba.¹⁰⁰³ The public health service reported that about 30,000 soldiers were stricken with yellow fever in 1897, with over 6,000 deaths. Other diseases reported among Spanish soldiers were smallpox, malaria, enteric fever (typhoid), enteritis, and dysentery. The total deaths in 1897 from diseases other than yellow fever were approximately 26,000 for that year alone. The number of Spanish soldiers

¹⁰⁰³ Chadwick, *Relations*, vol. 1, 51-52. Brunner, "Morbidity and mortality in the Spanish army," 409-412.

remaining to oppose the Americans in Cuba was 155,302 with around 80,000 more Cuban volunteers; about 88,000 of those sent from Spain had been lost from disease (died or permanently invalidated). Most Spanish defenders were located in or around Havana, but there were 34,000 in Santiago province, 9,430 in the city, 8,364 in Holguin, and 8,668 in Manzanillo. Disease was the primary killer of the unacclimated Spanish soldiers sent from the homeland, just as it would prove to be the primary killer of the American attackers in 1898.¹⁰⁰⁴ A recent paper has documented the number and types of outbreaks in Cuba between 1895 (the start of the insurrection) and 1898: the Spanish lost 53,440 soldiers to disease out of 62,853 total deaths, the Cuban rebels 3,437 out of 8,617, and the civilians had about 218,000 deaths, almost all from disease. The soldiers died from yellow fever, the civilians from smallpox, and some from all populations died of enteric fever (typhoid).¹⁰⁰⁵

The Spanish situation was dire. They were virtually exhausted from battling the rebels, the climate, and relentless attacks of epidemic disease. Their food supplies were scanty and threatened to become much worse with an American blockade. No reinforcements could be expected from Spain – neither men nor materiel. They were to be forced to fight with the meager forces already in country, already weakened by years of war.¹⁰⁰⁶

The difference between the disease rates for Spanish soldiers and native Cubans was striking. Tone notes that the Spanish troops suffered from high mortality rates from yellow fever epidemics that spared the Cuban natives; in one district in 1879 1,500 soldiers died against 119 Cuban civilians. The reason was simple: Cuban natives caught the fever in childhood; it was so endemic that it was referred to as a ‘fever of acclimation’ which most children survived. Adult

¹⁰⁰⁴ Chadwick, *Relations*, vol. 1, 53-54.

¹⁰⁰⁵ Smallman-Raynor and Cliff, “Cuba and the insurrection against Spain,” 331-352.

¹⁰⁰⁶ Chadwick, *Relations*, vol. 1, 54.

Spanish arrivals, however, caught the disease soon after arriving in Cuba – often with fatal results. Guidebooks warned visitors that “One Cubanized or one died.”¹⁰⁰⁷ This is consistent with J.R. McNeill’s thesis in *Mosquito Empires*. By the 1700s, local populations in the Caribbean (mainly descendants of early white settlers and blacks originally imported as slaves, as European diseases had decimated the Indian population in the region) had become thoroughly acclimatized to mosquito-borne diseases, especially yellow fever. This meant that locals had a significant advantage over any attackers from the major European powers; disease had defeated armies from Britain, France, and Spain, and would be a major factor in Cuban independence.¹⁰⁰⁸

It must be noted that American leaders had access to Spanish guidebooks and consular reports that detailed Spanish losses to disease between 1895 and 1898; the US Public Health Service tracked Spanish hospitalization and death statistics in the major cities where troop concentrations were found. It was clear to anyone that the disease environment would be as unfavorable to North Americans as those sent from Peninsular Spain.¹⁰⁰⁹

The Cuban general Máximo Gómez named his best generals “June, July and August.”¹⁰¹⁰ These generals were feared in Spain as much as in Cuba, as poor families unable to purchase an exemption from military service lost sons to the dreaded Cuban fevers. US Army Captain Tasker Bliss, the United States military attaché observed soldiers returning from Cuba, wounded or disabled from disease, “who return by every steamer from Cuba... Wives mothers and sisters ... were crying and some screaming at the sight of the death-like forms being landed from the boats.”¹⁰¹¹ Cuba was Spain’s Vietnam; a long war fought in a far-away place for motives obscure

¹⁰⁰⁷ Tone, “How the Mosquito (Man) Liberated Cuba,” 278.

¹⁰⁰⁸ McNeill, *Mosquito Empires*, 2-5. See also Tone, “How the Mosquito (Man) Liberated Cuba.”

¹⁰⁰⁹ An example of the information available to American decision makers is found in the April 29, 1898 report “Morbidity and mortality in the Spanish army in Cuba during the calendar year 1897” cited previously.

¹⁰¹⁰ Musicant, *Empire by Default*, 56.

¹⁰¹¹ Cited by *Ibid.*, 110.

to the Spanish citizens who saw fathers, brothers, and sons consumed by disease – an endless loss of blood and treasure.

Nonetheless, the arrival of Cervera's squadron in Santiago was "received with so much rejoicing both in Spain and Cuba."¹⁰¹² Governor-General Blanco told the Spanish Minister of Colonies that arrival of the squadron in Cuba was critical for Spain to maintain its control on Cuba. When informed that Cervera was considering returning to Spain, he said "If this should happen, situation here would be wholly untenable, and I could not prevent bloody revolution in this capital and whole island, feelings being already overmuch excited by delay in arrival of our squadron. Therefore, beg your excellency to tell me whether it is true that order has been issued to squadron to return to Peninsula, and if so does Government realize the significance of such a decision, which might be the cause of a bloody page staining our history, and of final loss of this island and the honor of Spain? If our squadron is defeated, it would increase here determination to vanquish or die; but if it flees, panic and revolution are certain." The Governor-General of Puerto Rico also told the Minister of Colonies that retention of Cervera's squadron was essential for morale: "Order for squadron to return to Peninsula will end enthusiasm and high spirit in island. Inhabitants will say Spain abandons them and situation may become very critical."¹⁰¹³ However, when Cervera actually arrived at Santiago, Blanco was less pleased: Cervera's "Squadron without provisions and coal. Taking coal at Santiago, where it cannot remain long; danger of being blockaded and entirely cut off; resources of place limited. If *Pelayo*, *Carlos V*, and torpedo-boat flotilla had come with them might attempt some action and lend powerful assistance in defence of islands. But reduced as it is, squadron must elude encounter and confine itself to maneuvers which will not compromise it and which cannot have great results. Has

¹⁰¹² Ibid., 308.

¹⁰¹³ The Governor-General, Puerto Rico (Macías) to the Minister of Colonies Girón, May 18, 1898. Ibid., 78.

brought no transports with coal and provisions which would have helped so much, nor weapons and ammunition.”¹⁰¹⁴

The Spanish had approximately 9,500 men stationed in Santiago de Cuba under the command of Lieutenant General Arsenio Linares Pomba, joined by approximately 1,000 sailors under Cervera’s command once he arrived at the port city. General Linares had more troops in the region which he could have moved into the city, but the city did not have the provisions or ammunition to support additional troops. He also had to have troops in Siboney and Daiquiri, to repel invaders, and to have troops in the countryside to gather and protect provisions and to protect the water supply. Cuban insurgents prevented or delayed the movement of troops into the city; if Linares had attempted to move the garrison into the countryside losses from Cuban rebels would likely have been great.¹⁰¹⁵

Santiago had excellent natural defenses; heights on either side of the harbor (the Morro on the east and Socapa on the west) as well as a height known as Punta Gorda control the entrance to the city and they were also difficult to attack on land. The entrance is very narrow; ships could traverse the entrance only in a column and the channel could easily be blocked by torpedoes (mines) or by sinking a vessel. Two rows of torpedoes were laid on April 21 and 27.¹⁰¹⁶ The land defenses were more primitive; only six modern breech-loading artillery pieces were available. The rest were old muzzle-loading weapons, some from the 18th century. Lieutenant Jose Müller, the second-in-command of the naval forces in Santiago de Cuba (not including Cervera’s ships), noted, “It does not require a deep knowledge of artillery to understand that the batteries erected

¹⁰¹⁴ Blanco to the Minister of Colonies Girón, May 17, 1898. Cervera y Topete, “A Collection of Documents,” 78; Blanco to the Minister for War Correa, May 20, 1898. Ibid., 81.

¹⁰¹⁵ Jose Müller y Tejeiro (Lieutenant, Spanish Navy), *Battles and Capitulation of Santiago de Cuba*, Office of Naval Intelligence, War Notes No. I (Washington: GPO, 1899), 72-73; Trask, *War with Spain*, 198-199.

¹⁰¹⁶ Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 11, 18

at the Morro and Socapa, and even at Punta Gorda, were powerless, or almost so, against armored and protected ships.” Nevertheless, Lt. Müller noted, “we kept the American fleet...for seventy days ...not daring to force the entrance.”¹⁰¹⁷ The city was short on provisions, coal, and ammunition. Müller reported that the animals of the city were dying of starvation; he saw “a dog throw himself upon a smaller one and kill and devour him.” It had an effect on the Spanish troops: “If there had been flour and bacon, the soldiers might not have become weakened and sick”¹⁰¹⁸

Linares prepared three lines of defense on land – an outer line between Daiquiri and Siboney, to screen against an arrival at either location, a second line anchored with blockhouses and forts north and east of the city, and an inner line of defense at the edge of the city itself.¹⁰¹⁹

Cervera’s squadron remained in Santiago before it was effectively blockaded because of the time and difficulty of recoaling at the port. The only launches and lighters in the port were “some of them useless, others in bad repair, and a few only in condition to be used.” The largest ship (Cristobal Colón) required a boiler overhaul, a week’s work. Müller advanced another reason: the presence of the ships compelled the United States navy to maintain a blockade with a superior force, using coal, and exposing the ships to mechanical breakdowns and the possibility of loss from storms.¹⁰²⁰ Cervera wired his superiors on May 24 that “In view maximum speed this squadron reduced to 14 knots, account of *Vizcaya* bottom fouled, lack of coal, location of

¹⁰¹⁷ Ibid., 24.

¹⁰¹⁸ Cervera told Spanish Minister Auñón “Santiago de Cuba very short of provisions, and if it does not receive any it must succumb. As this squadron is greatly inferior to American, we can not accept decisive battle, which would mean certain defeat, and if we are blockaded before we finish taking coal, which is difficult [scarce], we shall succumb with the city. If provisions are received, resistance will be possible as long as they last.” Cervera to Auñón May 1, 1898. Cervera y Topete, “A Collection of Documents,” 83. Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 31-34.

¹⁰¹⁹ Trask, *War with Spain*, 201.

¹⁰²⁰ Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 34, 38. Müller explained that “The coaling, which went on day and night, progressed very slowly, in spite of everything; for at the two piers where the coal was there was very little water, and at the end of each pier only one lighter could be accommodated...” (Ibid., 35)

hostile fleets, and condition of harbor, certain danger of sortie greater than advantages gained by reaching San Juan, only (near) harbor where we could go. ... Shall await more favorable opportunity.” He admitted the next day that “We are blockaded. I qualified our coming here as disastrous for interests of country. Events begin to show I was right. With disparity of forces any effective operation absolutely impossible.”¹⁰²¹

Once Cervera’s squadron was blockaded at Santiago, the Spanish situation became dire. Blanco explained this to the Minister of War on June 20, asking for command of all ground and naval forces on and around Cuba:

The entrance and stay of the squadron at Santiago has completely changed the objective and aspect of the campaign, the existence of provisions and coal, and provisioning of certain places. If an attempt had at least been made of consulting with me, General Linares, and the commandant-general of the navy-yard, perhaps between us we might in the beginning have found a better solution than those now awaiting the squadron, namely, either to await the result of unequal battle in the harbor, or break hostile line to go to some other harbor, Haiti or Jamaica, where it would again be closed in. It would perhaps be preferable to go to Cienfuegos or Havana, which is still possible; or, if not, reinforce and proceed to Spain, which would be the best; anything rather than remain closed in at Santiago with the prospect of having to surrender from starvation. The situation is extremely serious...General Linares states if Government does not have means to help them by sending a squadron against United States coasts, object to draw off part of United States fleet which attacks them, so

¹⁰²¹ Cervera y Topete, “A Collection of Documents,” 88, 91.

that our squadron can go out, or squadron to arrive from Spain run the blockade in cooperation with Cervera's sortie, circumstances will take care of solving conflict.¹⁰²²

The arrival of the US Fifth Army Corps off the outskirts of Santiago on June 22 did begin this process of solving the conflict.

¹⁰²² Blanco to Minister of War, June 20, 1898 (two messages). Cervera y Topete, "A Collection of Documents," 106-107. See also Trask, *War with Spain*, 210-202.

The U.S. Cuban Campaign

Once the decision was made to attack the city of Santiago de Cuba by land, a choice of landing sites and approaches was critical. The land along the southern coast east of Santiago is a plateau extending from the inland mountain ranges to the coast; much of the coastline consists of cliffs that border the sea. As one correspondent (George Kennan) explained, this plateau was cut in several places with narrow “notches.” One such notch was the entrance to the harbor of Santiago; the narrow passage from sea to port is angled so that it is not possible to see the city from offshore. About thirty-five miles east of the Santiago harbor channel, the land sinks from the plateau toward a broad bay, the Bay of Guantanamo (see Figure 6). In the lower (outer) part of the bay it is possible to land troops; this is the point where the Marines landed to seize the defenses of the outer bay (see below). Between Guantanamo and Santiago the high plateau is cut with notches in only three places, where streams from the mountains find their way to the sea. The first notch as you proceed east from Santiago is the Aguadores River (also called the Guamo River). At that point a railroad crosses on an old iron bridge; it is guarded with a stone fort and wooden blockhouse (see “Old Fort” and “Iron Bridge” on map). There is a road along the coastline between Aguadores and Santiago, but it was described as “bad” (which is really saying something considering the shape of other Spanish roads).¹⁰²³ The next notch is the town of Siboney, which is also on the rail line. The third is Daiquiri, which was used as the shipping port of the Spanish-American Iron Company; to facilitate loading iron ore onto ships the company built a wharf which extends about 40 feet from the shore. As Kennan noted, “There is no harbor, shelter for vessels, or safe anchorage at any of these places; but as the rampart [cliffs of the

¹⁰²³ Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 12.

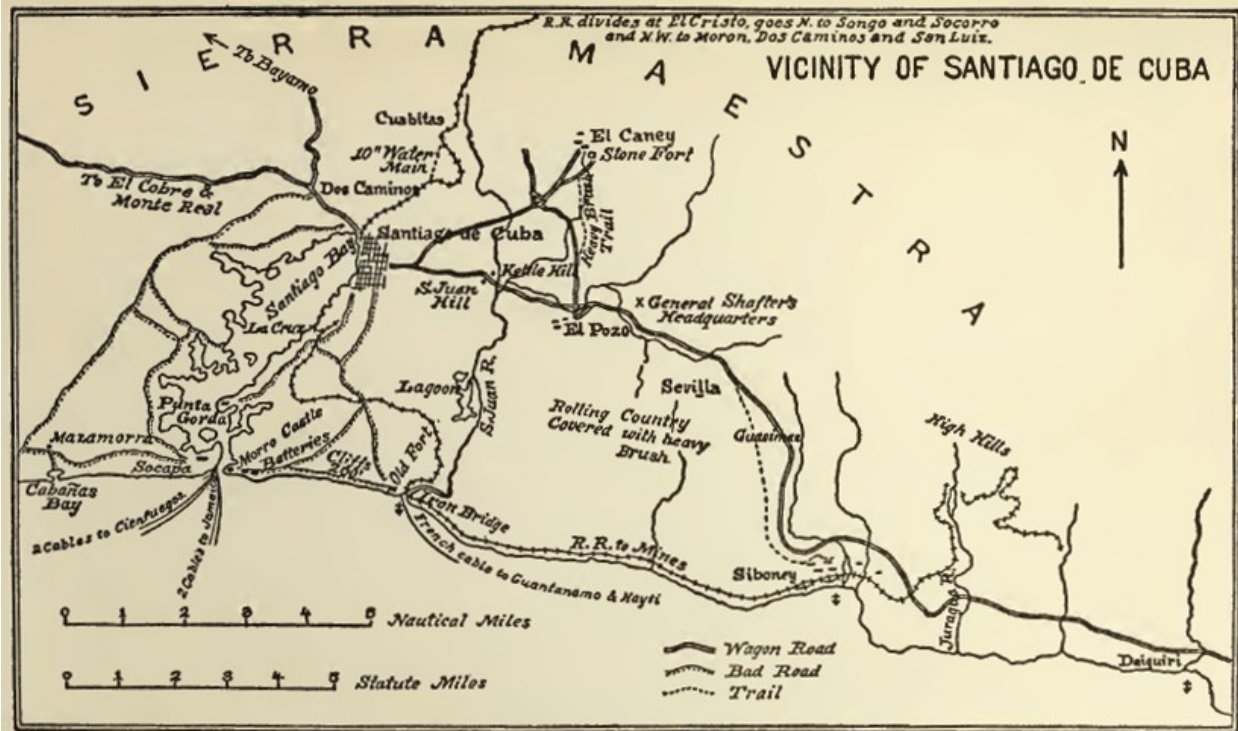


Figure 6: Santiago de Cuba and Vicinity
(Source: Chadwick, *Relations*, vol. 2, 27)

plateau], everywhere else, presents an almost insurmountable barrier, an invading force must either disembark in these notches, or go eastward to the Bay of Guantanamo and march forty miles to Santiago through the foothills.”¹⁰²⁴ Shafter decided to land much of his force, especially artillery, wagons, and heavy equipment, at Daiquiri, taking advantage of the wharf. To speed up the landing as well as to seize an important waypoint between Daiquiri and the city he also landed forces across the surf at Siboney.

Shafter and his troops arrived off of the coast of Cuba near Daiquiri and Siboney on June 22. He had “819 officers, 16,058 enlisted men, 30 civilian clerks, 272 teamsters and packers, and

¹⁰²⁴ George Kennan, *Campaigning in Cuba* (New York: The Century Co., 1899), 77-78. Chadwick also mentions two other breaks in the cliffs between Aguadores and Siboney – Sardinero and Jutici, where “landings could be made with difficulty.” Chadwick, *Relations*, vol. 2, 26-29.

107 stevedores” as well as 89 reporters and 11 foreign observers.¹⁰²⁵ The landing laid bare all of the problems associated with inter-service cooperation and the inexperience of the Quartermaster Department in managing troop transport by sea. Navy Lieut. F. K. Hill, on board the USS Iowa, later testified about the landing:

Q: ...did the army come properly equipped for landing an army of that size, in your judgment? A. They did not come prepared to land at all, as far as I saw. Q. Then, except as to the navy, there would have been no landing? A. Yes, sir; General Shafter said that himself. I understand that they started with a number of lighters, which they lost on the way. ...Q. Then, as I understand it, without the assistance of the navy the army could not have landed and could not have subsisted after they landed? A. That is the way I look at it.¹⁰²⁶

Part of the problem was the fact that the ships were civilian craft under charter rather than under the command of the army. Lt. Hill discussed this also.

Q. What distance were the transports from the shore—the distance you had to travel in order to land the stores? A. We had a great deal of trouble the first two days, due to the captains of the transports, as I found. Q. Those were loaded with supplies? A. Yes, sir; and the captains of those vessels would not move up closer, and they said they ordered the captains to come in, but the captains said they did not want to go in, because they did not know whether it was safe or not, and as the army officers did not know either, they could not insist.¹⁰²⁷

¹⁰²⁵ Chadwick, *Relations*, vol. 2, 20. The landings occurred at both Daiquiri and Siboney, which were about eight miles apart. Trask, *War with Spain*, 213; Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3197.

¹⁰²⁶ Lt. F.K. Hill, *Dodge Commission Report*, vol. 3 (Testimony), 304.

¹⁰²⁷ *Ibid.*, 305.

The captains had not volunteered to place themselves and their vessels under Spanish fire; despite the lack of Spanish opposition, they remained far off shore, due to “general timidity.”¹⁰²⁸

The Army had leased three tugs and two landing barges; however one (the *Uncle Sam*) deserted the first night, the second (*Bessie*) broke down en route and one of the barges broke tow and disappeared at sea. The loss of these ships made the Army absolutely dependent upon the navy to land. The limited number of transports also meant that many items that were later to be sorely missed were left behind. Only 7 ambulances were shipped, although Shafter later testified that they used wagons instead, and that “It is as easy to ride in a wagon as in an ambulance.”¹⁰²⁹

Another problem was that Shafter had decided upon his plan of attack without the navy in mind. The navy had wanted Shafter to capture the shore defenses near the harbor’s mouth; Shafter preferred an attack from inland. The route taken was far enough inland that the navy was unable to provide supporting fire; when Shafter got close enough to the city itself for naval gunfire support from the blockading vessels, he did not call for support until the final days of the campaign after Cervera’s fleet had departed. In 1898, as in the Civil War, the Army and Navy operated independently (subject to a common commander only at the Presidential level as commander-in-chief) and any joint operations between the two services depended upon voluntary cooperation between the two service commanders in the field. General Shafter and

¹⁰²⁸ Ibid., 305; Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3195. Chadwick believed that the problem arose because each transport lacked a naval liaison. Chadwick, *Relations*, vol. 2, 20. Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3194. He did say that in hindsight it would have been better to load about 13 more ambulances and that many fewer wagons, but that wasn’t a major issue (ibid.). In Shafter’s defense, Cosmas noted that the Fifth Corps had been organized and equipped for an anticipated attack on Havana, which had a good port of disembarkation (Mariel) and good roads for transportation. Cosmas, *An Army for Empire*, 206.

¹⁰²⁹ Chadwick, *Relations*, vol. 2, 19; Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3194. The Surgeon-General testified that “When the command embarked on the transport vessels the baggage wagons and mules were left behind ‘and were never seen again by the medical department of the Fifth Army Corps.’ The ambulance trains of all the divisions, with a large part of the outfit of each of the hospitals, were also left behind. Three ambulance wagons were taken apart and stored on one of the vessels. These did excellent service at San Juan and showed how efficient the ambulance companies would have been had they not been deprived of their equipment.” Sternberg, *Dodge Commission Report*, vol. 1 (Appendices), 644.

Admiral Sampson rarely saw eye-to-eye.¹⁰³⁰ Sampson and Shafter later engaged in a conflict in dispatches and official reports over who had committed to do what. Sampson claimed:

Extensive shore batteries were known to exist, and if our smaller vessels were sent in and were sunk, either by the mines or by the fire of the batteries, the harbor would be effectually closed to us. It was essential to the new scheme of attack on this mine field that the positions occupied by the eastern and western batteries should be carried, and this was the scheme of action first proposed by General Shafter in his discussion with my chief of staff, who was sent by me to meet General Shafter the day of his arrival. The chief of staff carried with him a chart of the harbor and explained the situation, stating that it was regarded by us as a movement of primal importance that these points should be carried before any attention was paid to the city. The possession of these points insured the destruction of the mines by us, the entrance of our heavy ships in the harbor, and the assault on Admiral Cervera's squadron inside. To this General Shafter gave most cordial assent, and stated that he had no intention of attacking the city proper ...¹⁰³¹

Shafter responded:

I cannot permit this to pass without notice, as it is incorrect in all that it states in reference to my assent to the plan which was proposed by the navy, to first attack the forts at the entrance of the harbor, permitting them to enter and take up the mines—a plan of operation that was never contemplated by me, and which, if it had been attempted, would, in my

¹⁰³⁰ Trask, *War with Spain*, 203-207. Chadwick later claimed that the route could have been covered by naval gunfire. However, analysis of naval actions indicates that the aim was often poor (many more misses than hits) and Shafter would likely have insisted on safety measures such as firing short (shorter ranges to avoid hitting friendly troops) which would have negated its effect. Shafter did insist later that the naval bombardment of the city fire short for troop safety reasons. Chadwick, Chadwick, *Relations*, vol. 2, 57-58, 220. Only 2.42% of the shots fired at Manila Bay hit their targets. Trask, *War with Spain*, 104.

¹⁰³¹ Report of Rear Admiral Sampson to the Department of the Navy, as quoted in Alger, *The Spanish-American War*, 87-88 (no date provided)

opinion, have resulted most disastrously to my army. ... I was convinced that Siboney and Daiquiri were the points at which to land, and that the city of Santiago itself was the objective, as that embraced both the city and the fleet of Admiral Cervera.¹⁰³²

In his history of the Army during the war, Cosmas concluded that “there every reason to believe Shafter correctly deduced and carried out his Commander-in-Chief’s intentions.”¹⁰³³

Part of the reason that Shafter conducted his land campaign was speed – “It was to be a dash or nothing.” Shafter had made a study of the British 1761-1762 attack on Havana, made at the same time of year as his attack. He later recorded “I know that the same climatic conditions were to be found about Santiago that existed in Havana; and I had no doubt that very soon we should be confronted with all the diseases incidental to that climate, and my experience verified it absolutely.”¹⁰³⁴ According to Shafter’s source, the British had suffered a loss of at least 1790

¹⁰³² Shafter to Corbin Dec. 24, 1898, as quoted in Alger, *The Spanish-American War*, 88. Goode discusses the controversy in *With Sampson through the War*. He says that in a pre-landing conference on June 20th with the navy and General Garcia, Shafter stated to Garcia that “My object, General, is to land my troops and occupy these forts at the entrance of the harbor, in order that the navy boats can lift the mines and let their ships get in and attack Cervera’s squadron.” Goode later interviewed Shafter and reported that “he replied that his plans had never changed; that he did not contemplate taking the forts, and that during the conferences on June 20 he had fully discussed the capture of the city by the army.” W.A.M. Goode, *With Sampson through the War* (New York: Doubleday & McClure Co., 1899), 177-178. Goode comes down on the side of Sampson, believing that the memorandum made at the time of the conference “flatly contradicts General Shafter” (179). Chadwick believed that Shafter had chosen to attack the city rather than the harbor approaches because of faulty intelligence on Spanish numbers given to him by the War Department: “7,000 Spaniards were entrenched at Siboney and Daiquiri; 5,000 at the mouth of Santiago harbor and about 1,000 at other points near the city.” General Garcia also told Shafter in the pre-landing discussions that “the main body of the troops being at the Morro and around the city of Santiago” Chadwick concluded that Shafter “naturally leaned to advancing at once upon Santiago itself, which, from the telegram sent him, seemed largely denuded of troops.” Chadwick, *Relations*, vol. 2, 23-24. On the controversy, Chadwick recalls that a plan to attack the defenses at the mouth of the harbor were discussed, and Shafter “probably meant to say “not seriously contemplated.” ...It is not surprising that in the multitudinous and pressing affairs of the days to come the general’s memory of what was talked of but never carried into effect should have become vague.” (ibid., 25).

¹⁰³³ Cosmas, *An Army for Empire*, 202. Trask discusses other possible reasons why Shafter did want to execute the Navy’s plan. He lacked the heavy artillery necessary to attack the fortifications overlooking the harbor, although naval gunfire could have been used instead. He also may not have wanted to share the credit and glory of capturing the city with the navy (he later deliberately excluded the navy from participating in the surrender ceremony). In the end, “he must have believed that the tactical dangers of his plan were not very imposing compared to those inherent in the navy’s proposal.” Trask, *War with Spain*, 206-207.

¹⁰³⁴ Shafter, “The Capture of Santiago de Cuba,” 614.

men in their siege of Havana from June 6 to August 12, 1762.¹⁰³⁵ A contemporary source, the journal of a chaplain from Connecticut who joined the American provincial troops in the attack, described it dramatically (spelling as original): “Thus with our Melancholly Camp a fatal disease enters tent after Tent, and with irresistable force strikes hands with soldier after Soldier, and with hostile violence Seizes the brave, the bold, the hearty and the Strong, no force of arms, no Strength of Limbs, no Solemn vows, no piteous moans, no heartrending Groans, no vertue in means, no Skill of Physicians can free from the Tyrant hand, but death cruel death that stands Just behind, draws the Curtain... .” He reported a regiment of 914 had 184 deaths by Oct 2, 1762 (over 20%); by October 17th, another 42 of the regiment died. He died a few days later.¹⁰³⁶ Other reports published contemporary with the war reported that 5,000 soldiers and 3,000 sailors were stricken by disease; “it is safe to say that half of the expedition were either dead or dying.” The difference between the 8,000 and 1,790 figure is probably the difference between casualties (sick and deceased – 8,000) versus dead (1790).¹⁰³⁷

Shafter made a comparison of the British outcome to his own experience:

The description given in the “Journal of the Siege of Havana” corresponds very closely to the way in which the men of my own army were stricken down, though our losses were very much less, as may be seen by the following comparison: The English army numbered

¹⁰³⁵ The source was almost certainly *The Capture of Havana in 1762 by the Forces of King George III* (Boston: Office of Lend-a-Hand, 1898) which reprints two journals of the period: *An Authentic Journal of the Siege of Havana by an Officer* (London: T. Jefferys, 1762) and Patrick MacKellar, *A Correct Journal of the Landing of His Majesty’s Forces on the Island of Cuba; and of the Siege and Surrender of the Havannah [sic] August 13, 1762* (Boston: Green and Russell, 1762). The endnote to this combined edition reprint states “The loss of the English army and navy exceeded 1790 in men and officers—The greater part of them died of sickness which raged both on shore and aboard ship” – exactly the figures cited by Shafter.

¹⁰³⁶ John Graham, *Extracts from the journal of the Reverend Graham at the Siege of Havana* (New York: Society of Colonial Wars, 1896), 8.

¹⁰³⁷ Asa Bird Gardiner, “The Havana Expedition of 1762 in the War With Spain,” *Rhode Island Historical Society* (1899): 182, Robert Burton, “Siege and Capture of Havana in 1762,” *Maryland Historical Magazine* IV (1909; presentation given 1899): 330. These figures (5,000 and 3,000) are from *An Authentic Journal of the Siege of Havana*, p. 32. Gardiner provides a figure of 1799 for the number of deaths lost by the British, although that included losses from enemy action.

14,000 men, our army 20,000. From the date of our arrival in Cuba, June 20, to August 24, at which time the last of the Fifth Corps left Santiago, 13 officers, 296 men, and 9 civilian employees died of disease; 24 officers and 226 men were killed, 83 officers and 1214 men were wounded, only 13 deaths resulting from wounds received in action. We made quick work of it. The English were much longer and suffered proportionately. I estimated that the troops would have immunity for two or three weeks, and to be successful with my force it was to be a dash or nothing.¹⁰³⁸

Fortunately for the Americans, the Spanish failed to provide any significant opposition to the landing. The landing was preceded by a general shelling of the coastline from west of Santiago to Daiquiri, ostensibly to confuse the enemy about the actual landing point(s). The size and unexpected nature of the shelling caused the few Spanish defenders in Siboney and Daiquiri to flee inland. Chadwick reported that the commander of the Spanish troops who abandoned Daiquiri in a rush as soon as the Americans arrived offshore left an unfinished letter to General Linares assuring the general that “he was abundantly able to resist any attack at Daiquiri, either by land or sea.”¹⁰³⁹ In hindsight it is reasonable to question why Linares did not attempt to put more forces forward at the landing points, which were generally easy to defend (only 300 were present at Daiquiri). It may have been a reluctance to scatter his forces too widely, which risked

¹⁰³⁸ Shafter, “The Capture of Santiago de Cuba,” 614-615. Shafter also noted that “The French expedition sent to Santo Domingo in 1801 was still more disastrous. Napoleon himself, in speaking of it, says: ‘I armed thirty ships and sixteen frigates, which carried successively about twenty-five thousand men to Santo Domingo... in the meantime yellow fever broke out among our troops, and in three weeks carried away two thirds of our fine army. Twenty thousand soon were dead or dying in the hospitals. The new regiments lost half their number within twenty-four hours after landing: The crews of the vessels were also cut off, leaving the remnant of these brave men no means of escape.’” (ibid., 614) Shafter also told the Dodge Commission that he was concerned about yellow and other fevers and was determined “that whatever we did at that season had to be done very quickly. I had been in the yellow-fever country and knew that no matter what precautions were taken men would get it and other fevers, and it was only a question of the strength of the command which would decide how long they would last, and for that reason the transports were pushed out immediately. I intended to go as far to the front as I could, until we met decided opposition, and then to make an attack.” Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3200.

¹⁰³⁹ Chadwick, *Relations*, vol. 2, 48

them being cut off and attacked in detail (individually), and/or an inability to provide scarce provisions and food to many isolated garrisons. In addition, the danger of Cuban insurgents attacking columns of troops attempting movement between Spanish strong points cannot be ignored.¹⁰⁴⁰ Kennan correctly noted that the terrain favorably supported a forward type of defense: “If the sides of the notches and the foot-hills back of them had been fortified with earthworks and held by a daring enemy with a battery or two of light guns, it would have been extremely difficult, if not impossible, to get the troops ashore.” Attacking a defended coastline from the sea is one of the hardest and costliest military operations (recall for example D-Day at Normandy or any of the amphibious assaults in the Pacific during the Second World War). Kennan notes that “it was great luck for us, but it was not war.”¹⁰⁴¹ The importance of this failure to employ Fabian tactics – to delay and harass the attacking forces in successive positions between the landing site and the objective (Santiago) – is hard to overstate. As we shall see, the Fifth Corps was almost entirely disabled from tropical disease just after the surrender of the city. Just a few days delay might well have meant the difference between defeat and victory..

Chadwick also presents a perspective on the matter that would not necessarily be thought of by an army commander. He reported that the terrain was:

...exposed to the fire of the fleet. It would have been impossible to hold in position a force occupying such an extent of ground as would have been necessary for the utilization of, say, 9,000 men, but two and a half miles from the sea occupied by a fleet in which there were over one hundred guns which could have been brought to bear upon the position. There was, in

¹⁰⁴⁰ Chadwick reported that the Spanish forces that had abandoned their defenses at Siboney had been followed and attacked by a Cuban force under General Castillo. Ibid.

¹⁰⁴¹ Kennan, *Campaigning in Cuba*, 79-80, 96; Trask, *War with Spain*, 212. Kennan also noted that a delay of the advance of Fifth Corps would have “given the climate and the Cuban fever more time to sap the strength and depress the spirits of our badly equipped and improperly fed troops.” Kennan, *Campaigning in Cuba*, 96.

fact, no point between Siboney and Santiago where such a stand could be taken without exposure to the fire of, at least, the heavier guns...¹⁰⁴²

The fact that Shafter never took advantage of naval gunfire in his advance on the city indicates “a want of correlation between the army and navy.”¹⁰⁴³

The awkward and lengthy disembarkation process also led to some shortages onshore, especially of medical supplies, which remained on the ships for days. Shafter later testified that he was only told of the shortage the second day after landing, when he discovered that “a majority of the doctors had left their regimental supplies on board. ... I had Dr. Goodfellow, of Colorado, who was there to see what he could, take charge of the Manteo and go around to the various ships and bring those boxes ashore; and the instant I had four four-mule teams onshore they were turned over to the medical department to draw these chests up to the front and give them to the troops.”¹⁰⁴⁴ However, Capt. Edward Munson, Commander of the Reserve Ambulance Corps, told a much different story as part of the Surgeon-General’s testimony to the Dodge Commission:

Having no means of transportation for even their field chests, the regimental medical officers had absolutely no resources at their command except such as were provided by the orderly and hospital corps pouches and the first-aid packets carried by the soldiers. Having once left their ships the latter were promptly ordered out of the small bays at Siboney and Daiquiri to permit the unloading of other ships. These partially unloaded ships, in obedience to their orders, then proceeded to sea from 5 to 15 miles, where they remained hove to indefinitely. The chief surgeon went directly to General Shafter, “requesting that a launch be

¹⁰⁴² Chadwick, *Relations*, vol. 2, 57.

¹⁰⁴³ *Ibid.*, 58.

¹⁰⁴⁴ Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3198.

placed under the control of the medical department for the collection of medical supplies from the various transports. It was also requested that a pack train be organized, in the proportion of 1 pack mule to each regiment, to transport supplies, especially the field chests, to the front for proper distribution; and I [Munson] was suggested by the chief surgeon as available for the performance of these duties. The exigency of the situation did not apparently appeal to the commanding general, and for two days the medical department was unable to get transportation of any kind to the other ships or to the shore, although there were a large number of naval launches and boats employed on various other duties.¹⁰⁴⁵

The poor conditions of the roads, along with the relatively small number of wagons available for transportation, forced the command to rely on pack trains to move all supplies, ammunition, and rations to the front. The ground was irregular, with hills covered by trees and brush frequently cut by creeks. Troops could only move through this dense growth if they stayed on the roads, and the roads were really trails, formed by the passage of men on foot and on horseback. All of the supplies moved between Siboney and the front were forced to move on one such road. The road (trail) was broken, strewn with boulders and crossing innumerable water obstacles (creeks, marshy ravines, etc.). In ideal conditions it was almost impassible even with single wagons. But the conditions were rarely ideal. The roads became blocked with broken-down or stuck wagons, blocking the only path; the jungle was too thick for even individual soldiers to bypass blockages in the road. After the rains the trails became quagmires and the streams would swell, preventing them from being forded.¹⁰⁴⁶ Lt. Miley, Shafter's aide, also discussed the effects of the climate: "The teamsters and packers as well as the troops contracted fevers, and this condition was sometimes so serious as to impair the efficiency of the transportation very

¹⁰⁴⁵ Capt. Edward Munson, *Dodge Commission Report*, vol. 1 (Appendices), 709.

¹⁰⁴⁶ Cosmas, *An Army for Empire*, 206-7.

much. The sick teamsters were generally replaced by soldiers, who could handle six-mule teams fairly well, but to supply the places of the sick packers was not so easy. ...The mules, as well as the horses, were affected very much like the men. Day by day these animals sickened and became unserviceable... »¹⁰⁴⁷

The loss of the lighters and barge during the move from Tampa to Daiquiri discussed previously meant that unloading was slow; the Quartermaster Department leased more vessels but most were wrecked by the high surf within a few days. The wharf at Daiquiri was hardly usable.¹⁰⁴⁸ General Shafter testified that transportation was “the only difficult problem of that campaign. It was simply to get the bare necessities of life to those men, and it taxed them to the utmost, the pack trains and all—the bare bread and sugar and coffee.” Even the pack mules were overtaxed; Maj. General Adna Chafee testified that “the road upon which the army had to operate became impassible for wagon transportation. The power of a pack mule to convey a load was reduced 50 per cent in consequence of the badness of the roads. Mules that I know, to my own knowledge, under ordinary circumstances would carry 230 pounds, became heavily loaded when they had two boxes of crackers of 100 pounds upon their backs.”¹⁰⁴⁹ Many troops testified to the Dodge Commission about shortages of food, clothing, and medical supplies.¹⁰⁵⁰ Some of

¹⁰⁴⁷ John D. Miley, *In Cuba With Shafter* (New York: Charles Scribner's Sons, 1899), 88.

¹⁰⁴⁸ Titherington reports that the main wharf was “used for loading ships with iron ore, [and] was too high above the water to serve as landing stage. The troops used the other, small wooden pier which the Spaniards had unsuccessfully tried to burn.” ¹⁰⁴⁸ Titherington, *History of the Spanish -American War*, 219.

¹⁰⁴⁹ Chafee, *Dodge Commission Report*, vol. 4 (Testimony), 910.

¹⁰⁵⁰ Miley stated that “There were instances where individual regiments were without rations for a day or more.” Miley, *In Cuba With Shafter*, 88-89. The general officers tended to minimize the problem; Maj. General Joe Wheeler stated that he didn’t recall any shortages of rations (Wheeler, *Dodge Commission Report*, vol. 3 (Testimony), 6). Lt. Colonel Bisbee, commanding the First Infantry Regiment at Santiago, stated that rations were sufficient at the front for healthy men but they lacked “nourishing food for the sick men.” (Ibid., 600). However, Lt. William Lutz, commanding a company in the Second United States Infantry, said that the men suffered “from the lack of proper food—that is, the commissary furnished enough for the men to live on and keep up their strength, but it was not such as sick men ought to have.” (Ibid., 621). Lt. Col Miner, commanding the Sixth Infantry, reported that his men were on short rations, “but I think we got all we could get. Those were conditions of war that could not be helped.” (*Dodge Commission Report*, vol. 4 (Testimony), 1280). Col. Turner, First Illinois, testified that when they arrived at Siboney (after the battles) “For the first three days we were not supplied at all, the men liked to starve to

the shortage of transportation to the front may have been caused by General Miles' directive to "limit the animals to the least number for artillery and transportation," but it was Shafter who determined what the least number needed for transportation was – and that number was too low.¹⁰⁵¹

After they were landed, Shafter's troops began pushing inland along the road to Santiago (see map, Figure 6). The Spanish fell back to their second defensive line along the San Juan river, from El Caney¹⁰⁵² to San Juan and Kettle Hills to the old stone fort at Aguadores (see "Iron Bridge" on the map). Advanced portions of the dismounted cavalry division encountered part of the retreating Spanish column at Las Guasamas on June 24. This initial engagement marked the beginning of the combat phase of the campaign, and it was also the Rough Rider's baptism under fire. After the battle where 16 Americans were killed and 52 were wounded, the way was open between Daiquiri, Siboney, and the Spanish second line of defense. Shafter planned to wait until additional reinforcements arrived from the United States, but a report that 8,000 Spanish troops were on the march from Manzanillo to reinforce the garrison at Santiago changed his mind. Wishing to engage the Spanish before they could be reinforced, Shafter moved up his attack.¹⁰⁵³

death. Our division quartermaster did everything he could, and finally 30 of my men volunteered to go to Siboney and bring out enough on their backs to last a few days." (Ibid., 1444). Cosmas referred to the conditions as "self-imposed privation." (Cosmas, *An Army for Empire*, 208).

¹⁰⁵¹ Directive cited in Alger, *The Spanish-American War*, 293-294.

¹⁰⁵² There is some disagreement on whether the name was "Caney" or "El Caney." Kennan says that the Spaniards called it simply "Caney," and the Dodge Commission after the war referred to it as "Caney" as well. However, most of the contemporary reports called the site "El Caney," so it is called by that name in this paper. Kennan, *Campaigning in Cuba*, 116. An example of the Dodge Commission's use can be found in the testimony of Adna Chaffee, who led one of the brigades in the attack. Chaffee, *Dodge Commission Report*, vol. 4 (Testimony), 901.

¹⁰⁵³ The actual size of the Spanish force was 3,500, but Shafter reacted to the information he received. (Graham Cosmas, "San Juan Hill and El Caney, 1-2 July 1898", in Heller and Stofft, *America's First Battles*, 122). Shafter wired Corbin on June 25th that "In pushing out to occupy good position near Sevilla to wait and intrench until supplies and artillery could be landed, the Fourteenth and Tenth Cavalry and Wood's regiment had a skirmish." Three days later he stated that "I will not act hastily, though I believe I can take the place within forty-eight hours, but I fear at considerable loss of life. There is no necessity for haste, as we are growing stronger and they weaker every day." Shafter to Corbin, June 25, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 54; Shafter to Alger June 28, 1898, Ibid., 60. Miley reported that on June 25th Shafter told Wheeler that "he wished to advance

He wired Corbin on June 30: “Expect to put division on Caney road, between that place and Santiago, day after tomorrow, and will also advance on Sevilla road to San Juan River, and possibly beyond. General Garcia, with 3,000 men, will take railroad north of Santiago at the same time, to prevent Pando [commander of Spanish column] reaching city.”¹⁰⁵⁴ He decided on a 2-pronged attack on the northern section of the Spanish defensive lines. Brig. General Lawton’s 2nd Infantry Division was to attack and seize the defenses at El Caney, then join on the right flank of an attack by Wheeler’s dismounted cavalry division and Brig. General Kent’s First Infantry Division on the Spanish fortifications on San Juan and Kettle Hills. At the same time, a diversionary force of the 33rd Michigan Volunteer Infantry under Brig. General Duffield was to attack the defenses at Aguadores from the sea.¹⁰⁵⁵

On July 1, 1898, the major ground battle of the war began. The Spanish defenses at El Caney proved to be hard to attack, especially without heavy artillery. Chaffee, who had reconnoitered El Caney before the battle, later testified that “The place turned out much stronger than I had any idea of.”¹⁰⁵⁶ The Spanish had constructed very strong defensive positions, from which they poured fire on the attacking US troops. The attack began at 7 AM. After several hours, Lawton

upon Santiago in force, but would make no move until he had all the troops well in hand.” Miley, *In Cuba With Shafter*, 89.

¹⁰⁵⁴ *Correspondence Relating to the War With Spain*, vol. 1, 68. In Shafter’s official report on his campaign, he explained his plan of attack: “I decided to begin the attack next day at El Caney with one division, while sending two divisions on the direct road to Santiago, passing by El Poso House, and, as a diversion, to direct a small force against Aguadores from Siboney along the railroad by the sea, with a view of attracting the attention of the Spaniards in the latter direction and of preventing them from attacking our left flank.” Department of War, *Annual Reports of the War Department for the Fiscal Year Ended June 30, 1898, Report of the Secretary of War*, vol. II (Washington: GPO, 1898), 152. The commander of the force moving from Manzanillo was later revealed to be General Escario with a “much smaller force” [3,500 men] rather than General Pando with the entire garrison. Alger, *The Spanish-American War*, 127.

¹⁰⁵⁵ Cosmas, *An Army for Empire*, 210, Kennan, *Campaigning in Cuba*, 112. Duffield also had one battalion of the 34th Michigan. Alger, *The Spanish-American War*, 129.

¹⁰⁵⁶ There was one battery, which fired on the stone fort. But Chaffee stated that “there was not sufficient artillery there to demoralize the garrison” because little artillery had been taken on the expedition and landed before the battle. Chaffee, *Dodge Commission Report*, vol. 4 (Testimony), 902.

concentrated both infantry and artillery on a stone fort that was the key defensive position. After intense firing all afternoon, Lawton's division took the village.¹⁰⁵⁷

The attack on San Juan and Kettle hills was also to prove long and costly. Although Shafter's plan had called for the reduction of El Caney before the attack on the heights, the extended time it took Lawton to seize El Caney meant that the battles occurred separately and are best understood as two separate engagements. The regulars were able to fire on the Spanish defenses using their Krag-Jorgeson rifles with smokeless powder, but the volunteer regiments using Springfields and black powder attracted devastating Spanish fire every time they attempted to shoot. They also encountered for the first time sharpshooters firing from camouflaged positions in trees. American troops under fire could not even see the snipers, and were not trained to react to them.¹⁰⁵⁸ The famous charge on Kettle Hill, led by Roosevelt's Rough Riders and the Ninth and Tenth US Infantry (Colored) Regiments, rose spontaneously from the men and finally carried the field, supported by heavy fire from a battery of Gatling guns.¹⁰⁵⁹ The Americans quickly dug in on the heights they captured on July 1. Firing between the Spanish defenders and American troops continued through July 3. The American losses from the three days of fighting (July 1 to 3, 1898) were 214 killed, 1303 wounded, while the Spanish lost 215 killed, 376

¹⁰⁵⁷ Cosmas, *An Army for Empire*, 215-216, Lawton, *Dodge Commission Report*, vol. 4 (Testimony), 946.

¹⁰⁵⁸ Kennan, *Campaigning in Cuba*, 124-129, 144-145. To appreciate the hazards encountered by the troops before the assault, consider the fate of the commanders of the 3rd Brigade, First Infantry Division. General Wyckoff was killed at 12:10 PM; Lt. Colonel Worth took command but was wounded at 12:15. The command then devolved on Lt. Col. Liscum, who was wounded at 12:20. Joseph Wheeler, *The Santiago Campaign of 1898* (New York: Lamson, Wolfe and Co., 1898), 53.

¹⁰⁵⁹ Roosevelt was acting as commander of the Rough Riders for the attack, Col. Wood having taken over command of the 2nd Cavalry Brigade. Cosmas, "San Juan Hill and El Caney," 132-33, 138-140. Trask, *War with Spain*, 214-243. Kennan said that "I cannot refrain from calling particular attention to the splendid behavior of the colored troops ... they fought with the utmost courage, coolness, and determination..." (Kennan, *Campaigning in Cuba*, 144). For more on the role of the black troops in the attack, see T.G. Steward, *The Colored Regulars in the United States Army* (Philadelphia: AME Book Concern, 1904), 217-219; M.V. Lynk, *The Black Troopers* (Jackson, TN: The M.V. Lynk Publishing House, 1899), 24-28. Roosevelt had praise for the 9th and 10th Cavalry in the Rough Riders: "Our men behaved very well indeed--white regulars, colored regulars, and Rough Riders alike." Roosevelt, *The Rough Riders*, 103.

wounded, and 2 missing.¹⁰⁶⁰ Spanish General Vara del Ray (who led the defense at El Caney) and two of his sons were killed. The commanding general, Linares, was wounded, leaving General José Toral in command at Santiago.¹⁰⁶¹

Upon seizing the heights, the American Army stopped. Although the Spanish were retreating in disarray, the Americans were too tired and too widely dispersed to give chase; they also lacked artillery support at the front.¹⁰⁶² Given the poor state of the road back to the base and the scarcity of transportation, it also took quite some time for the wounded to be evacuated and for food and ammunition to reach the front lines. Instead, the troops were immediately ordered to entrench themselves to protect against fire from Spanish outposts within firing range.¹⁰⁶³ Alger later speculated that if Lawton had been able to seize El Caney in a couple of hours as planned, the combined forces of Wheeler, Kent, and Lawton would have taken the city. However, this seems unlikely given the reports of the combat later given by officers and men who were in the battles – the army was too worn out for such a follow-up action.¹⁰⁶⁴ General Wheeler told Shafter “You can hardly realize the exhausted condition of the troops. The 3d and 6th Cavalry and other

¹⁰⁶⁰ Trask, *War with Spain*, 245. Slightly different numbers were reported at the time; for example “Twenty-two officers and 208 men killed; 81 officers and 1,203 men wounded; 79 missing.” Booker T. Washington, *A New Negro for a New Century* (Chicago: American Publishing House, 1900), 46.

¹⁰⁶¹ Alger, *The Spanish-American War*, 146; Cosmas, *An Army for Empire*, 225.

¹⁰⁶² Only about 20% of the Fifth Corps had reached the front by the end of the engagement. Lawton’s troops were still en route from El Caney when nightfall halted the movement. William Shafter, “General Shafter’s Report,” in Department of War, *Report of the Major-General Commanding the Army (1898)* (Washington: GPO, 1898), 155; Trask, *War with Spain*, 244.

¹⁰⁶³ Miley, *In Cuba With Shafter*, 114-115; Trask, *War with Spain*, 244. Miley later testified that “by midnight these troops were well intrenched and by morning very strongly intrenched.” Miley, *Dodge Commission Report*, vol. 7 (Testimony), 3234. See also Chadwick, *Relations*, vol. 2, 97-98.

¹⁰⁶⁴ Alger, *The Spanish-American War*, 149. This is a debatable point. Trask and Cosmas was convinced that pursuit was not possible (Trask, *War with Spain*, 224, Cosmas, *An Army for Empire*, 218), although on the evening of July 1st there were very few Spanish defenders on the line in front of the American army. Shafter later testified that he thought his army could have captured the city but that it was much better in the end that they didn’t. His force would have captured only the 8,000 or so Spanish troops then in the city, leaving large Spanish forces at Holguin and marching from Manzanillo. “General Escario’s troops then being 30 miles away, we would not have gotten the 12,000 able-bodied men that did surrender, and we would have had Cervera’s fleet to capture, which went out on the 3d.” He concluded by saying “I think Providence was on our side the first day.” Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3204. In addition, after July 2nd the inner line of the Spanish defenses was still strongly held, and Shafter was reluctant to attack those defenses even after he consolidated his position and received reinforcements from the United States.

troops were up marching or halted on the road all last night, and have fought for twelve hours today, and those that are not on the line will be digging trenches tonight.” However, Wheeler was confident that “with our line intrenched and Lawton on our right we ought to hold tomorrow, but I fear it will be a severe day. If we can get through to-morrow all right we can make our breastworks very strong the next night.”¹⁰⁶⁵

The Fifth Corps fortifications were laid out by Colonel Derby of the Corps of Engineers, and were continued until the city was completely invested by July 9. This gave the American army a strong position to besiege the city and avoid having to make a costly frontal assault.¹⁰⁶⁶ They managed to create strong fortifications by July 3, but suffered many casualties from Spanish fire on July 2 and 3.¹⁰⁶⁷ Despite the successful seizure of both objectives of the battles on July 1, the next day Shafter considered withdrawing from the heights west of the city and instead advance against the forts guarding Santiago harbor. He asked Gen. Wheeler if Wheeler’s division could “clear out the forts along the entrance to the bay so as to let the Navy in and have the business over.” Wheeler disapproved, saying that “the effort would be attended with great loss.”¹⁰⁶⁸ Shafter discussed the matter with his senior commanders that evening, and on July 3rd he wired Alger saying “I am seriously considering withdrawing about 5 miles and taking up a new position on the high ground between the San Juan River and Siboney, with our left at Sardinero, so as to get our supplies, to a large extent, by means of the railroad, which we can use, having engines and cars at Siboney.”

This defeatism alarmed Alger and McKinley. Alger promptly responded “If, however, you could hold your present position, especially San Juan heights, the effect upon the country would

¹⁰⁶⁵ Wheeler to Shafter, July 1, 1898, as quoted in Alger, *The Spanish-American War*, 168.

¹⁰⁶⁶ Miley, *Dodge Commission Report*, vol. 7 (Testimony), 3237.

¹⁰⁶⁷ Wheeler, *The Santiago Campaign*, 49-50.

¹⁰⁶⁸ *Ibid.*, 296.

be much better than falling back” although he allowed Shafter discretion to make the final call.¹⁰⁶⁹ The Administration also sent Shafter reinforcements, telling him “You can have whatever reenforcement you want.”¹⁰⁷⁰ A brigade of troops from Camp Alger and a division from Camp Thomas was ordered to prepare for immediate movement; McKinley also ordered General Miles to the front “to give such orders as might be required for the welfare and success of the army.”¹⁰⁷¹ However, the arrival of reinforcements was delayed due to a severe lack of shipping available for hire, as the Puerto Rico invasion fleet also needed its own transports.¹⁰⁷² The lack of reinforcements meant that troops could not be pulled off the line even if they became sick, which was to become a major issue later that month.

Shafter also asked Sampson if he would attack the city from the sea: “I urge that you make effort immediately to force the entrance to avoid future losses among my men, which are already very heavy. You can now operate with less loss of life than I can.” Sampson replied that it was “Impossible to force entrance until we can clear channel of mines—a work of some time after forts are taken possession of by your troops.” He went on to say “It is not so much the loss of men as it is the loss of ships which has, until now, deterred me from making a direct attack on the ships within the port.”¹⁰⁷³ Shafter decided to wait for a few more days, although he still intended to retreat if conditions did not improve.¹⁰⁷⁴

¹⁰⁶⁹ *Correspondence Relating to the War With Spain*, vol. 1, 74-75. Alger, *The Spanish-American War*, 175-177. See also Cosmas, *An Army for Empire*, 218-219.

¹⁰⁷⁰ *Correspondence Relating to the War With Spain*, vol. 1, 77.

¹⁰⁷¹ Cosmas, *An Army for Empire*, 219

¹⁰⁷² The major limitation was the requirement for all ships in US service to have United States registry. The Army attempted to get relief from this requirement by transferring registry from foreign ships to the US, but “in Congress, opponents of transfers of registry remained adamant.” Cosmas, *An Army for Empire*, 220.

¹⁰⁷³ Chadwick, *Relations*, vol. 2, 106-107.

¹⁰⁷⁴ “About six o'clock on the evening of July 2, General Shafter summoned to El Pozo Generals Wheeler, Lawton, Kent, and Bates to obtain their opinion as to the advisability of withdrawing his line from San Juan Heights and taking up a position farther back nearer his base of supplies at Siboney. The four officers did not agree upon the question of withdrawal, and after an hour's discussion Shafter expressed his intention of making no change in his position until he had considered the matter further.” Sargent, *The Campaign of Santiago de Cuba*, vol. II, 128-129

The Spanish had also suffered badly from the battles on July 1st. Virtually all of the few Spanish survivors of El Caney were wounded, and the force that had held the heights of San Juan and Kettle hills lost between 30 and 50% of their ranks. By the evening of July 1, only about 300 men were present in the Spanish defenses, 100 of whom were walking wounded pulled from the hospital. Toral managed to reinforce the defenses in front of Shafter's force, but only by pulling men off of the western side of the harbor. The situation of the Spanish defenders was dire. Food and ammunition were critically short, while the loss of El Caney meant the Americans controlled the city water supply. The American positions dominated the Spanish defenses, allowing artillery to fire freely at defenses or the city itself, and they also prevented the garrison from evacuation. The Spanish choices were simple, even if highly distasteful – surrender, starve, or die in place. Toral wired Governor-General Blanco on July 2 that the “situation [was] becoming more and more untenable.” Blanco told Toral to try to “hold out until arrival of Escario or Pareja brigade, situation would be much improved; but if it is so critical as to make continuation of defense impossible, you will gather all troops and loyal citizens, try to open a path, and fall back upon Holguin or Manzanillo, destroying what can not be taken along and burning everything left behind... .” Blanco also ordered Cervera to exit the city immediately “for if enemy takes possession of harbor entrance it is lost.”¹⁰⁷⁵

On July 3, the situation changed dramatically – Cervera left the port. In obedience to his orders from Blanco, Cervera sortied his squadron from Santiago. Cervera had little hope that it would succeed – he had told Blanco on June 25 that “In my opinion the sortie will entail the certain loss of the squadron and majority of its crews. I shall never take this step on my own account, but if your excellency so orders I shall carry it out. The loss of the squadron was, in my

¹⁰⁷⁵ Toral to Blanco, July 2, 1898; Blanco to Toral, July 2, 1898; Blanco to Minister of War Correa, July 2, 1898. Cervera y Topete, “A Collection of Documents,” 120-121.

judgment, decreed when it was ordered to come here.”¹⁰⁷⁶ However, Blanco’s order on July 2 was peremptory and so he attempted to make his escape when conditions most favored it – early morning on July 3, 1898.¹⁰⁷⁷ Cervera’s flagship *Maria Teresa* first, followed by the remaining three armored cruisers – *Vizcaya*, *Cristobal Colón*, and *Almirante Oquendo*, with the two destroyers *Pluton* and *Furor* in the rear. Captain Concas of the *Maria Teresa* explained later that harbor was so narrow that ships could only leave in single file with a significant separation between them. As a result, when the ships left port, “the one which should go out first would suffer alone the fire of all the enemy’s ships, and so successively; the result thus being a force of two effective guns against more than two hundred.”¹⁰⁷⁸ As anticipated, these ships ran directly into a devastating fire from the American battleships and were forced to beach west of the harbor entrance. The impact of the brief naval battle of Santiago was much greater than the engagement itself. The United States now had control of the seas in the Caribbean, and could land on or attack any port or coastline of the Spanish possessions Cuba and Puerto Rico unless Spain sent additional ships to the theater. Spain was also unable to move any significant amount of supplies or personnel by sea after July 3.

The remainder of the Santiago campaign was a siege of the city by the Fifth Army Corps, as Shafter was unwilling to suffer the casualties inherent in a direct assault on the Spanish defenses.¹⁰⁷⁹ Despite the successes of July 1 and the advantages of his position overlooking the

¹⁰⁷⁶ Cervera y Topete, “A Collection of Documents,” 113. He also stated in a letter to Linares on June 2th that “You are familiar with the history of the squadron since its arrival here. If I had gone to San Juan de Puerto Rico when a telegram from the government caused me to change, my situation would be the same, only the scene would have been a different one and the avalanche which has fallen upon this island would have come down upon Puerto Rico instead. I believe the mistake was made in sending the squadron out at all.” Cervera to Linares, June 25, 1898 (ibid., 112).

¹⁰⁷⁷ The American squadron had made it almost impossible to sortie at night, as their ships pulled in closer to the harbor entrance, illuminating them with powerful searchlights. Trask, *War with Spain*, 260-261.

¹⁰⁷⁸ Cited in Chadwick, *Relations*, vol. 2, 125.

¹⁰⁷⁹ Miley reported that “On the 3d, General Shafter felt that the situation warranted him in thinking that the forces in Santiago would surrender, if given time, and he decided that the problem before him now was to thoroughly

Spanish defenses, Shafter still appeared intensely worried that he could still be defeated. He told Alger on July 4 that the “Situation has been precarious on account of difficulties of supplying command with food and tremendous fighting capabilities shown by the enemy from his almost impregnable position” although he also assured Alger that he would hold his position. He also told Alger that “he must have reinforcements.” That evening, he wired Alger again, asking for reinforcements: “When am I to expect troops from Tampa? Report just received, Pando entered city last night by Cobre road with 5,000 from Holguin.”¹⁰⁸⁰ He also sent a long message to Adjutant-General Corbin, saying that the arrival of the 5,000 reinforcements “puts a different aspect upon affairs, and while we can probably maintain ourselves, it would be at the cost of very considerable fighting and loss. ... if they intend to reduce Santiago, we will have to depend alone upon our own troops, and that we will require twice the number we now have. ... We have got to try and reduce the town, now that the fleet is destroyed, which was stated to be the chief object of the expedition. There must be no delay in getting large bodies of troops here.”¹⁰⁸¹ All of these repeated concerns caused the Administration to divert General Miles and many of his troops to go to Santiago before proceeding to Puerto Rico.¹⁰⁸²

invest the city by land, and, in connection with the navy, cut off all hope of re-inforcements or supplies of any kind.” Miley, *In Cuba With Shafter*, 129

¹⁰⁸⁰ Shafter to Alger, July 4, 1898, (2 messages). *Correspondence Relating to the War With Spain*, vol. 1, 78, 87.

Miley, *In Cuba With Shafter*, 125. Alger noted that “The arrival of this large body of reinforcements made the problem of capturing Santiago more difficult. It also decreased the likelihood of an early surrender, of which General Shafter had been so hopeful since the destruction of the fleet.” Alger, *The Spanish-American War*, 186.

¹⁰⁸¹ Shafter to Corbin, July 4, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 87.

¹⁰⁸² Trask, *War with Spain*, 289.

Disease and the Surrender

Shafter had written Toral a surrender demand as early as July 3rd, threatening to shell the city. Under international law, he suggested that all foreign nationals and women and children leave the city before this artillery attack would occur. Toral replied to Shafter, refusing to surrender but announcing that “there are between 15,000 and 20,000 people, many of them old, who will leave” for [El] Caney. Shafter told Toral that he would hold off the shelling until noon on July 5th, but he also wired a worried note to Alger:

I do not know that these extreme measures which I have threatened be justifiable under the circumstances, and I submit the matter for the consideration of the President. The little town of Caney will not hold 1,000 people, and great suffering will be occasioned and our friends, as we must regard the people referred to, and it is now filled with dead and wounded, the dead still unburied. The consuls tell Dorst [Spanish colonel delivering the messages] that there are not to exceed 5,000 troops in the city. I can hold my present line and starve them out, letting the noncombatants come out leisurely as they run out of food, and will probably be able to give such as are forced out by hunger food to keep them alive. I await your orders.¹⁰⁸³

The siege continued while Shafter waited for Toral to decide that further resistance was useless. Shafter cut the water supply into the city and continued to pester Sampson about attacking the city from the sea, which Sampson refused.¹⁰⁸⁴ Chadwick later explained the issue:

¹⁰⁸³ Shafter to Alger, July 4, 1898, which included the messages between Shafter and Toral. *Correspondence Relating to the War With Spain*, vol. 1, 79.

¹⁰⁸⁴ Shafter wrote to Sampson on July 3rd: “Now if you will force your way into that harbor the town will surrender without any further sacrifice of life” Chadwick, *Relations*, vol. 2, 191. See also Trask, *War with Spain*, 291-292.

“War is sacrifice—both of men and material. Of men there were plenty; of the all important material—ships—there was but little.” The ships were too vital to risk; “of this” Chadwick concluded, “the general seemed to have no conception.”¹⁰⁸⁵

A prisoner exchange was arranged for July 5th which temporarily suspended hostilities; in addition, the civilian refugees from Santiago were allowed to depart that day.¹⁰⁸⁶ The arrival of a mass of 20,000 refugees from the city heightened Shafter’s supply difficulties. The conditions the refugees encountered was horrifying. They set out on foot with only the clothes on their backs. The houses they occupied at El Caney still had partially buried remains of those killed on July 1st, and the houses, packed with eighty to as many as 200 in each, were riddled with shell fragments and bullets. They had no sanitary facilities, and the starving children cried day and night. The river used for washing clothes and people was filled with the corpses of dead animals and even some dead people. The worst came quickly: malaria, fevers, and dysentery.

Müller described the horrors of the supposed refuge of El Caney:

Those eleven days at El Caney have caused more victims in Santiago than the three years of war; for the epidemic that broke out still continues. When the inhabitants of the city numbered 45,000 there were, on an average, not over five deaths a day; and now, that the number of inhabitants is reduced to 30,000, there are not less than fifty a day. The house that does not contain one or more sick is an exception, and people who are well and hearty one day are buried a day or two later. The physicians can not attend all the sick, and the dead are carried to the cemeteries by members of their own families. The city wears that stamp of

¹⁰⁸⁵ Chadwick, *Relations*, vol. 2, 202.

¹⁰⁸⁶ Shafter to Alger, July 5, 1898: “Large number of women and children coming out of Santiago this morning. With assistance of Miss Barton will try and feed them. Do not believe there will be any firing to-day on account of all the people not being able to get out.” *Correspondence Relating to the War With Spain*, vol. 1, 92. The message detailing the prisoner exchange dated July 6, 1898 is found in *ibid.*, 99.

sadness and absence of life which is the mark of great calamities, and we hear nothing but wailing and sobbing.”¹⁰⁸⁷

Although he had threatened earlier to let them starve, humanity required Shafter to supply them with rations to the best of his ability, but that ability was woefully insufficient. Provisions intended for three days quickly ran out, and people began to starve. It was so bad that people actually petitioned to be allowed to return to the city, despite the shelling and the shortage of provisions.¹⁰⁸⁸

Shafter was increasingly pressured to bring the surrender negotiations to a swift end by the outbreak of disease among his troops. Once surgeons reported cases of yellow fever in his command¹⁰⁸⁹ (as he had predicted would occur), this pressure greatly increased. We see this in his cables to the War Department during the siege. On July 4, 1898, Shafter told Alger that “Men are in good spirits and so far in good health, though it is hard to tell how long the latter will continue.”¹⁰⁹⁰ Once Shafter had invested the city, both sides knew that surrender was inevitable from a military perspective. On the 6th, Shafter sent Toral another letter demanding surrender,

¹⁰⁸⁷ Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 147.

¹⁰⁸⁸ Ibid. Shafter wired Corbin on the 5th, stating that “After talking with the French consul myself, and Lieutenant Miley, with several others, I do not believe I will bombard the town until I get more troops, but will keep up fire on trenches. If it was simply a going out of the women, and to outside places where they could be cared for, it would not matter much, but now it means their [sic] going out to starve to death or be furnished with food by us, and the latter is not possible now.” *Correspondence Relating to the War With Spain*, vol. 1, 89. Referring to his own forces, Shafter wired Corbin on July 7th that “It is with the greatest difficulty that one day’s food can be issued at a time.” Ibid., 104. The British consul submitted a petition to Shafter that concluded with the following: “They [the refugees] now invoke that same humanity which has been the motive of this war, to ask that something be done as soon as possible to put an end to this terrible state of affairs, or that arrangements be made with the Spanish authorities permitting us to return to the city, where we would rather die from the shells or be buried under the ruins of our homes than perish slowly from hunger and disease, and the privations we are suffering.” Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 148-149. Miley regarded that “great suffering was inevitable,” noting that “The problem of feeding 20,000 people in addition to the troops, seemed well-nigh insoluble.” He also stated that the foreign consuls were warned that provisions could only be provided for three to four thousand. Miley, *In Cuba With Shafter*, 131-132.

¹⁰⁸⁹ Historians have acknowledged that it is likely that some of these cases may have been misdiagnosed malaria; medical historians think that yellow fever only broke out after the surrender of the city. Regardless, cases of malarial fever increased during the period of the siege and Shafter acted on the assumption that part of the illness was yellow fever.

¹⁰⁹⁰ Shafter to Alger, July 4, 1898. Alger, *The Spanish-American War*, 187.

this time giving him until noon on July 9th in order that Toral could consult with his superiors. Shafter detailed how Cervera's squadron had been completely vanquished; of course protecting the squadron had been the reason Blanco had ordered Toral to hold the city. Shafter also arranged with Sampson for naval gunfire on the city starting July 9th as an additional incentive for him to surrender.¹⁰⁹¹ In the mean time there were proposals and counterproposals for surrender terms flying back and forth between the lines. Toral asked that the employees of the cable company that fled to El Caney be returned so he could communicate with his own government; they were returned on the 7th.¹⁰⁹² The next day Toral proposed to evacuate the eastern half of the province of Santiago, to include the city, if he could be allowed to march his troops unmolested to Holguin.¹⁰⁹³

Disease begins to affect the negotiations when Toral began to force Shafter to confront the disease asymmetry between the veteran Spanish troops and the newly arrived American soldiers. He implied that time was on his side; Spanish troops were acclimated to the climate and had little to fear from disease, while the American troops had no acclimation and an epidemic was just a matter of time "The Spanish soldier is fully acclimated as your troops are not, and the losses attendant on the different attacks on Santiago will be greatly added to by the rigors of a bad climate and the sickness of the present season."¹⁰⁹⁴ Although his statement about the American troops was correct, unbeknownst to Shafter the disease situation within the city was dire. Müller noted in his journal that at the time of surrender (July 17th) there were 2,100 sick and wounded.

¹⁰⁹¹ "a long-continued bombardment of Santiago from the sea, with the heavier guns of fleet, the fleet firing slowly and continuously during, say, twenty-four hours, at the rate of one shell every five minutes, excepting one hour at the rate of one shell every two minutes. This refers to the 8- and 13-inch shells." Chadwick, *Relations*, vol. 2, 205.

¹⁰⁹² Shafter to Alger, July 9, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 113; Miley, *In Cuba With Shafter*, 144; Alger, *The Spanish-American War*, 191-192.

¹⁰⁹³ Alger, *The Spanish-American War*, 192-193; Trask, *War With Spain*, 299-300.

¹⁰⁹⁴ Cited in Alger, *The Spanish-American War*, 193. See also Miley, *In Cuba With Shafter*, 144; Chadwick, *Relations*, vol. 2, 214; Cosmas, *An Army for Empire*, 229. Shafter replied that "while I have submitted the matter to my home Government I did not think his terms would be accepted." Shafter to Alger, July 9, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 116.

However, “At the hospital, only the seriously wounded and sick were admitted; those who could stand on their feet were refused and sent back to the trenches. If this had not been the case, there would not have been beds enough in which to put them nor physicians to attend them. Therefore, the number of sick was in reality much greater than shown by the statement furnished by the hospital.”¹⁰⁹⁵

Despite telling Toral that he did not think his proposal to evacuate would be accepted, Shafter (with the acquiescence of his senior commanders) suggested to Alger that it be accepted: “First, it releases at once the harbor; second, it permits the return of thousands of women, children, and old men, who have left the town fearing bombardment and who are now suffering where they are, though I am doing my best to supply them with food; third, it saves the great destruction of property which a bombardment would entail, most of which belongs to Cubans and foreign residents; fourth, it at once relieves the command, while it is in good health, for operations elsewhere.” Critically, Shafter for the first time brings up the prospect of disease, urging the department to consider less forceful terms: “There are now three cases of yellow fever at Siboney, in Michigan regiment; and if it gets started, no one knows where it will stop.”¹⁰⁹⁶

This must have caused great consternation in Washington, for it was only a little over two hours later that Shafter received a blunt reply from Corbin, relaying instructions from the President and Alger:

I am directed to say that you have repeatedly been advised that you would not be expected to make an assault upon the enemy at Santiago until you were prepared to do the work thoroughly. When you are ready, this will be done. Your telegram of this morning said your

¹⁰⁹⁵ Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 151-152.

¹⁰⁹⁶ Shafter to Alger, July 9, 1898, 9 AM. *Correspondence Relating to the War With Spain*, vol. 1, 117.

position was impregnable and that you believed the enemy would yet surrender unconditionally. You have also assured us that you could force their surrender by cutting off the supplies. Under these circumstances your message recommending that Spanish troops be permitted to evacuate and proceed without molestation to Holguin is a great surprise and is not approved. The responsibility of destruction and distress to the inhabitants rests entirely with the Spanish commander. The Secretary of War orders that when you are strong enough to destroy the enemy and take Santiago that you do it. If you have not force enough, it will be dispatched to you at the earliest moment practicable.¹⁰⁹⁷

To make sure the message got across, Corbin concluded “Acknowledge receipt.”¹⁰⁹⁸ While negotiations were underway, there was a small land engagement between the two forces on July 10th and 11th, consisting of rifle fire between the respective trenches. The American force, having the advantage of high ground, was able to inflict a disproportionate amount of casualties on the Spanish – they lost over 50 wounded and 7 dead to the American 2 dead and 2 wounded.¹⁰⁹⁹

Reinforcements finally began to arrive on July 9 through July 11, but many did not leave their transports. They were part of the force intended for Puerto Rico, and included General Miles. Miles was determined to avoid the possibility of infection to his soldiers from the sick, which had increasingly begun to appear among the Fifth Corps. He later stated that “Already, before leaving Washington, I had been made aware of the appearance of yellow fever among our troops in Cuba and the serious situation which that fact presented. On arriving there I found that the contagion had increased rapidly, and the importance of immediate and decisive action was

¹⁰⁹⁷ Corbin to Shafter, July 9, 1898, 11:15 AM. *Correspondence Relating to the War With Spain*, vol. 1, 119.

¹⁰⁹⁸ Ibid. The demand for acknowledgement was quite unusual; very few messages have it appended. Alger later stated that the message was delivered in “no equivocal language.” Alger, *The Spanish-American War*, 194.

¹⁰⁹⁹ Cosmas, *An Army for Empire*, 227-228. Alger reported that the Spanish wounded were four officers and 61 men. Alger, *The Spanish-American War*, 197.

abundantly apparent.”¹¹⁰⁰ Miles joined Shafter for the later negotiations with Toral but did not assume direct command of the Fifth Corps. The troops that did disembark allowed Shafter to complete his envelopment of the city. No breakout of the Spanish forces was possible unless Shafter’s army became incapacitated by disease – which did indeed occur. Fortunately, the American weakness peaked after the Spanish surrender.¹¹⁰¹

Miles joined Shafter to hear Toral’s counterproposal on July 12. Toral reiterated his refusal to surrender, but reiterated his offer to turn over the city and the eastern part of Santiago province provided he was allowed to depart intact.¹¹⁰² Adding pressure on Shafter, he had received word the previous day from the Cubans that another column of 6,000 men was expected to move shortly from Holguin to Santiago. Shafter again asked for permission to accept, asking Alger “Will any modification of the recent order be permitted? I have been perfectly satisfied that he can be taken, but if he fights, as we have reason to believe he may, it will be at fearful cost of life; and to stay here with disease threatening may be as great loss from that cause.” He also mentioned the suffering of the civilians at El Caney. This time Miles wired Alger, also suggesting that they accept Toral’s offer. He also mentioned the issue of disease: “Under ordinary circumstances would not advise acceptance, but this is a great concession, and would avoid assaulting intrenching lines with every device for protecting his men and inflicting heavy loss on assaulting lines. The siege may last many weeks, and they have the provisions for two months. There are 20,000 starving people who have fled the city and were not allowed to take

¹¹⁰⁰ Nelson Miles, “The War With Spain – II”, *The North American Review* 168, No. 511 (Jun., 1899), 755.

¹¹⁰¹ Alger, *The Spanish-American War*, 197.

¹¹⁰² Toral’s reply is reproduced in Alger, *The Spanish-American War*, 199.

any food. ...The very serious part of this situation is that there are 100 cases of yellow fever in this command and the opinion of the surgeon that it will spread rapidly.”¹¹⁰³

Shafter ordered the shelling of the city on July 10 and 11 from some of the naval squadron's 8-inch guns. The shelling was largely ineffective, as the navy had been told to aim short to avoid hitting the American lines, and Shafter had halted the fire at 1 PM on July 11 before the navy used its 12- and 13-inch guns.¹¹⁰⁴

One of the cables that Shafter received on July 11 helped to break the impasse between the American and Spanish conditions for surrender. The cable read “Should the Spaniards surrender unconditionally and wish, to return to Spain they will be sent back direct at the expense of the United States Government.”¹¹⁰⁵ This was a powerful incentive for the survivors of years of combating both Cubans and epidemic disease. Shafter also had an incentive to settle, which he mentioned in a message to Alger on July 12: “Rained very hard last night and so far today. If it continues long, roads will be practically impassable. ...If roads become too bad to transport rations, we will simply have to take the town by assault, without regard to what it costs. Refugees are suffering for food.”¹¹⁰⁶ Shafter issued another demand for surrender on July 12, giving Toral until the next day to check with his superiors. Toral agreed to meet with Shafter personally to give his reply the next day. Miles reported the result to Alger: “At a meeting between the lines, at which Generals Shafter and Wheeler and Spanish General Toral were present, the latter claimed that he is unable to act without authority of his Government, but has

¹¹⁰³ Shafter to Alger, July 13, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 133; Miles to Alger, July 13, 1898. *Ibid.*, 134.

¹¹⁰⁴ Shafter told Sampson that “It would be very disastrous for the morale of my men to have any of the shell fall near them, and I think it would be better, at first, to put your shots in the westward part of the city near the bay.” Chadwick, *Relations*, vol. 2, 220.

¹¹⁰⁵ Alger to Shafter, July 10, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 125. Trask states that the cable was not received by Shafter until July 11th, this was not unusual, Trask, *War with Spain*, 303.

¹¹⁰⁶ Shafter to Alger, July 12, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 132.

received authority to withdraw and surrender harbor ports, munitions of war, and eastern portion of Cuba. He urgently requests until tomorrow noon to receive answer from his Government regarding offer of our Government to send his forces to Spain, which was granted.” Shafter elaborated: “Told him [Toral] that his surrender only will be considered, and that he was without hope of escape and had no right to continue the fight. I think it made a strong impression on him, and hope for his surrender. If he refuses I will open on him at 12 noon to-morrow with every gun I have, and have the assistance of the navy. Am ready to bombard the city with 13-inch shells.” He provided a reason for his decision to attempt to demolish the city with the largest caliber guns available: “There is a good deal of nervousness throughout the army on account of yellow fever, which is among us certainly. Twenty-nine new cases yesterday and probably 150 all told. Whatever happens, one or two immune regiments should be sent here to act as hospital guards and garrison for the town.”¹¹⁰⁷

Fortunately for the United States, Toral and his superiors agreed to surrender on July 14, provided that he and his troops be provided transportation back to Spain. Toral not only surrendered the city and its garrison, but most of eastern Cuba, almost the entire Spanish Fourth Army Corps. We know from Spanish sources that the reality was stark. After the surrender, Linares (still nominally in command although wounded) explained the necessity for surrender to the Minister of War in Madrid: “Soldiers without permanent shelter; rice the only food; cannot change or wash clothes. Many casualties, chiefs and officers killed; forces without proper command in critical moments. Under these circumstances, impossible to open passage, because one-third of the men of our contingent would be unable to go out; enemy would reduce forces still further; result would be great disaster without accomplishing the salvation of eleven much-

¹¹⁰⁷ Miles to Alger, July 13, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 136. Shafter to Corbin, July 13, 1898. *Ibid.*, 137.

thinned battalions, as desired by your excellency.”¹¹⁰⁸ A last minute glitch almost torpedoed the surrender; Toral insisted that his soldiers be allowed to take their arms with them. When he suggested as such to Alger, the Secretary of War was indignant: “It is not possible that you are entertaining the proposition of permitting the Spanish to carry away their arms. Such a suggestion should be rejected instantly. You have been instructed the terms of surrender acceptable to the President, and they must be concluded on those lines.” Fortunately a face-saving measure was worked out. The surrender terms included the following clause: “the Spanish forces will march out of Santiago de Cuba with honors of war, depositing their arms thereafter at a point mutually agreed upon, to await their disposition by the United States Government, it being understood that the United States commissioners will recommend that the Spanish soldier return to Spain with the arms he so bravely defended.” This permitted Shafter to obey the President’s dictate, as provided by Alger, and Toral to claim that he did all he could to retain the soldier’s armament.¹¹⁰⁹

The ending was extremely fortuitous for the United States. By July 12 Shafter’s position was increasingly threatened. His line of supply had almost collapsed. Heavy rains had washed out what passed for the road between Siboney and the American lines, and half of the teamsters and mule packers were sick. Over 40,000 people depended on the transport of rations into the lines; about 20,000 US troops, 4,000 Cubans under General Garcia, and about 16,000 surviving civilians at El Caney. The civilians were already been cut off from rations and were starving; if anything (like a seasonal hurricane or even heavy storm, quite possible at those latitudes) should impede his supply chain the troops would starve as well. The reinforcements that arrived on July 9 and 10 firmed up his military position but made the supply issue even more critical.

¹¹⁰⁸ Linares to Minister of War, July 12, 1898. Quoted in Alger, *The Spanish-American War*, 202.

¹¹⁰⁹ Terms of the surrender. *Correspondence Relating to the War With Spain*, vol. 1, 152.

Above all Shafter was driven by the threat of epidemic disease. We can thus trace Shafter's willingness to take his time or to force the issue as a function of the perceived health of his command. On June 25 he told Alger "There is no necessity for haste as we are growing stronger and they weaker each day. The health of the command is reported to me by the surgeon as remarkable." On July 4, he started to become uneasy, sending the cable cited previously that the men are healthy so far. By July 9, he was asking permission for conditional terms; by that time three cases of yellow fever had appeared in his command. When that number got to around 100 cases (July 13), he solicited support from General Miles to pressure Washington for a speedy resolution.¹¹¹⁰ It appears that his concern over yellow fever was driving his actions.

Shafter was not alone in worrying how the disease outbreaks would affect the remainder of the war. Once Miles arrived on scene, he concurred with the urgency of the situation. "Before leaving Washington I was aware of the fact that yellow fever had developed among our troops, and by this time learned that it had spread so rapidly that there were over a hundred cases, and the medical officers were undecided as to the extent to which it might cripple the command. This was the most serious feature of the situation, and impressed me with the importance of prompt action... ." He also took immediate action to deal with the perceived threat: "I became fully apprised of the condition of the troops in the fever hospitals, and realized the great importance of immediate action to avoid the danger threatening the whole command. I had already, on the 11th of July, directed the destruction of the infected habitations at Siboney and other places, and now ordered the Twenty-fourth Regiment of the United States Infantry to the yellow fever hospitals to police the grounds, nurse the sick, and bury the dead, that entire regiment of colored troops having volunteered to serve in the infected hospitals. I moved all the troops then on board the

¹¹¹⁰ Trask, *War with Spain*, 227.

transports to Guantanamo.”¹¹¹¹ These actions demonstrated how the outbreak significantly affected the progress of the war. The troops that had been designated for the conquest of Puerto Rico (the survivors of the Fifth Corps) were no longer available for continued service, and the troops that could have been used as a stopgap to assist the Fifth Corps while large numbers were sick and debilitated were instead physically isolated from Shafter’s men. The men of the Fifth Corps were left to guard the prisoners, secure the city, and treat the massive numbers of seriously sick troops all while being sick themselves. It is a testament to the courage and steadfastness of these men that so many lied to their doctors and continued to serve despite having the fever, aches, and pains associated with malaria.¹¹¹²

Miley, an aide to General Shafter in the Santiago campaign, agreed that his boss had been greatly influenced by the outbreak of disease. “Yellow fever had now most unmistakably made its appearance, the first cases being manifested at Siboney. At first it was attempted to keep the command at the front in ignorance of it, but this, of course, was impossible for any length of time, and by the 11th the whole army was aware that it would have to fight a foe more dangerous than the Spaniards.”¹¹¹³ He emphasized the risk taken by the War Department’s insistence on unconditional surrender when he discussed the situation as it had been just a few days later: “There was great fear, and excellent grounds for it, that the yellow fever, now sporadic throughout the command, would become epidemic. With the command weakened by malarial

¹¹¹¹ Miles, *Serving the Republic*, 287, 293.

¹¹¹² Major Reade’s inspections of the Twenty-first US Infantry and the 71st New York indicated that “Many men are worn out by sickness and famine, but from motives of pride and from a disinclination to impose any more work upon the regimental surgeon ask not to be placed on sick reports.” He also stated that “In some doubtful cases, i.e., of convalescents, the examining surgeon asked if they were able to do duty. As a rule, the reply indicated a willingness to “try to.”” Reade, *Dodge Commission Report*, vol. 1 (Appendices), 377, 379.

¹¹¹³ Miley, *In Cuba with Shafter*, 155.

fevers, and its general tone and vitality much reduced by all the circumstances incident to the campaign, the effects of such an epidemic would practically mean its annihilation.”¹¹¹⁴

Shafter’s Adjutant, E. J. McClernand, agreed that the outbreak was critical to the outcome of the campaign:

Our distinguished Surgeon General, General Ireland, has told us this evening [July 2nd] that disease had driven its fangs into our men before the day of battle. We know its progress was rapid, and beyond question a delay followed by a demand to retake positions that had once been captured only to be surrendered would have been fatal. While we waited the physical strength of officers and men would have lessened, and never again would our gallant little Army have been equal to the burst of speed and conquering energy that enabled it to capture El Caney and carried it to the Heights of San Juan on July 1. It would have been necessary to have sent another Army to accomplish its mission.¹¹¹⁵

Clearly Shafter and his officers all agreed that time was of the essence. McClernand also stated that the officers had been expecting the disease threat: “That we would have to contend with disease was fully foreseen by the Chief Surgeon, Colonel Pope, who, on the way down from Tampa, repeatedly cautioned us that trouble was ahead, and he labored diligently to meet it.”¹¹¹⁶

The key to understanding the impact of the disease outbreak is realizing that things would only become worse as time progressed. As Lt. Stewart of the 8th Infantry noted, “each day endangered rather than improved the situation. The increasing difficulty of supply which cut the troops down to bare necessities, the increasing effect of climate and disease on their health, and the prospect

¹¹¹⁴ Ibid., 215-6.

¹¹¹⁵ E. J. McClernand, “The Santiago Campaign,” *The Infantry Journal* 21 (July, 1922): 298-9. Ireland was Surgeon-General in 1922 when the article was written. During the Spanish-American War, he was a doctor assigned to the Reserve Divisional Hospital.

¹¹¹⁶ Ibid.

of still more unfavorable weather conditions, all made it imperative that the campaign be brought to a speedy conclusion.”¹¹¹⁷

Some historians agreed with this analysis. Millis, in *The Martial Spirit*, empathized with Shafter: “the commanding general had realized that he was in a position of the utmost gravity. The remaining defenses were much stronger and more strongly held than those on San Juan; there was no way of taking them save by frontal assault, but to have attempted it might have ended in the disintegration of his army. At the same time the fear of disease and the possibility of a hurricane which would cut off his line of communications imperatively urged him forward.” He related just how close the race between surrender and disease had been: “Just before the surrender, the Twenty-Fourth Infantry, a colored regiment supposed on that account to be immune from the terrible disease, was ordered to Siboney to assist the small staff at the base hospital in stemming what had become a deluge. Many were never to return. For with the fall of the city and the relaxation of the tension, malarial and yellow fever swept the Fifth Army Corps like a scythe; and within a few days the command was reduced to an army corps of prostrate invalids.”¹¹¹⁸

Some historians either dismissed the impact that disease had on Shafter’s negotiations or regarded it as only one among many factors. Despite emphasizing the role disease had in Shafter’s initial planning, Trask ridiculed Shafter’s concerns during this period: “Shafter’s actions after the naval victory reflected the various difficulties, real or imagined, that still weighed upon him. He overestimated the enemy’s strength; he magnified petty concerns; he quailed at the prospect of further casualties to his forces; he feared that tropical disease might

¹¹¹⁷ M. B. Stewart, “The Regulars,” *The Santiago Campaign: Reminiscences of the operations for the capture of Santiago de Cuba in the Spanish American War, June and July, 1898* (Richmond, VA: Williams Printing Co., 1927), 49.

¹¹¹⁸ Millis, *The Martial Spirit*, 295, 329.

soon strike. It is hardly surprising that this uncertain performance eroded the confidence of the Fifth Army Corps in its commander.”¹¹¹⁹ Later, when discussing Shafter’s willingness to accept a conditional surrender, he stated that “Toral’s arguments had made a considerable impression on Shafter and his division commanders. Once again the commander of the Fifth Army Corps appears to have lost his nerve. He might easily have interpreted Toral’s message as a sign of weakness, but chose instead to emphasize his own difficulties rather than those of the enemy.” Clearly Trask was not buying Shafter’s concerns; according to him, it was not until July 23rd that “Shafter became sufficiently alarmed to recommend drastic action.”¹¹²⁰ Although Trask provided a great deal of detail on the progress of the disease through Shafter’s army, he did so in a different section of his book that comes after the discussions of surrender. To Trask, the surrender is a military operation that Shafter poorly handled. The epidemic is a different historical matter, to be discussed separately. “As soon as the Spanish garrison surrendered,” he wrote, “the problem of disease assumed the highest priority.”¹¹²¹

Musicant was ambivalent about the possibility that disease had some impact on Shafter’s operations, even if he was less convinced about Shafter’s planning. On one hand, he wrote that “Conditions along the front on both sides were awful. The onset of malaria, in most cases mistaken for yellow fever, in the Fifth Corps had now mounted to over a hundred cases, and the medical officers were undecided to what extent it might cripple the command,” concluding that “There had to be a surrender or an attack on the city; neither could wait any longer.”¹¹²² On the other hand, he failed to carry through on this analysis later. He is the only author to leave out the

¹¹¹⁹ Trask, *War with Spain*, 290.

¹¹²⁰ Ibid., 329.

¹¹²¹ Trask puts the section entitled “Epidemic” in the chapter entitled “After the Capitulation at Santiago de Cuba” despite the fact that Shafter is arguing with the War Department on whether or not he needs to shift troops to “more healthful camps” before the surrender or after. See Trask, *War with Spain*, 324-332; quote, 326.

¹¹²² Musicant, *Empire by Default*, 488.

wording Miles used to convey the importance of the outbreak of disease (“The very serious part of this situation...”) and, like Trask, he only discussed the epidemic “in the period just after the surrender,” when “about half the troops had been attacked by malaria and dysentery.”¹¹²³

Musicanant was sure that “the war, at least in Cuba, the main theater, had ended in sickness and confusion. Epidemics of malaria and other diseases drove the Fifth Corps from Santiago in unqualified panic”; however, he failed to take a stand on whether or not Fifth Corps planning and operations were affected by disease.

Cosmas is alone in almost completely ignoring the effect disease had on Shafter’s negotiations over the surrender of the city. His discussion of the entire period completely omitted Shafter’s messages back and forth to Alger over the state of health in his command, to include Miles’ support for a conditional surrender sent on July 13th. It is only in a later section dealing with the epidemic that he finally mentioned that “The specter of an epidemic had haunted General Shafter ever since the landing at Daiquiri. During the siege, the threat became actuality when, on July 6, surgeons discovered cases of yellow fever at Siboney. Their reports were among the factors that led Shafter and Miles to press for acceptance of Toral's evacuation offer.”¹¹²⁴ He clearly thought that it should be mentioned, but on the other hand he could not have regarded it as an essential element of the operations outside Santiago; if he had, he would have provided an interpretation of its effect in his analysis of the siege. Like Trask, Cosmas did provide an extensive analysis of the epidemic, but he also placed it in a separate section of his book.¹¹²⁵

¹¹²³ Ibid., 493, 511.

¹¹²⁴ Cosmas, *An Army for Empire*, 252.

¹¹²⁵ Ibid., 252-264.

One factor that is found in all of the first-hand accounts of the campaign was that the conditions under which the men fought greatly contributed to the outbreak of disease. Surprisingly, this fact is rarely even mentioned in modern histories of the war.¹¹²⁶ The location and season were obviously prime for the transmission of malaria and yellow fever, both carried by mosquitoes (*Anopheles* for malaria, *Aedes* for yellow fever). The conditions that the men were in encouraged the development of the filth-borne diseases. Typhoid had been carried into the Cuban theater from encampments in the United States, while diarrhea and dysentery quickly broke out in the trenches. All of the factors that were identified as contributory to disease epidemics were present. The diet was scanty, and lacking in essentials such as vegetables. For example, an officer of the 16th Infantry recounts that “Captain Levin C. Allen carried a big onion, from which he cut a small sliver each day. After a hearty meal of fat pork and hardtack with no fruit or vegetable, the sight of that dirty onion brought tears to our eyes.”¹¹²⁷ The constant low-level fire, combined with the heat, humidity, and frequent rain guaranteed that soldiers would be tired and sleep deprived. Countless reports from the front indicate that the men were filthy, and had no clean uniforms or means with which to clean themselves. Typical is Maj. Reade’s report on the 21st Infantry: “The men are filthy. Campaign hats are worn out, full of holes, shapeless, and sweat through. Blue flannel shirts are rent, making visible backs and shoulders; sleeves tattered to the elbows. ... The damp soil and humid climate cause feet to swell; then the shoes become too tight; enlarged joints, corns, etc., follow, and the men cut or slit their shoes for ease. In many cases toes project.”¹¹²⁸ Men were crowded together; only the fact that outbreaks of measles and other crowd diseases had occurred earlier when the units were first created kept

¹¹²⁶ Some of the epidemiological papers do discuss these issues. See for example the articles written by Smallman-Raynor and Cliff – “The spatial dynamics of epidemic diseases in war and peace: Cuba and the insurrection against Spain, 1895–98” or “The Philippines insurrection and the 1902–4 Cholera epidemic” Parts I and II.

¹¹²⁷ B. B. Simmonds and E. R. Chrisman, “The Sixth and Sixteenth U. S. Infantry,” in *The Santiago Campaign*, 84.

¹¹²⁸ Reade, *Dodge Commission Report*, vol. 1 (Appendices), 376.

them from enduring outbreaks of these disease while in Cuba. Multiple outbreaks of disease increased the death lists; typhoid and/or dysentery on top of malaria could easily kill. There was a particular concern that malarious soldiers of the Fifth Corps would be extremely susceptible to a yellow fever attack; by August 8 Shafter wired the War Department saying that “more than 75 per cent of [the corps] which have been ill with a very weakening malarial fever, lasting from four to six days, and which leaves every man too much broken down to be of any service and in no condition to withstand an epidemic of yellow fever, which all regard as imminent... .”¹¹²⁹

¹¹²⁹ Shafter to Corbin, August 8, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 213.

Dying on a Foreign Shore

The experience in Cuba (as in other wars) demonstrates that combat conditions can facilitate outbreaks of disease. When outbreaks occur, particularly when they reach epidemic levels, it is more than just the actual casualty levels that influences the behavior of commanders and thus the outcomes of military campaigns. Commanders have to look ahead to anticipate the potential disease state their troops will be at in the future; this may accelerate the pace of a campaign or limit future options available to a commander. In the Spanish-American War, disease pressured both Fifth Corps commander Shafter and Commanding General Miles to recommend less than a complete surrender of the Spanish forces in Santiago; only the determination of the leaders in Washington (and their ability to command over telegraph cables not available in previous wars) prevented this from happening.¹¹³⁰ The outbreak of disease also limited the ability of both Shafter and Miles to shift forces to where they were needed; all of the troops (and all of their equipment) at Santiago were considered contaminated. Not only could they not be shifted to another combat zone or sent home without a complete quarantine and detention/isolation facilities for treatment while they were proven not to be infected with yellow fever, they also could not be reinforced or replaced without rendering another set of forces contaminated and thus unusable anywhere else. Modern histories of the war discuss how broken down and unfit the soldiers at Siboney became, but their authors do not appear to realize that they were also considered contaminated with yellow fever until proven otherwise.

¹¹³⁰ It is interesting to speculate what might have happened if the American army had been dependent on letters sent back and forth by ship rather than nearly instantaneous cable communication. Given the speed of steamship travel combined with the landlines available between Key West and Washington, probably not much. A commander at the beginning of the nineteenth century, however, would have had much more leeway to set terms of surrender than did his Spanish-American War counterpart.

Alger and McKinley forced Shafter (and Miles) to hold out for unconditional surrender regardless of the yellow fever.¹¹³¹ Although this was a strategic decision that McKinley had the right to make, it had a negative consequence – any delay in accepting the surrender meant more American troops would be infected with disease. Not surprisingly, Alger made no mention of the impact the disease had on the surrender negotiations in his history of the war. He does, however, examine the possible outcome if Toral had realized the situation of the Fifth Corps when negotiating the surrender: “It was fair to assume, if Toral became aware of an outbreak of yellow-fever among our troops, especially if it was attended by the least sign of panic and demoralization, he would at once interrupt negotiations. With disease fighting his battles for him, the Spanish general would soon be master of the situation.”¹¹³² Senator Lodge, on the other hand, argued that haste in concluding the negotiation was essential:

Haste was imperative, not on account of anything to be feared from the enemy, but through the surrounding conditions. ... With their exhausting labors, and not fortified by food, with a hospital service which had in large measure broken down, the men were exposed to scorching tropic heats and torrential rains, all in a climate famous for malarial fevers. It was only a question of a very short time when these fevers would become general, striking first the sick and wounded, who were insufficiently cared for and who could not be restored to health on a diet of pork and beans, and then the well and unwounded men in the trenches. Worst of all, behind the climatic diseases lurked the dread epidemic of yellow fever, hidden in the cabins of Siboney...¹¹³³

¹¹³¹ Alger, *The Spanish-American War*, 187, 193, 194, 200, 201.

¹¹³² *Ibid.*, 255-256.

¹¹³³ Lodge, *The War With Spain*, 155-6. Note that Lodge is also presuming that the yellow fever threat lay in the contamination of buildings at Siboney.

The American troops were increasingly debilitated from fevers.¹¹³⁴ The diseases were *vivax* malaria and a relatively mild strain of yellow fever; the two were frequently confused for each other, as indicated in the Surgeon-General's Report for 1898.¹¹³⁵ Although mostly nonlethal, malaria prostrated up to 75% of the troops, rendering them unable to serve. Most of the remainder were greatly fatigued and were less capable of performing their duties. In addition to the actual cases of yellow fever and malaria, troops were hit with dysentery, diarrhea (severe enough to weaken individuals) and some typhoid.¹¹³⁶ Roosevelt testified on the effect of the epidemic on his Rough Riders: "We would normally have only 15 to 25 per cent on the sick list, but of the remaining 75 per cent 50 were more than half sick. Toward the end, in the whole cavalry division, you could not have gotten more than a fourth of the men who could have carried their packs and walked 5 miles in that hot weather."¹¹³⁷ Alger instructed Miles that all of the Fifth Corps would be unavailable for service in the planned attack on Puerto Rico: "The conditions are such on account of yellow fever that I have ordered all further shipment of troops to Santiago to cease. We are now arranging transportation for 25,000 men for Porto [sic] Rico. As soon as matters are settled at Santiago, I think you had better return and go direct with this

¹¹³⁴ On the 14th, Fifth Corps Chief Surgeon Greenleaf wired Sternberg: "Two hundred and fifty cases, 5 deaths. Still increasing. Camp established. . . . Not yellow." Greenleaf to Sternberg, July 14, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 140.

¹¹³⁵ Major Havard [chief surgeon, Department of Santiago] reported "toward the middle of August I inspected the Seventh United States Infantry, camped near Cuevitas and reported to be in an unusually sad plight. Out of 740 men 300 were sick, 250 with malarial fever and diarrhea and 50 with yellow fever; many other soldiers were reported to have had yellow fever and recovered, although, within ten days, six patients had died, presumably of this disease. An attempt had been made to separate infected cases, but a very imperfect one, although, under the circumstances, perhaps the best possible. In many regiments cases were recognized and isolated, but in many others cases were doubtless overlooked and treated as malarial fever. The fact that at least 75 per cent of all officers and men were incapacitated, that able-bodied surgeons were few and many of them inexperienced, explains what otherwise would appear like incompetency on the part of the Medical Department. It is to be wondered at that, under the circumstances, yellow fever did not assume the proportions of a violent epidemic and cause great mortality. But, in truth, the great majority of cases were of a mild type, with a mortality of less than 5 per cent; that is, hardly as great as that of malarial fever we were struggling against at the same time, and much smaller than that of our typhoid fever cases." *Report of the Surgeon General 1898*, 60.

¹¹³⁶ Gillett, *The Army Medical Department*, 124.

¹¹³⁷ Roosevelt, *Dodge Commission Report*, vol. 5 (Testimony), 2268.

expedition. Yellow fever breaking out in camps at Santiago will, I fear, deprive you of the use of all forces there. That, however, can be determined later. As soon as Santiago falls the troops must all be put into camps as comfortable as they can be made, and remain, I suppose, until the fever has had its run.”¹¹³⁸

We can see here how disease significantly influenced the subsequent course of the war. The Fifth Corps had been tasked with continuing on to Puerto Rico to assist in the capture of the island under Commanding General Miles. Once the entire force was disabled, either sick or caring for the sick, it was necessary for the Administration to retask volunteer formations in the First and Fourth Army Corps to become part of the invasion force. These were largely volunteer units that were of a lower quality than the almost all-regular force deployed earlier to Cuba. In the end, Miles and his army did very well in Puerto Rico, although the war ended before the climactic battles occurred between the invading forces and the main Spanish defensive forces. It is possible that the lack of regular units could have led to higher casualty counts and a less satisfactory outcome if the war had continued for an additional few months. Unquestionably the forces deployed were not the forces intended for deployment, due to epidemic disease.

One of the scandals that would later be investigated by the Dodge Commission was the treatment of wounded during and immediately after these battles. Much of the medical supplies remained on the transports for lack of transportation to the front, and an entire reserve hospital stayed on a transport that joined the naval blockade off of Santiago rather than unloading at Daiquiri or Siboney.¹¹³⁹ Since most of the ambulances had been left at Tampa, it often took hours to evacuate wounded soldiers from the field, using army wagons “jolt[ing] over the nine miles of

¹¹³⁸ Alger to Miles, July 14, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 144.

¹¹³⁹ Report of Capt. Edward Munson, Reserve Ambulance Brigade to the Surgeon-General, July 29, 1898. *Dodge Commission Report*, vol. 8 (Correspondence), 137.

a road which made the journey a trial for one in fullest health” to the only field hospital present, belonging to the First Division.

The correspondent George Kennan described the scene at the only hospital:

The resources and supplies of the hospital, outside of instruments, operating tables, and medicines, were very limited. There was tent shelter for about one hundred wounded men; there were no cots, hammocks, mattresses, rubber blankets, or pillows for sick or injured soldiers; the supply of army woollen [sic] blankets was very short and was soon exhausted; and there was no clothing at all except two or three dozen shirts. In the form of hospital food there was nothing except a few jars of beef extract, malted milk, etc., bought in the United States by Major [Surgeon] Wood, taken to the field in his own private baggage and held in reserve for desperate cases.¹¹⁴⁰

Major Wood reported, “The poor wounded men were in a pitiable condition. Some, absolutely without clothing save the dressings on their severe wounds, had little but the wet ground for their bed and the sky for cover throughout that first terrible night, but we did the best we could in utilizing every scrap of canvas or bedding, and before very long could shelter, bed, and cover them. They were hungry, nearly famished, and with parched throats.”¹¹⁴¹ Roosevelt later testified that he had talked to some wounded men who told him that it took 24 to 36 hours before they were given any water.¹¹⁴²

Once again, Kennan vividly described the scene:

¹¹⁴⁰ Kennan, *Campaigning in Cuba*, 104.

¹¹⁴¹ Wood to the Surgeon-General, July 31, 1898. *Dodge Commission Report*, vol. 8 (Correspondence), 144. Major Wood is not to be confused with Colonel Leonard Wood, also a doctor but who commanded the Rough Rider regiment (and later a brigade) during the war.

¹¹⁴² Roosevelt, *Dodge Commission Report*, vol. 5 (Testimony), 2268.

Hundreds of seriously or dangerously wounded men lay on the ground for hours, many of them half naked, and nearly all without shelter from the blazing tropical sun in the daytime, or the damp, chilly dew at night. No organized or systematic provision had been made for feeding them or giving them drink, and many a poor fellow had not tasted food or water for twelve hours, and had been exposed during all that time to the almost intolerable glare of the sun. ... Of course the wounded who had been operated upon, or the greater part of them, had to lie out all night on the water-soaked ground; and in order to appreciate the suffering they endured the reader must try to imagine the conditions and the environment. It rained in torrents there almost every afternoon for a period of from ten minutes to half an hour, and the ground, therefore, was usually water-soaked and soft. All the time that it did not rain the sun shone with a fierceness of heat that I have seldom seen equaled, and yet at night it grew cool and damp so rapidly as to necessitate the putting on of thicker clothing or a light overcoat. ... all that a litter-squad could do with a man when they lifted him from the operating-table on Friday night was to carry him away and lay him down, half naked as he was, on the water-soaked ground under the stars. Weak and shaken from agony under the surgeon's knife and probe, there he had to lie in the high, wet grass, with no one to look after him, no one to give him food and water if he needed them, no blanket over him, and no pillow under his head.¹¹⁴³

The single division hospital was overwhelmed: "Our facilities were totally inadequate even for the First Division hospital, and owing to the absence from the field of the Second and Third Division hospitals, which necessitated our caring for their wounded, work was thrown upon our

¹¹⁴³ Kennan, *Campaigning in Cuba*, 133-136.

hands for which we were entirely unprepared and which taxed our resources to the utmost.”¹¹⁴⁴

Although most of the wounded were evacuated to hospital ships anchored off Siboney, some of the most severely wounded were kept at the division hospital until yellow fever broke out among the men.¹¹⁴⁵

In the end the Santiago campaign was a success, but as Wellington said about the Battle of Waterloo, “it was the nearest run thing.”¹¹⁴⁶ The Americans had engineered the destruction of the Spanish fleet in the Caribbean, and taken the second-largest city in Cuba, capturing almost 24,000 troops. President McKinley succeeded in his goal of persuading the Spanish that only loss and defeat would result from a continuation of the war. Yet it was accomplished just in time, as the Fifth Corps was becoming increasingly unfit for battle due to disease. A few weeks delay and Shafter would have not been able to maintain his siege with his original troops.

Another issue which historians of the war have largely overlooked was the arrival of over 3,000 additional troops under Gen. Escario July 3. Although the arrival of troops without accompanying food supplies worsened the food and water situation for the Spanish, they also reduced the likelihood that Shafter could take the city by frontal assault.¹¹⁴⁷ Combining the reinforcement of the Spanish garrison with the fact that up to 90% of the American force was debilitated from epidemic malaria, the odds of a successful Spanish defense or even of an all-or-nothing counterattack on the American lines increased. As stated before, the American victory at Santiago was a close-run thing; if disease had struck the American besieging force a few days

¹¹⁴⁴ Maj. Johnson (Surgeon, 1st Division Hospital) to Wood, undated. *Dodge Commission Report*, vol. 8 (Correspondence), 149.

¹¹⁴⁵ Wood to the Surgeon-General, July 31, 1898. *Dodge Commission Report*, vol. 8 (Correspondence), 143.

¹¹⁴⁶ “Victory at Waterloo did not spoil the Duke of Wellington,” *The Telegraph* (UK), June 12, 2015.

¹¹⁴⁷ This is the column that was erroneously reported to be 5,000 under Gen. Pando. Report of Maj. Gen. Shafter, *Report of the Secretary of War 1898*, 67. Lt Müller claimed that if Escario had arrived a day earlier, neither San Juan Heights or El Caney would have fallen, so it is reasonable to assume that the shorter lines closer to the city could be held even more strongly. Müller, *Battles and Capitulation of Santiago de Cuba*, 91.

earlier, or the Spanish had defended Daiquiri or Siboney delaying the Americans by a few days, or the Spanish had managed to dislodge the Fifth Corps by attacking at the height of its vulnerability, it might have been an American defeat rather than victory. Although the war would certainly have been won eventually by the United States given the political will to continue after an embarrassing defeat, the outcome might have been much different. For example, if Miles' Puerto Rican invasion force had been diverted to take Santiago in mid-July, it certainly could have succeeded even if Shafter's siege had failed. In that event (troops from the Puerto Rico force used to reinforce or retake Santiago), it is possible that Spain could have retained its other island colony at the end of the war. There are too many possible hypotheticals to argue for one or another, but it is reasonable to assume that the eventual outcome would have been different, and that the results would be less favorable to the United States, in terms of higher casualties if no other outcome.

The Santiago campaign revealed many of the errors committed by American leadership from President McKinley down to the campaign commander William Shafter. McKinley and Alger overruled General Miles' concerns about epidemic disease outbreaks if troops were sent during the Cuban rainy season – epidemics that were highly predictable given all of the previous armies sent to the island, to include the Spanish Army's losses just the previous year. The idea that these outbreaks could be avoided given just simple sanitation measures was dubious at best, although it may be reasonable to excuse the President and the Secretary of War if Surgeon-General Sternberg strongly endorsed the sanitation theory in May when the decision was made to commit troops in June (delayed to early July). At the very least Sternberg's apparent lack of effort in upholding Miles' objections (based on Miles' knowledge of previous military history as well as Sternberg's own March 25 appraisal of risks) resulted in the acceleration of the military

campaign from the drier fall to the earlier rainy summer.¹¹⁴⁸ Craig notes that “If Sternberg had remained immovable on this issue with Miles, then it is possible—although unlikely—that the president may have opted to postpone the invasion while continuing with a naval blockade.”¹¹⁴⁹ Many historians have stated that McKinley’s haste was driven by a desire to force Spain to an early conclusion by using overwhelming force, the nineteenth century equivalent of the modern “shock and awe” campaign. This might force a Spanish surrender without having to confront her major troop concentration in Havana.¹¹⁵⁰ Failures of the Army’s mobilization driven by command failures, organization defects, and the stovepiped staff bureau system with its peacetime regulatory mindset prevented the Army from being ready to deploy in May before the rainy season began. This was a failure of leadership as well as organization; neither Alger nor Miles rose to the occasion. The subordinate officers under their command did their best, but they were untrained in the mobilization and deployment of large units and the staff system was separated from the line commanders.¹¹⁵¹

The mobilization problems in turn can be blamed in part on Presidential decisions to mobilize the entire Guard for political purposes in his initial call for 125,000 men and then trying to fill the holes in Guard recruitment with the additional 75,000 men call-up. 200,000 volunteers were far more than were needed for a war against Spain in the Caribbean and the Philippines, and were far more than the Army supply system could support. McKinley decided in May to pursue a more aggressive policy against Spain. This was demonstrated in his decision to fight a two-front war, first exploiting Dewey’s defeat of the Spanish Pacific fleet by sending an Army

¹¹⁴⁸ Craig, *In the Interest of Truth*, 219.

¹¹⁴⁹ Ibid., 242-243.

¹¹⁵⁰ Trask, *War with Spain*, 168, 172

¹¹⁵¹ Trask, *War with Spain*, 154. His judgment was that ““Alger and Miles manifested no real qualities of leadership at this critical moment,” while “the system of bureaus in the War Department was not organized to support major land campaigns such as the one against Spain” (ibid.).

corps to seize Manila¹¹⁵² and then directing a land campaign in Cuba, to be followed by an invasion of Puerto Rico. Cosmas and Musicant both credit McKinley's May decision to move against Cuba quickly to the reassessment of the disease risk from Guiteras and Sternberg.¹¹⁵³ Cosmas and Trask also argue that the decision to deploy two invasion forces in the short term made the mobilization, supply, and training of the 200,000 volunteers almost impossible for the War Department.¹¹⁵⁴ Although Alger is at fault in preventing the Medical Department from ordering any medical supplies using funds from the \$50 Million Dollar Bill, Sternberg failed to determine the status of National Guard medical supplies in advance, finding deficiencies in their availability an unpleasant surprise.¹¹⁵⁵

Despite the problems supplying the units in their mobilization camps in the United States, the Medical Department sent adequate supplies, medicines, ambulances, and field hospital sets for the Fifth Corps; three division hospitals were loaded onto the ships. However, Shafter had not planned for adequate transportation for all of the medical materiel that would be needed once the Fifth Corps arrived in Cuba; for example, most of the ambulances were left behind in Tampa. He failed to allocate lighters to offload the materiel upon arrival in Cuba, and there was inadequate transportation for medical supplies to be moved from Siboney or Daiquiri to the front.¹¹⁵⁶ His medical director (Major Pope) and the Quartermaster-General and his bureau are also at fault for

¹¹⁵² Cosmas notes that "McKinley's formal instructions to General Merritt [in charge of the Eighth Corps], issued on May 19th, implied an extensive land campaign" although "it still left unclear its long-range purpose." Cosmas, *An Army for Empire*, 112-113.

¹¹⁵³ Cosmas, *An Army for Empire*, 114-115; Musicant, *Empire by Default*, 258. Trask rather interestingly does not mention the reassessment in his history.

¹¹⁵⁴ Trask, *War with Spain*, 167, Cosmas, *An Army for Empire*, 135-136.

¹¹⁵⁵ He later testified that he had requested each state to provide supplies for their National Guard units, but "unfortunately, many of the State medical departments had no such equipment." *Dodge Commission Report*, vol. 1 (Appendices), 275, 277, 681.

¹¹⁵⁶ Although the Medical Department could have done a better job of anticipating possible transportation difficulties, in the end Shafter must be held to account for failing to provide unloading facilities and ground transportation. Although the issue became a "you said, he said" impasse during the Dodge Commission testimony, Munson's testimony discussed previously that they asked for and were refused assets seems more credible than Shafter's assertion that he gave medical supplies a priority. Shafter, *Dodge Commission Report*, vol. 7 (Testimony), 3198; Capt. Edward Munson, *Dodge Commission Report*, vol. 1 (Appendices), 709.

failing to plan or execute actions to ensure that the hospitals, medicines, beds, etc. were available for both the wounded and the sick that should have been expected given all previous military campaigns in Cuba during the rainy season. Given the incubation times the delay in getting medical materiel to the front proved to be more of a problem for the wounded than the sick, but both should have been anticipated. There was too much improvisation needed once the campaign began, and not all improvisations worked. Although almost the entire Army command structure below the general officer level lacked any experience in moving or fighting large numbers of troops (the general officers and some field grade officers had some prior experience from the Civil War), the entire point of the professional education of the 1880s and 1890s should have been directed toward planning for campaigns such as were executed in Cuba, Puerto Rico, and the Philippines. Every prior campaign by Europeans (or Americans) in the tropics had experienced massive numbers of disease casualties, excepting only Wolseley's campaign which was expressly planned around avoiding the rainy season in Africa.

It is easy to dismiss Nelson Miles as a pompous peacock given some of his grandiose plans and his desire for military glory at the climax of his long career, but when it came to disease avoidance his plans and recommendations were consistently designed to minimize the disease risk to American soldiers sent to tropical regions. Some of his plans were impractical (the plans to maneuver cross-country in the Cuban highlands come to mind) but the focus on minimizing disease casualties were sound, and the campaign he commanded in Puerto Rico was a sterling success up to the end when the armistice precluded further military operations.¹¹⁵⁷ However,

¹¹⁵⁷ Miles' letter to Alger on April 18th where he "respectfully call[s] attention to the letter of the Surgeon-General of the Army, dated Washington, March 25 of this year, as to the danger of putting an army in Cuba during what is known as the "rainy" or "sickly" season" is a good example of how he emphasized disease risks (Miles to Alger April 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 8). Miles' plan of May 27th which called for a movement from Puerto Principe to Santa Clara "through a country comparatively free from yellow - fever, well stocked with cattle, and having grass sufficient for our animals" is the impractical plan referred to. Alger reproduces

relations between Miles and Alger had been poisoned by years of infighting before the war on the relative status and prerogatives of the Commanding General, and McKinley distrusted Miles as well.¹¹⁵⁸ The result was that all of Miles' plans to avoid the rainy season (which would also permit the Army to train the volunteer troops and more importantly manufacture enough ammunition to actually arm them for combat) were dismissed. There were some countervailing reasons for moving against Santiago immediately after Cervera anchored his fleet off the city, and it can be argued that military necessity required operations during the rainy season. However, if this argument is accepted, then it was incumbent upon the leadership to plan for the epidemics that became inevitable once the decision to invade Cuba during June or July was made.

The epidemics surprised no one; everyone later testified that disease was expected. General Joe Wheeler testified to the Dodge Commission, "It was expected that the army would have to go through yellow fever. I expected it, and the experts were instructed to go to the officers at Tampa and give us information about yellow fever...",¹¹⁵⁹ and Surgeon-General Sternberg advised all army officers of the dangers of epidemic disease to soldiers deploying to Cuba in his Circular #1: "In Cuba our armies will have to contend not only with malarial fevers and the usual camp diseases—typhoid fever, diarrhea, and dysentery—but they will be more or less exposed in localities where yellow fever is endemic and under conditions extremely favorable for the

the communiqué in his history, but then savages the plan: "The landing and shipping of ninety tons a day over a road with little rolling stock, from Nuevitas to Puerto Principe, a distance of fifty miles, and thence loading upon wagons and hauling over a newly made road, where the first day out the wagons would have cut the roads hub-deep; the pitching of camps and hospitals every night; striking them each morning, and moving and pitching them again on wet land; taking the sick, or leaving them along the route; the burying of the dead; the suffering of the men during the rainy season; the guarding of the whole line against guerillas or raiders; and, from a military point of view, putting the entire cavalry force of the United States where, if needed in an emergency, it would have been impossible to have shipped it—there being no seaport where transports could take them aboard, except on lighters—would have been an unnecessary risk and an inexcusable blunder." (Alger, *The Spanish-American War*, 51-57). The Puerto Rico campaign is discussed in Chapter 11.

¹¹⁵⁸ Ranson, "Nelson Miles as Commanding General," 182, 186, 190-191.

¹¹⁵⁹ Joseph Wheeler, *Dodge Commission Report*, vol. 3 (Testimony), 49.

development of an epidemic among unacclimated troops.”¹¹⁶⁰ What did surprise the leadership (but should not) was the extent of malarial infection. General Chaffee testified about the mindset: “I certainly did not think when we went to Cuba that we would have anything like the sickness that we did have. Our minds were somewhat bent upon yellow fever. We talked of that at Tampa as probably the disease with which we would have to compete, but we did not discuss the sickness of malaria.” However, the experience of Union troops with malaria during the Civil War should have indicated the likelihood that many if not most of the soldiers would become ill with the disease. This was also the lesson of the Caribbean wars of the previous two centuries.

As both a participant and an analyst, Sergeant summarized the historical record:

The knowledge derived from the histories of wars in the West Indies could not fail to be of inestimable value to any one responsible for the conduct of a campaign in Cuba. No matter what precautions were taken, it was plain that invading armies could not long keep their health in the island. As a rule, when an army landed, not much sickness developed before the end of the third or fourth week; then suddenly probably a quarter of the command would become ill and continue ill for several weeks, with new cases arising daily, until practically every soldier of the command had passed through a serious spell of sickness. Malarial fever, dysentery, and yellow fever were the prevailing diseases; and at times, especially when the sanitary condition of the troops was bad, the mortality was appalling. When not fatal, so enervating were these tropical diseases that their victims would lose all ambition and energy; and upon convalescence many would be left in such a weak and emaciated condition that they were no longer fit to bear the hardships of an active campaign.¹¹⁶¹

¹¹⁶⁰ Appendix B, Item 3, from *Report of the Surgeon-General of the Army, 1898*, 139-140

¹¹⁶¹ Sargent, *The Campaign of Santiago de Cuba*, vol. I, 42-43.

It is likely that the post-Civil War experience blinded most officers of the dangers of malaria. Even the Medical Corps lacked sufficient experience with the disease. Major Pope's testimony before the Dodge Commission was telling: "Q: Was there not in the service a sufficient number of officers familiar with the malaria of the Gulf Coast to know that it was a serious disease, and that if a man recovered it was an apparent, instead of real recovery, and that a transfer from a warm to a cold climate made it return, and that within a few days? Were there not officers in the service familiar with these facts? A. I do not know of any. I think perhaps the Surgeon-General himself was the only one who had knowledge of that fact by personal experience. Nearly all the older men who had had experience with these Southern fevers during the civil war had left the service."¹¹⁶² However, the point of publishing the *Medical and Surgical History of the War of the Rebellion* was to record this knowledge for future generations of Medical Corps doctors, so they would not have to rely on the recollections of superannuated veterans. Pope also points his finger at the one man who lacked even the excuse of no personal experience: Surgeon-General Sternberg. Sternberg knew that malaria was likely in Cuba, and indicated so in his circular to the army, but he failed to take any steps to mitigate its effect on the Cuban campaign. His biggest mistake was to ignore the one measure that would have had a significant effect on the Fifth Corps soldiers: chemical prophylaxis using quinine. The virtues of quinine prophylaxis were demonstrated in the Civil War, and there was no shortage of quinine available.¹¹⁶³ Sternberg was

¹¹⁶² Maj. Benjamin Pope, *Dodge Commission Report*, vol. 6 (Testimony), 3048. This may have been somewhat misleading; Gillett reports that there were 14 Civil War veterans still serving in the Army at the start of the war. Gillett, *The Army Medical Department*, 118.

¹¹⁶³ He did authorize prophylaxis "in decidedly malarious localities" in Circular #1 but ruled out general use: "the taking of quinine as a routine practice should only be recommended under exceptional circumstances." Without specific guidance to provide quinine prophylaxis in Cuba, the practice was not applied to the campaign. This was self-contradictory even within the circular itself, as his preamble stated that "medical officers of the United States Army are well informed as to the necessary measures of prophylaxis and the serious results which infallibly follow a neglect of these measures, especially when unacclimated troops are called upon for service in a tropical or semitropical country during the sickly season." *Report of the Surgeon-General of the Army, 1898*, 139-140. On the availability of quinine, 7.5 million tablets were purchased for the war; 1 million were sent to Tampa. Despite

familiar with the British and French use of quinine prophylaxis in Africa and had written favorably about it as far back as 1883. Craig states, “Its use may have precluded the development of an army of convalescents... .”¹¹⁶⁴

The villain in the quinine prophylaxis story may be Juan Guiteras. Lt. Col. Pope, the chief medical officer for the Fifth Corps published a circular on June 2, 1898, entitled “Suggestions to commanding and medical officers for the prevention of yellow fever, and the preservation of the health of the United States forces in the Tropics, by Dr. John [sic] Guiteras, United States Army.” It begins with a section on quinine, which states, “The regular administration of quinine for the prevention of malaria is of doubtful advantage. Quinine, however, should be used when the individual is subjected to extraordinary depressing influences, such as traumatism, exhaustion.” This unfortunately made the avoidance of quinine prophylaxis the official medical policy for the Fifth Corps.¹¹⁶⁵ However, the responsibility for the health of the command rested with Dr. Pope with Surgeon-General Sternberg having oversight responsibility. They should have consulted a true malaria expert or relied on the vast number of cases reported during the Civil War as guidance in this matter.

In order to anticipate the occurrence of the epidemics in Santiago and mitigate their effects, Shafter should have prepared for large numbers of sick troops and requested immune regiments sooner in anticipation of the yellow fever epidemic that began as early as July 9, if for no other reason than to care for the yellow fever patients in lieu of the 24th Infantry. He and his medical director, under Sternberg’s guidance, should have started quinine prophylaxis for malaria upon

difficulties unloading at Tampa, “the supply of quinine was large enough to meet all possible demands” (see *ibid.*, 105;189-190)

¹¹⁶⁴ Craig, *In the Interest of Truth*, 243.

¹¹⁶⁵ General Orders No. 2, Fifth Army Corps, June 2, 1898. *Report of the Surgeon General, 1898*, 203. Reprinted as item #6, Appendix B (Correspondence). The instructions issued to the troops included the following: “Do not take quinine regularly when your health is good” (*ibid.*, 205).

departing for Cuba, and ensured that sufficient medicines reached the front (which would have required dedicated transportation assets). The Medical Department should have taken more responsibility for the transport of medical supplies, rather than simply hoping that the Quartermaster Department would make it a priority; although this would have broken with precedent as well as regulations, it could have been done with the active support of Secretary of War Alger. The issue of evacuation of sick troops should have been addressed before the start of the war; plans for evacuation should have been developed which would have revealed the need for a recuperation camp like Camp Wickoff before the Fifth Corps became totally incapacitated. Although the lack of available sites for recuperation in Cuba might not have been apparent before the Santiago campaign began, it should have been apparent after the transportation difficulties became painfully obvious to all. Likely events can be anticipated; anticipated events can be planned for, and if anything should have been clear to the 1898 Army Medical Corps it was the likelihood of dysentery, typhoid, malaria, and yellow fever during the Cuban campaign.

CHAPTER 11

THE INDIRECT APPROACH: WAR AGAINST SPANISH COLONIES

The War in the Philippines

The first major engagement in the Spanish-American War occurred thousands of miles from either Spain or the United States – off the coast of the Philippine Islands. Commodore Dewey had been informed by the American consul to Manila (who met the fleet in Hong Kong on April 27, 1898) that the Spanish Asiatic fleet under Admiral Montojo was located at Subig Bay. Montojo had sailed for the bay with the anticipation of meeting the American squadron supported by major defenses that were supposed to be located there. Upon arrival, Montojo discovered that the defenses were woefully incomplete, so he returned to Manila Bay where he anchored off of the Spanish naval base at Cavite. Dewey first reconnoitered Subig Bay then, after discovering the absence of Spanish ships, sailed for Manila in order to decisively engage Montojo's fleet.

Dewey entered Manila Bay at night on April 30 in order to achieve surprise; he managed to get almost the entire squadron past the defenses at the head of the bay when three shots were fired, all missing Dewey's ships. Montojo had anchored his squadron in a line; Dewey sailed his ships along this line on the morning of May 1. Although Montojo had seven ships to Dewey's six, the American ships outweighed the Spanish by 7770 tons. Four of the American ships were protected (i.e., had steel armored decks) while all of the Spanish ships were unprotected – one (the *Castilla*) was entirely made of wood. Furthermore Dewey's eight-inch guns outranged the Spanish guns, some of which were muzzle loading. The outcome of the engagement was

overwhelming – all of the Spanish ships were destroyed or scuttled to prevent seizure and the American ships were almost completely unharmed. Dewey's squadron defeated the Spanish squadron without the loss of a single man. This gave the Americans control of Manila Bay and eliminated any Spanish naval presence in the Pacific.¹¹⁶⁶

After his victory Dewey wired Washington on May 4 saying that "I control bay completely and can take city at any time, but I have not sufficient men to hold."¹¹⁶⁷ The Secretary of the Navy noted that "It was at once determined to reenforce the Asiatic Squadron and to send troops to take and occupy the city of Manila." This led the War Department to order 20,000 men to San Francisco for service in the Philippines as the Eighth Army Corps under Maj. General Wesley Merritt.¹¹⁶⁸ Merritt was the second-ranking general officer in the Army after Miles. Mobilization for service in the Philippines occurred rapidly without any prior planning after Dewey's overwhelming victory in the islands. McKinley failed to properly define the mission for Merritt's command; a letter from Merritt to McKinley dated May 16, 1898, stated that "I do not yet know whether it is your desire to subdue and hold all of the Spanish territory in the islands, or merely to seize and hold the capital", although McKinley's May 19 instruction to Alger specified that the force would accomplish a "the twofold purpose of completing the reduction of the Spanish power in that quarter and of giving order and security to the islands while in the possession of the United States." One of the issues dictating force size was the size of the Spanish garrison in the Philippines. Merritt demanded a larger force as "the work to be done consists of conquering a territory 7,000 miles from our base, defended by a regularly trained and acclimated army of from

¹¹⁶⁶ Alger, *The Spanish-American War*, 318-323; Trask, *War with Spain*, 96-103; *Report of the Chief of the Bureau of Navigation*, 68; *Report of the Secretary of the Navy, 1898*, 6. The latter report also noted that the victory "removed at once all apprehension for the Pacific coast" which also had an "indirect pecuniary advantage to the United States in the way of saving an increase of insurance rates." (*Report of the Secretary of the Navy, 1898*, 6).

¹¹⁶⁷ *Report of the Chief of the Bureau of Navigation*, 68; the message was not received in Washington until May 7th.

¹¹⁶⁸ *Report of the Secretary of the Navy, 1898*, 6; Cosmas, *An Army for Empire*, 111-113; Alger, *The Spanish-American War*, 326-327.

10,000 to 25,000 men, and inhabited by 14,000,000 of people, the majority of whom will regard us with the intense hatred born of race and religion” while Miles stated that “The reference to the Spanish troops is believed to be very much exaggerated. No reports have been received thus far that there is anything like the number indicated in the above indorsement, while the population of that territory is probably nearer one-half the number stated.” Furthermore, his concept of the mission was much smaller: “The force ordered at this time is not expected to carry on a war to conquer an extensive territory, and the chief object of the within letter was to suggest a means of quickly establishing a strong garrison to command the harbor of Manila, and to relieve the United States fleet under Admiral Dewey with the least possible delay.”¹¹⁶⁹ Alger supplied Merritt with an accounting of Spanish troops on May 25: 41,014 officers and men on paper but Alger was sure that “there can be little doubt that the Spanish contingent of the army in the Philippines, as given above, may be safely cut down 50 per cent or more, and these troops probably do not number more than 10,000 men today.”¹¹⁷⁰ The American consul at Hong Kong estimated “Twenty-one thousand Spanish troops, of which 4,000 natives, 2,000 volunteers. All but 1,000 at Manila.”¹¹⁷¹ Partly as a result of this uncertainty, Merritt insisted on a larger force than Miles wished to allocate to him. Merritt ended up with about 5,000 Regular Army troops and 15,000 National Guard volunteers, primarily from the western states.¹¹⁷²

The initial detachment of 2,501 troops sailed for the Philippines on May 25 under the command of Brig. General Anderson; the second of 3,540 men sailed on June 15, 1898 under

¹¹⁶⁹ Message from Merritt to Corbin May 17, 1898, attached as the 2nd indorsement [sic] to a message from the Adjutant-General’s office to Merritt May 16, 1898; message from Miles to Alger May 18, 1898 attached as 3rd indorsement (dates in text as indicated). *Correspondence Relating to the War With Spain*, vol. 2, 648-649.

¹¹⁷⁰ Alger to Corbin May 25, 1898. *Correspondence Relating to the War With Spain*, vol. 2, 654.

¹¹⁷¹ State Department to War Department May 21, 1898. *Correspondence Relating to the War With Spain*, vol. 2, 665.

¹¹⁷² Merritt to McKinley May 15, 1898 *Correspondence Relating to the War With Spain*, vol. 2, 646; Alger to Merritt May 28, 1898, forwarding message from McKinley to Alger May 19, 1898, *ibid.*, 676; Cosmas, *An Army for Empire*, 112-113.

the command of Brig. General Greene, and the final detachment of 4,847 men under Brig. General MacArthur sailed on June 27 and 29. Maj. General Merritt accompanied the final expeditionary force; by July 31 he had just under 11,000 officers and men under his command outside the city of Manila. Four additional detachments arrived later after the capture of the city.¹¹⁷³

The Manila Campaign

Once the initial convoys arrived, they faced a total Spanish force of about 26,000 Spanish regulars and about 14,000 militia; most of the Spanish army was on the island of Luzon and about 9,000 in Manila itself¹¹⁷⁴ (see map, Figure 7). As in Cuba, the Spanish garrison in the Philippines was actively engaged in countering an insurgency by the native population. Unlike Cuba, the Spanish had achieved a momentary lull in this counterinsurgency achieved by buying off the leader of the rebellion, Emilio Aguinaldo. However, that agreement quickly broke down and by February 1898 the American consul stated that “Conditions here and in Cuba are practically alike. War exists, battles are of almost daily occurrence, ambulances bring in many wounded, and hospitals are full. Prisoners are brought here and shot without trial, and Manila is under martial law. ... Insurgents are being armed and drilled, are rapidly increasing in numbers and efficiency, and all agree that a general uprising will come as soon as the governor-general

¹¹⁷³ Alger, *The Spanish-American War*, 329; *Correspondence Relating to the War With Spain*, vol. 2, 671-672, 701-2, 716-717.

¹¹⁷⁴ Trask, *War with Spain*, 371. Merritt was advised by the US consul at Manila to expect “Twenty-one thousand Spanish troops, of which 4,000 natives, 2,000 volunteers. All but 1,000 at Manila.” State Department to War Department May 21, 1898. *Correspondence Relating to the War With Spain*, vol. 2, 665.

embarks for Spain, which is fixed for March.”¹¹⁷⁵ Aguinaldo was in exile in Hong Kong when the war began; he quickly attempted to ally his forces with the United States in the hope that the US would subdue the Spanish and allow him to declare a free and independent Philippines. He contacted Dewey and later claimed that US representatives agreed to Philippine independence. Dewey denied this, as he had been firmly instructed “not to have political alliances with the insurgents or any faction in the islands that would incur liability to maintain their cause in the future.”¹¹⁷⁶ He did, however, tell Aguinaldo that if they wished to help the Americans fight the Spanish, their aid would be accepted provided they served under US command and no political concessions were demanded. Dewey also provided Aguinaldo transportation back to the Philippines.¹¹⁷⁷ As Aguinaldo was unwilling to subordinate his forces to the United States, eventually the siege of the city involved three separate armed forces, each with their own agenda: the American army, Filipino insurgents, and the Spanish army.

The Spanish authorities realized that they would need to fight one war at a time, and sought the assistance of the native population to prepare for combat against the United States rather than their participation in the insurgency. They formed a native militia and attempted to involve notable Filipinos in the government, but they quickly discovered that the general populace was mostly aligned against them. An example of the difficulties encountered by the Spanish was reported by American consul Williams: On March 25, 1898, “a Crown regiment of natives, the

¹¹⁷⁵ Consul Oscar Williams to Third Assistant Secretary of State Cridler, Feb. 22, 1898. *Dodge Commission Report*, vol. 2 (Appendices), 1206; also *Correspondence Relating to the War With Spain*, vol. 2, 650. See also Chadwick, *Relations*, vol. 2, 366.

¹¹⁷⁶ Long to Dewey, May 26, 1898, quoted in Long, *New American Navy*, vol. 2, 109. See also Chadwick, *Relations*, vol. 2, 366.

¹¹⁷⁷ Cosmas, *An Army for Empire*, 187. Dewey wired Long on June 27th saying “I have given him [Aguinaldo] to understand that I consider insurgents as friends, being opposed to a common enemy. He has gone to attend a meeting of insurgent leaders for the purpose of forming a civil government. Aguinaldo has acted independently of the squadron, but has kept me advised of his progress... I believe he expects to capture Manila without my assistance, but doubt ability, they not yet having many guns.” Dewey to Long, June 27, 1898, quoted in Chadwick, *Relations*, vol. 2, 368.

Seventy-fourth... marched out of the barracks and deserted in a body to the insurgents, saying they were willing to fight the foreign enemies of Spain but would not fight their friends.”¹¹⁷⁸

This ultimately made the Spanish position in the Philippines untenable, which eventually led to an arranged surrender on the part of the Spanish.

Merritt’s instructions from President McKinley to serve as “an army of occupation to the Philippines for the twofold purpose of completing the reduction of the Spanish power in that quarter and giving order and security to the islands while in the possession of the United States.”¹¹⁷⁹ Although these instructions were broad and implied the complete seizure of the islands from Spain, many in the US Congress and Administration continued to consider more limited goals of the acquisition of a naval base, the capture of only the capital Manila, or the occupation of only the main island of Luzon (with much of the population, upon which Manila was located). The occupation of the entire island group was not settled until the later stages of the negotiations with Spain on a peace treaty.¹¹⁸⁰ Regardless of the long-term aims of the American government, in the short term all agreed that the initial campaign would be against the seat of Spanish power at Manila. Dewey closed off Manila Bay and sent naval landing parties to occupy Cavite. He had the power to demand surrender of the city at any time, but refrained from doing so as he lacked the troops to occupy it after surrender. When Merritt’s force arrived, it was not simply a matter of planning how to force the city to surrender; the issue was complicated by the presence of the Filipino insurgents.

Upon his arrival back in the islands, Aguinaldo quickly proclaimed a Republic of the Philippines, with himself as “dictator-President.” Using arms captured from Spanish arsenals,

¹¹⁷⁸ Williams to Cridler, March 27, 1898. *Correspondence Relating to the War With Spain*, vol. 2, 651.

¹¹⁷⁹ McKinley to Alger, May 19, 1898, quoted in Chadwick, *Relations*, vol. 2, 396.

¹¹⁸⁰ Trask, *War with Spain*, 382-385; 423-435.



Figure 7: Map of the Philippine Islands, 1898
 (Source: Russell, *An Illustrated History of Our War With Spain*, 539)

purchased using the bribe he had been given the year before to declare an end to the insurrection, and a few rifles supplied by Dewey, Aguinaldo armed native troops (including about 14,000 Filipinos that had been part of the Spanish army) and began to isolate and capture small Spanish garrisons across the islands. In June, he mobilized roughly 12,000 men and lay siege to the city of Manila.¹¹⁸¹ While the siege was underway, Anderson's 2,500 men of the first convoy of American troops landed at Cavite at the beginning of July, and set up "Camp Dewey," an American base just south of the city. By the end of July, Merritt and the remainder of the troops landed and also began to lay siege to the city. The first task was to clear a spot on the city's perimeter for the American troops to entrench, as Aguinaldo's army had already completely invested the city. Using persuasion, the Americans initially occupied a small section of the Filipino lines then moved closer to the city, establishing their own trench line.¹¹⁸²

The Spanish government had ordered a squadron to reinforce the Philippines, but it turned back when the US Navy organized an Eastern Squadron that planned to sail against Spain. Chadwick indicates that if that Spanish squadron had arrived at this point, Dewey and Brig. General Anderson (commander of the initial troops in the Philippines before Merritt's arrival) made plans to separate – Dewey sailing east to join two monitors en route to the Philippines, then returning to confront the Spanish, while Anderson planned to retreat to the hills, entrench, and wait for Dewey's return. Fortunately, this plan never needed to be implemented.¹¹⁸³

¹¹⁸¹ Cosmas, *An Army for Empire*, 187-188; Trask, *War with Spain*, 405-407. Cosmas used the term "dictator-President" as a more accurate description of his self-imposed Presidency. Aguinaldo styled himself "The President of the Philippine Revolution" in a proclamation on June 18, 1898, but also provided the following description of the new government in his proclamation: "The dictatorial government shall hereafter be known as the revolutionary government, . . . The dictator shall hereafter be known as the president of the revolutionary government." *Report of the Chief of the Bureau of Navigation 1898*, 113-114.

¹¹⁸² Cosmas, *An Army for Empire*, 239-241; Chadwick, *Relations*, vol. 2, 393-394; Alger, *The Spanish-American War*, 331-333.

¹¹⁸³ Chadwick, *Relations*, vol. 2, 382. The Spanish force included two battleships (*Carlos V* and *Pelayo*). It reached Egypt on June 25th but was recalled July 8th.

The Spanish commander in Manila, General Jaudenes, knew that his position was doomed. He was faced with conflicting imperatives: if he surrendered without a fight, he would face a certain court-martial upon returning to Spain. If he surrendered to the Filipino insurgents, the fate of himself and his troops was uncertain – there were no Geneva conventions, especially in cases of civil war. In the end, he negotiated with the Americans to stage a charade – the Americans would conduct a very limited attack, which would allow him to yield gracefully under force of arms. The Eighth Corps would conduct an attack on his outer lines; the Spanish would defend these lines but would not reply with the heavy artillery located within the inner city fortifications. Once the land battle started, Dewey would sail in close to the city and demand surrender, which would be proffered.¹¹⁸⁴

Merritt and Dewey then planned an attack that should succeed regardless of the fight the Spanish would put up, although it also was designed to facilitate the planned staged surrender. Around 9:30 on the morning of August 13, 1898, Dewey began the attack with naval gunfire on the outer Spanish fortifications. The attack was successful, but when Jaudenes hoisted the surrender flag two hours later, Merritt and his subordinate commanders did not see it and continued the attack. Fortunately for the soldiers, their commanders realized their error quickly and a detachment of senior officers entered the city to accept the surrender in the name of the United States. Aguinaldo's force took advantage of this time to move forward and capture some of the city's suburbs. By the end of the day, the Americans held the city and some of the suburbs, but were surrounded by Filipinos angry at being left out of the capitulation.¹¹⁸⁵

¹¹⁸⁴ Cosmas, *An Army for Empire*, 241; Chadwick, *Relations*, vol. 2, 411.

¹¹⁸⁵ Cosmas, *An Army for Empire*, 241-243; Alger, *The Spanish-American War*, 335-340. Chadwick reproduces the message exchange between Merritt and Dewey on one side and Jaudenes on the other. One of Jaudenes' replies to the American surrender demands hinted at the Spanish fear of reprisals from the Filipino insurgents: "finding myself surrounded by insurrectionary forces, I am without places of refuge for the increased numbers of wounded, sick, women, and children who are now lodged within the walls." Jaudenes to Merritt & Dewey, August 7, 1898 in

The final surrender terms were formally signed the next day, August 14. Ironically, the surrender occurred after an armistice had been agreed upon between the United States and Spain, halting combat in preparation for negotiations on a peace treaty. However, just as in Andrew Jackson's victory in the Battle of New Orleans in 1814 (after the war officially ended), the ground truth mattered far more than any legalities – the Americans had captured Manila by force of arms, and this gave the United States a significant advantage in the peace negotiations, which determined the future of the Spanish colony.¹¹⁸⁶

The Philippine campaign of the Spanish-American War had ended – but the end of the conflict did not mean peace for the occupying army. Immediately after the surrender, Aguinaldo demanded that the city be jointly occupied, which was refused. During the period between the surrender of Manila and the signing of the Treaty of Paris that ended the conflict and awarded the United States all of the Spanish possessions in the Philippines, the insurgents strengthened their lines, and issued countless “edicts, proclamations and manifestoes” that acted to “discredit the motives and habits of our [American] people” leading to a “feeling of keen antagonism.”¹¹⁸⁷ This ill-will turned into a rebellion against the United States, which the US Army officially refers

Chadwick, *Relations*, vol. 2, 406. The American commanders were prepared for the surrender, having received a memo from Merritt stating “In the event of a white flag being displayed by the enemy on the angle of the walled city, or prominently anywhere else in sight, coupled with a cessation of firing on our part, it will mean surrender, as the admiral proposes, after having fired a satisfactory number of shots, to move up toward the walled city and display the international signal “Surrender.” If a white flag is displayed, this will be an answer to his demand, and the troops will advance in good order and quietly.” Chadwick, *Relations*, vol. 2, 409.

¹¹⁸⁶ Chadwick, *Relations*, vol. 2, 420-424. Merritt later testified that he considered that “the surrender was virtually a surrender of the Philippine Islands. ... Nothing was left of Spanish sovereignty that was not at mercy of the United States.” Message from Day, acting Secretary of State to Minister Hay, one of the US negotiators in Paris, Oct. 6, 1898. *Foreign Relations of the United States, 1898*, 920-921. The proclamation made by McKinley of “a suspension of hostilities” dated August 12, 1898 is given in *Correspondence Relating to the War With Spain*, vol. 1, 220.

¹¹⁸⁷ Alger, *The Spanish-American War*, 920. The peace treaty also awarded the United States the Spanish territories of Puerto Rico and Guam.

to as the “Philippine Insurrection.”¹¹⁸⁸ Several years of fighting would occur before US troops captured Aguinaldo and repressed the rebellion.

Unlike Cuba, the Manila Campaign resulted in very few deaths from sickness. As of August 31, 1898, there were only 28 deaths from disease, including one case of heat exhaustion. The primary killer was typhoid (14 deaths). The Chief Surgeon of the Philippine expeditionary force, Lt. Col. Lippincott, stated that “the health of this command was fairly good” although “the sick list is larger than it would be were our men better situated in a sanitary way”; with relatively frequent attacks of dysentery and malaria.¹¹⁸⁹ The major difference in disease environment between Cuba and the Philippines is the complete absence of yellow fever from the latter, almost certainly from the fact that African slaves were never imported into the Philippines.

The Philippine Insurrection

The story of the American annexation of the Philippines did not end on a happy note. The Treaty of Paris formally relinquished Spanish sovereignty over the islands and gave it to the United States, but the Philippine Republic of Emilio Aguinaldo denied that Spain had any claim to cede.

To General Otis, in command of the Eighth Corps after Merritt returned to the United States, the responsibility for the subsequent insurrection is clear:

¹¹⁸⁸ See footnote 754 for a discussion about the naming of the conflict.

¹¹⁸⁹ “Report Of Lieut. Col. Henry Lippincott, Deputy Surgeon-General, United States Army, on the Condition of Medical Affairs in the Philippine Expeditionary Commands,” Aug. 31, 1898. *Report of the Surgeon-General of the Army, 1898*, 262. This contrasts with 135 killed in action. *Ibid.*, 265. Part of the problem lay in the unsanitary conditions at a hospital set up at Cavite, which Gillette says “was apparently always regarded as ‘a kind of pest hospital.’” Gillett, *The Army Medical Department*, 165.

Aguinaldo, under the advice of the Hongkong junta, proceeded from that city to Manila Harbor with the intention of securing as much aid from the United States as possible, and then, when in his opinion he might find himself sufficiently strong, of driving out the Americans with the sword. His course throughout was consistent with this well-settled intention. His declaration of independence of June, 1898; his capture during the succeeding seven months of the slightly garrisoned Spanish posts throughout the islands, by which he obtained large quantities of arms and ammunition; the elimination from his so-called government of his ablest advisers, who advocated United States supremacy; his declared dictatorship; the concentration of his troops around Manila; the public demonstrations and rejoicings at his capital of Malolos on the anticipated victory of his army shortly before hostilities commenced – all following each other in well-timed succession – are sufficient in themselves to prove a predetermined definite plan of action to place the country under Tagalo [Tagalog] rule.¹¹⁹⁰

Aguinaldo's secret instructions to his men on January 9, 1899, make his enmity to the United States painfully clear:

The chief of those who go to attack the barracks should send in first four men with a good present for the American commander. Immediately after will follow four others who will make a pretense of looking for the same officer for some reason and a larger group shall be concealed in the corners or houses in order to aid the other groups at the first signal. ... One should go alone in advance in order to kill the sentinel. In order to deceive the sentinel the one should dress as a woman... on the top of the houses along the streets where the American forces shall pass there will be placed four to six men, who shall be prepared with

¹¹⁹⁰Department of War, *Report of Maj. Gen. E.S. Otis, United States Army, Commanding Division of the Philippines, Military Governor. September 1, 1899, to May 5, 1900* (Washington: GPO, 1900), 4-5

stones, timbers, red-hot iron, heavy furniture as well as boiling water, oil, and molasses, rags soaked in coal oil ready to be lighted and thrown down, and any other hard and heavy objects that they can throw on the passing American troops... In addition to the instructions given in paragraph 6 there shall be in the houses vessels filled with boiling water, tallow, molasses, and other liquids which shall be thrown as bombs on the Americans who pass in front of their houses, or they can make use of syringes or tubes of bamboo. In these houses shall be the Sandatahan [dedicated followers] who shall hurl the liquids that shall be passed to them by the women and children.¹¹⁹¹

Aguinaldo's account of the facts was completely different. First, he maintained that the US promised him independence, saying that Dewey told him:

The United States had come to the Philippines to protect the natives and free them from the yoke of Spain. He said, moreover, that America is exceedingly well off as regards territory, revenue, and resources and therefore needs no colonies, assuring me finally that there was no occasion for me to entertain any doubts whatever about the recognition of the Independence of the Philippines by the United States.¹¹⁹²

Furthermore, Dewey pledged his honor on the pact (caps in original):

THE UNITED STATES WOULD UNQUESTIONABLY RECOGNIZE THE INDEPENDENCE OF THE PEOPLE OF THE PHILIPPINES, GUARANTEED AS IT WAS BY THE WORD OF HONOUR OF AMERICANS, which, he said, is more positive, more irrevocable than any written agreement.¹¹⁹³

¹¹⁹¹ Ibid.

¹¹⁹² *True Version of the Philippine Revolution by Don Emilio Aguinaldo Y Famy, President of the Philippine Republic* (Farlar (Philippine Islands), 23 September, 1899), 16.

¹¹⁹³ Ibid., 18.

When Otis arrived, Aguinaldo claimed that Otis was guilty of:

wounding the feelings of and belittling the Filipino Government to provoke a collision, and it was clear also that this system of exasperating us was not merely the wanton act of the soldiery but was actually prompted by General Otis himself, who, imbued with imperialistic tendencies, regarded the coming of the Civil Commission with disfavour and especially would it be unsatisfactory that this Commission should find the Philippines in a state of perfect tranquility... but neither did General Otis nor the Imperialists wish for such a landscape. It was better for their criminal designs that the American Commission should view the desolation and horrors of war in the Philippines, inhaling on the very day of their arrival the revolting odour emitted from American and Filipino corpses.¹¹⁹⁴

Aguinaldo then recounted a series of alleged war crimes committed by American soldiers against “innocent and defenseless people.”¹¹⁹⁵

The actual conflict between the Americans and Filipino insurgents lasted about 3 years from 1899 to 1902. A noted historian that has written a detailed history of the war concludes that “the war varied greatly from island to island, town to town, even village to village...in some areas there was a long and bitter struggle marked by atrocities and widespread destruction, but in other areas – roughly half of the archipelago’s provinces – there was little or no fighting.” In some areas the army employed the brutal methods of reconcentration camps and “the water cure” for interrogating suspects; but in others, the soldiers engaged in nation-building, building schools and hospitals, empowering natives with a large degree of local autonomy. As another chronicler

¹¹⁹⁴ Ibid., 47-48..

¹¹⁹⁵ Ibid., 54.

of the war stated, “judged in retrospect, the performance [of the American Army] was neither as brilliant as their publicists claimed nor as bleak as their critics contended.”¹¹⁹⁶

The Army had to deal with the usual fevers expected in the tropics. At times these could be severe; for example, a cavalry unit had 54% of its men down with fever in one report.¹¹⁹⁷ The volunteer units used in the first phases of the war had it particularly hard; the First Nebraska had 78 individuals so sick that they were recommended for an early discharge. However, that unit had only six deaths; the diseases tended to incapacitate rather than kill.¹¹⁹⁸ Long campaigning was particularly fatiguing for troops, breaking down entire regiments. When MacArthur’s Second Division finished a 21-day campaign, over 54% of these men were on sick report. Lind reports that “Army doctors agreed that serious diseases such as typhoid, cholera, and chronic dysentery warranted hospitalization, but more insidious were a multitude of minor ailments such as sore or rotting feet, low-grade fever, diarrhea, parasites, headaches, chills, fainting, chronic fatigue, skin diseases, tropical ulcers, and psychological depression.”¹¹⁹⁹ The Americans were spared the real killer – yellow fever – which had never occurred in the Philippines. Ironically, the source of that disease was discovered during the Philippine conflict. Nevertheless, the troops soldiered on, and the volunteers were slowly replaced by Regulars as the war continued.

On the civilian side, the big killer was the cholera epidemic that swept the nation at the end of the war that killed about 200,000 Filipinos between 1902 and 1904. “Asiatic” cholera had first occurred on the islands sometime between 1817 and 1821; the Spanish reported at least seven major epidemics in the Philippines under their rule. In 1882 Manila was struck with an epidemic

¹¹⁹⁶ Brian McAllister Lind, *The Philippine War, 1899-1902* (Lawrence, KS: Univ. of Kansas Press, 2000), ix. Karnow, *In Our Image*, 12.

¹¹⁹⁷ Col. Hates to Gen. Schwan, Nov. 22, 1899. *Report of Maj. Gen. Otis*, 75.

¹¹⁹⁸ Lind, *The Philippine War*, 31.

¹¹⁹⁹ *Ibid.*, 90. A large number of troops qualified for permanent disability payments, which were notoriously hard to qualify for.

that killed about 1,000 person per day, overwhelming the cemeteries and even blocking the roads with wagons and carriages carrying the dead.¹²⁰⁰ During the epidemic beginning in 1902, the American military imposed stringent sanitary measures on the populace in order to control the outbreak. However, the natives actively resisted the measures: “The people, entirely unaccustomed as they were to any sanitary restrictions, believing as they did that the disease was not cholera and firm in their conviction that they had the right to do whatever they liked...there arose a bitter feeling of hostility toward the work of the [American] Board of Health. In fact, the very success of the campaign proved an obstacle and we were assured that the disease could not be cholera, as if it were there would be a thousand deaths a day.”¹²⁰¹ The war also contributed to the outbreak; the stress of the constant warfare with its movement of peoples, disruption of supply systems, famine, and the general collapse of the social order all contribute to an increased civilian vulnerability to epidemic disease.¹²⁰² American soldiers, following stringent sanitary regulations, remained mostly unaffected by the outbreak. This was undoubtedly facilitated by the fact that the volunteer soldiers had been replaced by better-disciplined Regulars by the time of the epidemic. It is also likely that both doctors and commanders were more vigilant over sanitation procedures after the epidemics of 1898.¹²⁰³

¹²⁰⁰ Matthew Smallman-Raynor and Andrew D. Cliff, “The Epidemiological Legacy of War: The Philippine–American War and the Diffusion of Cholera in Batangas and La Laguna, South-West Luzon, 1902–1904,” *War in History* 7, No. 1 (2000): 29–64. Dean Worchester, *A History of Asiatic Cholera in the Philippine Islands* (Manila: Bureau of Printing, 1908), 3–10.

¹²⁰¹ *Ibid.*, 17.

¹²⁰² Smallman-Raynor and Cliff, “The Epidemiological Legacy of War,” 30.

¹²⁰³ The transmission of cholera can be controlled through the disinfection and disposal of the discharges from cholera patients and ensuring that water supplies are pure or boiled before use (which also helps ensure that food preparation is likewise sanitary). These precautions were well known to the US Army, used to dealing with cholera outbreaks during the prewar era. By the time the cholera epidemic occurred, volunteer troops had been replaced by regular forces. This contributed to the positive outcome unlike the typhoid epidemic, where poor volunteer sanitation combined with an ignorance in the role of flies and airborne dust led to large casualty numbers in 1898. The American soldiers that did contract cholera “occurred among soldiers and others who visited or lived with native women and ate and drank food and water that had been infected. In other cases Americans were foolish enough to believe that the use of alcoholic drinks was a preventative against cholera.” Government of the

The Puerto Rico Campaign

The final ground campaign of the Spanish-American War was the invasion of Puerto Rico under General Nelson Miles. The invasion had been planned for some time, to be executed after the Santiago campaign.¹²⁰⁴ Originally the invasion force was to be augmented by the survivors of the Cuban campaign, but the outbreak of disease among the Fifth Corps soldiers eliminated them for the Puerto Rican campaign. The risk of these soldiers infecting the relatively healthy troops en route to Puerto Rico was too great to permit the Fifth Corps to participate in the invasion. In addition, almost all of the troops were too sick to be combat effective. The regiments in Cuba were examined to see if any were free from infection, but General Miles reported that “there was not a single regiment that had not been represented on the surgeons' reports as having some cases of this dread disease [yellow fever], ranging from the lowest number to as high as 33 cases to a regiment. ... In addition to these, there were many reports of sickness, great weakness and prostration among the troops, which I then supposed were caused by exposure and climatic influences... .”¹²⁰⁵

Miles was convinced that “The possession of Porto Rico would be of very great advantage to the military, as it would cripple the forces of Spain, giving us several thousand prisoners. It could be well fortified, the harbor mined, and would be a most excellent port for our Navy...” Miles had always regarded the seizure of Puerto Rico as the most important target for the Army, to the

Philippines, *Annual Report of the Commissioner of Public Health, Sept. 1, 1903 to Aug. 31, 1904* (Manila: Bureau of Public Printing, 1905), 48-49.

¹²⁰⁴ Miles laid out a plan for the seizure of the island on May 26, 1898. He recommended that the US “capture the island of Puerto Rico by a combined attack of the Army and Navy with the least possible delay. Twenty-five thousand men of the Army, principally artillery and infantry, with the assistance of the fleet, will, in my judgment, be sufficient to capture that island.” Miles to Alger, May 27, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 261-262.

¹²⁰⁵ Nelson Miles, “The War With Spain – III,” *The North American Review* 169, No. 512 (Jul., 1899):126.

point that he had raised McKinley's and Alger's ire by continually pressing for Puerto Rico to be given higher priority.¹²⁰⁶ He was directed on June 7th to assemble a force of 23,000 men to be ready for transport in ten days.¹²⁰⁷ As usual, Miles was concerned about disease adversely affecting the operation. He worried about a possible outbreak of yellow fever among the men training in Florida, and recommended that the troops be concentrated in Fernandina and Miami. "Experience has demonstrated the necessity for camping troops in such places as may be made safe against the introduction of this disease (yellow fever)... It will be an imperative necessity to move those troops at once should yellow fever approach Florida, and it should he commenced now."¹²⁰⁸ The War Department ordered three divisions from the First and Third Army Corps to assemble under the command of Maj. General Brooke, to be joined by two divisions from the Fourth Army Corps.¹²⁰⁹ Miles was sent to Santiago with troops to reinforce Shafter before proceeding to Puerto Rico; although some troops were disembarked as reinforcements, he retained 3,414 men for the Puerto Rico campaign apart from the rest. He kept these troops isolated at Guantanamo to avoid infection.¹²¹⁰

¹²⁰⁶ Alger, *The Spanish-American War*, 59. On June 6th Miles sent Alger a note asking that Puerto Rico be invaded first, leaving Santiago to be "safely guarded." After Puerto Rico had been conquered the troops could then be used to take Santiago. Alger wired back "The President says no." Miles to Alger, June 6, 1898, quoted in Alger, *The Spanish-American War*, 60. Alger to Miles, June 6, 1898. Alger, *The Spanish-American War*, 61. Even after Shafter successfully besieged Santiago, Miles argued for withdrawal from Santiago in order to facilitate the Puerto Rican campaign. Reason not to send Fifth Corps to Puerto Rico, Alger, *The Spanish-American War*, 255; Alger to Miles, July 14, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 144. See also message from Miles to Alger July 21st: "There is not a single regiment of regulars or volunteers with General Shafter's command that is not infected with yellow fever, from 1 case in the Eighth Ohio to 36 cases in the Thirty-third Michigan." Miles to Alger July 21, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 303.

¹²⁰⁷ Corbin to Miles, June 7, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 264.

¹²⁰⁸ Miles to Alger, June 14, 1898. *Ibid.*, 266.

¹²⁰⁹ Alger to Miles, June 26, 1898; Gilmore [under direction of Miles] to Brooke, June 27, 1898 *Ibid.*, 268-270. The other two divisions were under Maj. Gen. Coppinger. Gilmore to Coppinger, June 27, 1898. *Ibid.*

¹²¹⁰ Miles, "The War With Spain – III," 126-127. "I will now keep these troops away from the infected district, and will probably let them go ashore at Guantanamo. Other vessels en route will go into the harbor at Guantanamo. Presume that will be a good rendezvous, at least for the troops coming from Tampa. They could come in on the south side and go into safe harbor." Miles to Alger, July 14, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 273. Trask comments on the procedure: "Miles had his medical personnel develop strict procedures to minimize health problems. This sensible precaution helped maintain relatively good health in his command by

Puerto Rico did not have a large anti-Spanish sentiment and remained neutral with respect to the rebellion in Cuba, although it was granted autonomy along with Cuba in November 1897. The population remained loyal to the Crown under autonomy, but were to prove fickle once the Americans landed.¹²¹¹ The Spanish had about 8,000 regulars to defend the entire island, about what was garrisoned in the city of Santiago alone. There were about 7,000 to 9,000 “volunteers” (militia), but they were considered unreliable.¹²¹² The US press freely printed stories about Miles’ expeditionary force and its intended destination, so the Spanish had time to prepare for an anticipated attack on the capital San Juan.¹²¹³ As a result, Miles changed his destination en route, later explaining his choice:

The point for disembarkation, Point Fajardo, for which we had set sail, had been originally selected at the instance of the officers of the Navy. This point was on the northeast corner of Puerto Rico, and presumably the Spanish commanders must have obtained information of our destination and our strength. Later it was learned that they had been apprised of both and had actually proceeded to concentrate their forces and commence constructing

comparison with Shafter’s, although as it turned out Puerto Rico did not pose problems of this nature comparable to those in Cuba.” Trask, *War with Spain*, 347.

¹²¹¹ There were some elements that favored the American attack in advance. J.J. Henna, writing from New York, offered “the services of the entire board of directors of the revolutionary party of the island, of which I have the honor of being president, and a contingent of about forty natives, to accompany the expedition about to be sent, in the capacity of commissioners, guides, scouts, interpreters, and soldiers. In coming to offer our services, we are only moved by a sense of duty toward the country where we were born, and to the one that gave us hospitality and citizenship, as well as by the conviction that the influence we will exercise over our compatriots on our arrival in the island could not but quickly satisfy them that the purpose of the American invasion is to redeem the natives from the ignominious yoke of the tyrant, and not to conquer them with the sword and enslave them again under another flag and master, as the Spaniards would have them believe—thus facilitating and making victory easy for the American arms instead of having to meet resistance and unnecessary shedding of blood on both sides.” Henna to Miles, June 30, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 313.

¹²¹² Trask, *War with Spain*, 357-359.

¹²¹³ See for example the headline of a page 1 article in the New York Times for July 22, 1898: “ARMY SPEEDING TO PUERTO RICO: Miles’s Transports Were off Haiti Yesterday. WILSON ALSO EN ROUTE Is Taking the First Brigade of His Division of the First Corps. MORE SHIPS LOADING AT TAMPA Haines’s Brigade Hurrying to Embark at Newport News. GEN. F.D. GRANT TO GO Appointed to Command the Brigade Composed of the First and Third Kentucky and Fifth Illinois.” The text specified that Miles was “sailing steadily eastward along the north coast of Haiti” and also listed the exact composition of Miles’ force to include the number and types of units and the total size of 3,425 men. “ARMY SPEEDING TO PUERTO RICO,” *New York Times*, July 22, 1898, 1.

entrenchments and fortifications with a view to a stubborn and effective resistance. Acting on the principle that a military commander should do that which the enemy least expects him to do, I determined, under the circumstances, to change my point of disembarkation from the northeast coast of the island to Guanica, on the southwest coast, and within easy striking distance of Ponce, the principal city and commercial emporium of the island.¹²¹⁴

Unfortunately he failed to inform the War Department in advance, stranding several transport convoys en route to reinforce his command, unprotected by naval transports. Alger noted that “Fear was entertained that these unprotected transports with their troops might be attacked by some of the small gunboats then thought to be in San Juan Harbor... .”¹²¹⁵ Despite this, Alger later concluded that “General Miles's action in the matter was both wise and commendable. It probably saved a battle.”¹²¹⁶

After Miles landed and took Ponce, which gave him a major port for disembarkation of troops and lighters with which to facilitate unloading, additional forces from the United States arrived – 3,571 men under Maj. Gen Wilson, 2,896 under Brig. Gen Schwan, and 5,317 under

¹²¹⁴ Miles, *The War With Spain – III*, 129. Miles had been given discretion to do so by Alger: “He [Alger] gives you the fullest discretion, but your determination of time and place of such landing should be made with full knowledge that reinforcements cannot reach you from five to seven days from this date.” Corbin to Miles, July 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 283. See also Alger, *The Spanish-American War*, 302. Miles also wrote a long message to Alger on July 30th, outlining his rationale. Miles to Alger, July 30, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 337-338. Chadwick cites a letter from Miles to Capt. Higginson, USN [commander of a small squadron anchored by the battleship *Massachusetts*] identifying some additional rationale: “Puerto Guanica, where there is deep water near the shore—4-1/2 fathoms—and good facilities for landing. We can move from Cape San Juan to that point in twelve hours (one night), and it would be impossible for the Spanish to concentrate their forces there before we will be re-enforced. I am also informed that there are a large number of strong lighters in the harbors at Ponce and Guanica, as well as several sailing-vessels, which would be useful. As it is always advisable not to do what your enemy expects you to do, I think it advisable, after going around the north-east corner of Puerto Rico, to go immediately to Guanica and land this force and move on Ponce, which is the largest city in Puerto Rico. After, or before, this is accomplished we will receive large re-enforcements, which will enable us to move in any direction or occupy any portion of the island of Puerto Rico.” Quoted in Chadwick, *Relations*, vol. 2, 285.

¹²¹⁵ Alger, *The Spanish-American War*, 305. This was based on a message he received from Sampson on July 20th: “If the *New Orleans* is not at San Juan, there is nothing to prevent the small Spanish gunboats coming out of that harbor and attacking the transports en route...” The exact location of the *New Orleans* was unknown at that time. Sampson to Alger, July 20, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 297.

¹²¹⁶ Alger, *The Spanish-American War*, 307.

Maj. Gen Brooke. This brought the total size of the army in Puerto Rico at 15,199 men.¹²¹⁷ Once the Americans landed, many Puerto Ricans broke silence and indicated their support of the American landing. One such communication received by Miles stated rather floridly “we wait with impatience American occupation that comes to break the chain that has been forged constantly during four centuries of infamous spoliation, of torpid despotism and shameful moral slavery. When the rudders of the American ships entered the waters of the coast of Guanica to bear to this country political revolution, great confidence was born again, again was awakened the ideal of sleeping patriotism in our consciences and the lullaby of perfidious promises which have never been fulfilled. An entire city, with the exception of those who live under the shadow of pretense and official immunity, is prepared to solemnize the glorious tramp of civilization, and offers its blood as a holocaust to such a grand proposition.”¹²¹⁸

The map of Puerto Rico (Figure 8) illustrates the location of Ponce relative to the other centers of population on the island. A military road connected it with San Juan to the north, and other roads connected it to the inland regions and northern coast of the island to either side of San Juan. Unlike the landings at Daiquiri and Siboney, Miles had seized two major ports from which to disembark men, materiel, horses, and transportation mules and wagons. Also unlike the Fifth Corps, Miles’ force was fully equipped with food, supplies, ammunition, and medical support (including full divisional hospital sets). The Medical Department was dissatisfied with a

¹²¹⁷ Ibid., 308. The seizure of Guanica and Ponce was largely a naval operation, as detailed in Chadwick, *Relations*, vol. 2, 288-289. Miles characteristically reported it as more of an army operation. Department of War, *Report of the Major-General Commanding the Army for Fiscal Year 1898* (Washington: GPO, 1898), 31. See also Miles, “The War With Spain-III,” 130-132.

¹²¹⁸ Miles, “The War With Spain-III,” 132.

shortage of surgeons and nurses, but they proved ample for the minimal sick and wounded generated by the campaign.¹²¹⁹

The commander of the expedition, Nelson Miles, was well known to be vain, egotistic, and ambitious. He was also known as a brave and effective Indian fighter and an effective field commander.¹²²⁰ Miles was a fan of the “indirect approach” to combat, favoring maneuver over frontal assaults, thus minimizing casualties and confronting Spanish forces on the periphery rather than in the center of Spanish power.¹²²¹ Although he had repeatedly advanced some rather radical plans earlier, what Trask refers to as “harebrained schemes” and “eccentric views,”¹²²² the final strategy that Miles followed once on the ground was sound. He separated his force into four independent columns. The first, under Schwan, was to proceed from Guanica to attack the Spanish city of Mayaguez in the far west of the island, then proceed to Arecibo, on the north coast west of San Juan. The second, under Garretson, was to attack almost due north against Utuado and then to Arecibo. The third under Wilson was to move northeast against Aibonito and later link up with a force under Brooke that would attack northeast from the port of Arroyo to Cayey. Both Aibonito and Cayey were on the main road from Ponce to San Juan, and after linking up the combined Wilson-Brooke force would then proceed against San Juan on the military road. All of these attacks were designed to outflank the Spanish and avoid direct assaults on the centers of Spanish military power.¹²²³

¹²¹⁹ Cosmas, *An Army for Empire*, 235.

¹²²⁰ Ibid.

¹²²¹ B.H. Liddell Hart referred to this as “the indirect approach.” Trask, *War with Spain*, 541.

¹²²² Trask, *War with Spain*, 346. The “harebrained scheme” was a plan by Miles to move through the center of Cuba, where no roads existed and the ability to supply the troops minimal (Miles to Alger, June 24, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 51-52). Alger dissected the plan in his history, noting that it involved moving 345 miles through Cuba, and capturing a city that was heavily fortified, the center of Spanish troops in the province, and “yellow fever prevails sometimes.” He concludes by stating that “This plan was so evidently impossible and impracticable as to need little argument to so prove it.” Alger, *The Spanish-American War*, 51 – 57.

¹²²³ Ibid., 310-314. Trask, *War with Spain*, 358-359.

The movements were highly successful. The force moving towards Cayey was engaged in a flanking maneuver that would have surrounded a defending Spanish force when the cease-fire notice was received August 13. The assault toward Aibonito had executed a turning movement bypassing Spanish entrenchments for an American loss of six wounded, and was in the process of turning the defenses of Aibonito when the cease-fire was called. A forward element of Garretson's force had reached Utuado by August 13. In the west, Brig. Gen. Schwan's brigade encountered the heaviest fighting of the Puerto Rico campaign. The Spanish had moved forward from Mayaguez to meet Schwan's force in heavily fortified positions on the Rio Grande river near San German.¹²²⁴ Schwan managed to outmaneuver the Spanish, forcing them out of position with a loss of only two men killed and 15 wounded. Schwan's brigade then took Mayaguez and was en route to Aricibo when peace was declared. Alger noted that this force had accomplished the following: "the entire western end of the island had been cleared, the Spanish forces in the vicinity had been completely defeated, and the city of Mayaguez, the third in size and importance on the island, had fallen into our hands." The two week campaign on the island ended with an amazingly low American casualty count: six dead and forty wounded. The campaign also secured our claim to the island. The peace treaty surrendered the island to the United States, and Puerto Rico remains a U.S. territory today.¹²²⁵

Although the author agrees with Cosmas that "the Puerto Rico campaign was well planned and impressively conducted,"¹²²⁶ not all historians have regarded Miles' plan to be wise. Chadwick notes that "The change of plan by the commanding general had thus landed the United States forces on the opposite side of the island from the only fortress, and thus necessarily the main objective, San Juan. On the only serviceable road for a movement in force were numerous

¹²²⁴ Not to be confused with the river in the continental US.

¹²²⁵ Alger, *The Spanish-American War*, 312-316. Miles, "The War With Spain – III," 134-137.

¹²²⁶ Cosmas, *An Army for Empire*, 237.

positions of great military strength which, if entrenched and occupied, would, if well defended, have made an advance across the mountains one of utmost difficulty and great slaughter.” He concludes by stating “The change of plan would probably have shown serious disadvantages had there not been an early coming of a cessation of hostilities.”¹²²⁷ Trask notes the difficulties Miles still faced, as he had not yet engaged the major Spanish forces on the island except in the far west. However, Trask takes a more strategic view, looking at the effect of the campaign on the war itself. He notes that Miles’ “constant progress gave the Spanish government no basis upon which to resist the United States demand that Madrid cede the island of Puerto Rico to it as part of the peace settlement.”¹²²⁸

¹²²⁷ Chadwick, *Relations*, vol. 2, 299

¹²²⁸ Trask, *War with Spain*, 365.

CHAPTER 12

BEHOLD, THE HORSEMAN OF PESTILENCE APPEARS

Treating the Survivors – Cuba and Camp Wikoff

As intimated earlier, the surrender of Santiago was not the end of the travails of the Fifth Corps. During the latter days of the negotiations for surrender, both Shafter and Miles finally reported a dangerous outbreak of fever among the troops outside the city, identified at the time as yellow fever, although some of the cases may have been misdiagnosed malaria.¹²²⁹ Malaria was diagnosed among the troops, along with typhoid (enteric fever). In fact, a disease called “typhomalarial fever” was invented to account for all of the ambiguous cases.¹²³⁰ Regardless of the diagnosis, the fact was that troops were increasingly stricken with fevers that rendered them incapable of fighting and led to some deaths among them. Surgeon General Sternberg noted that typhoid “was carried by the Fifth Army Corps from Tampa to Santiago where, under the unfavorable conditions affecting the troops in the trenches, its rapid spread, together with the occurrence of yellow fever and the general prevalence of malignant malarial fevers, occasioned

¹²²⁹ Cosmas reports that “Army surgeons, like their civilian colleagues, often confused with the early stages of yellow fever or diagnosed typhoid as malaria.” Cosmas, *An Army for Empire*, 248. Surgeon-General Sternberg testified that “We have ample evidence now that at Camp Thomas the early cases of typhoid were not recognized—they were called by some other name, until the patients became so sick that it was evident it was something else; the diagnosis was not usually made until they got to the division hospital, and that failure to make an early diagnosis, mistaking typhoid fever for malarial fever, led very largely to the camp infection. . . . even in Camp Wikoff many cases called malarial fever proved to be typhoid.” There was a test (called the Widal test) which would confirm the presence of typhoid, but test took five or more days to return. Also, “this test has been so recently introduced that the profession generally have not used it.” Sternberg, *Dodge Commission Report*, vol. 6 (Testimony), 2822.

¹²³⁰ The cases diagnosed as typhomalarial fever during the Spanish-American War turned out to be typhoid. Smith, “The Rise and Fall of Typhomalarial Fever: I. Origins,” 182-220; Reed et al., *Abstract of Typhoid Board Report*, 147-167.

the utter breakdown of the health of that command.”¹²³¹ Sternberg attributed the disease outbreak in part to the exertions of combat: “After the capitulation of Santiago the troops at the front broke down rapidly under the fatigues they had undergone and the malarial influences to which they were exposed. Remittent and typhoid cases became exceedingly common.”¹²³²

Yellow fever began to be reported the second week of July, while negotiations were still underway; the disease spread quickly among troops in the open exposed to the climate and still short of food. Chief Surgeon Greenleaf outlined the situation on July 7, 1898: “there are in Cuba climatic and other conditions infinitely more harmful and difficult of control. The long-continued and excessive daily heat of the climate, with rapid lowering of temperature at night, the necessary exposure to rain in the absence of tentage, the scarcity and poor cookery of food, the effect of prolonged physical exertion on the battlefield inducing nervous exhaustion, are all factors which must be seriously considered in forming an estimate of the health of the troops if their continued residence in Cuba is contemplated. ... should yellow fever make its appearance it will be almost equally impossible to thoroughly prevent its spread.”¹²³³ On July 9, Shafter sent his first message explicitly mentioning yellow fever: “There are now three cases of yellow fever at Siboney, in Michigan regiment...”¹²³⁴ On July 13, Miles wired Alger about the worsening situation: “The very serious part of this situation is that there are 100 cases of yellow fever in this command...”¹²³⁵ Later the same day Shafter upped the total: “Twenty-nine new cases [of yellow

¹²³¹ *Report of the Surgeon-General of the Army, 1898*, 114.

¹²³² Reply of the Surgeon-General, *Dodge Commission Report*, vol. 1 (Appendices), 645. This represented as traditional view of the process of acquiring infectious disease, placing a great emphasis on the environment and less on the presence of a pathogen.

¹²³³ Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613.

¹²³⁴ Shafter to Alger, July 9, 1898, 9 AM. *Correspondence Relating to the War With Spain*, vol. 1, 117.

¹²³⁵ Miles to Alger, July 13, 1898. *Ibid.*, 134

fever] yesterday and probably 150 all told.”¹²³⁶ The Spanish commander Toral surrendered the next day but the disease outbreak steadily became more serious.

One of the problems facing Shafter’s men was the ignorance among the medical community about the cause of yellow fever. The prevalent view among most doctors was that the disease was spread by *fomites*. As discussed previously, fomites consisted of clothing, bedding, buildings, and other objects that were supposedly infected with yellow fever germs. In their minds, the disease was contagious through the contact of unexposed personnel with these fomites. This theory provided an obvious means to control the epidemic that was unfortunately almost useless: disinfect or destroy the fomites, and you prevent the spread of the disease. Greenleaf recommended on July 23 that the buildings at Siboney be quarantined or burned to limit the spread of yellow fever: “All persons connected with the army are forbidden to enter any building whatever on the island without express authority from these headquarters, and all buildings in rural districts that may be suspected of harboring the germs of disease should be destroyed by fire or otherwise thoroughly disinfected. As woven goods, particularly those of woolen fabric, are special carriers of disease, the purchase or acceptance of articles of this kind from stores or inhabitants of the island is strictly forbidden...” He later explained why; it was because of “the possible existence of fomites of yellow fever in any building on this island, and the readiness with which nonimmunes exposed at this season of the year become infected. It was to prevent exposure that the sanitary order from these headquarters was issued...”¹²³⁷

Other theories for yellow fever and malaria included miasma, infected water, and infected soil. Circular #1 from the Office of the Surgeon-General of the Army (April 25, 1898) offered

¹²³⁶ Shafter to Corbin, July 13, 1898. *Ibid.*, 137.

¹²³⁷ Tone, “How the Mosquito (Man) Liberated Cuba,” 287. Greenleaf to Corbin, July 17, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 617. Greenleaf to Huidekoper (Chief Surgeon, First Army Corps), August 5, 1898. *Ibid.*, 618-619.

another route of transmission: “No doubt typhoid fever, camp diarrhea, and probably yellow fever are frequently communicated to soldiers in camp through the agency of flies, which swarm about fecal matter and filth of all kinds deposited upon the ground or in shallow pits, and directly convey infectious material, attached to their feet or contained in their excreta, to the food which is exposed while being prepared at the company kitchens or while being served in the mess tent.”¹²³⁸ This advice on flies was ignored. It was unfortunate with respect to typhoid as the Medical Department focused on clean water supplies to the detriment of anything else. However, flies had nothing to do with the spread of yellow fever; this simply illustrates how doctors cast about for plausible hypotheses in the absence of any real knowledge.

With the actual source of both malaria and yellow fever ignored, the only available recourse available to the medical community of 1898 was the same as that available in 1648: avoid areas where yellow fever is present during the time of year when epidemics are to be expected. They made a major mistake relying on the fomite theory, which led “yellow fever expert” Juan Guiteras and others to believe that they could avoid the disease by avoiding areas “where refuse has been permitted to accumulate” and observe “the ordinary rules of health.”¹²³⁹ As a result, the Administration planned a campaign for the rainy season of Cuba, precisely when and where yellow fever and malaria could be expected.

To some degree, the epidemic of yellow fever that did occur in Cuba was expected. Surgeon-General Sternberg testified that “I expected a great amount of sickness, and I was very fearful of an epidemic of yellow fever. I knew an army operating near one of the large seaports in Cuba would be in danger of yellow fever.” His letter to the Secretary of War on March 25, 1898

¹²³⁸ *Report of the Surgeon General, 1898*, 140. It should be noted that the information was correct as one means of transmission for typhoid fever. See Cirillo, “WINGED SPONGES,” 52-63.

¹²³⁹ “Plans for Invading Cuba,” *New York Times*, May 6, 1898, 3; “No Danger of Disease,” *New York Times*, May 25, 1898, 2.

provided a thorough history of the disease in Cuba from the first epidemic in 1648 through 1879 and the prevalence of the disease in the major cities on the island. Miles repeatedly warned of the dangers of yellow fever in his proposals for campaigns before the Santiago campaign plan was solidified; he warned that operating during the Cuban rainy season “extremely hazardous, and I think it would be injudicious, to put an army on that island at this season of the year, as it would undoubtedly be decimated by the deadly disease”; furthermore, as Toral pointed out in his refusal to surrender, the American army would be naïve to the disease while the Spanish would have “80,000 troops, the remnant of 214,000, that have become acclimated.”¹²⁴⁰ Shafter expected to “be confronted with all the diseases incidental to that climate,” so he planned to rely on speed – “it was to be a dash or nothing.”¹²⁴¹ In many respects, the campaign was as much of a “dash” as could possibly be achieved. Shafter landed his troops on the shore of Cuba on June 22, 1898 and received the surrender and occupied the city of Santiago de Cuba on July 17 – a campaign of only 25 days. But the surrender was not the end of the mission of the Fifth Corps – until the regiments of immunes that Shafter requested on July 13 arrived, the corps was needed to occupy the city and guard the Spanish prisoners until they could be returned to Spain. Furthermore, when the epidemic occurred the war was not yet over – it was conceivable (if unlikely) that Spanish forces still in Cuba could mount an offensive against the American force.¹²⁴² The city also had to be held against the Cubans; as in the Philippines, there was much resentment among the rebels that the Spanish defenses were not turned over to them.¹²⁴³ Fortunately, it did not lead

¹²⁴⁰ Letter from Sternberg to Alger, March 25, 1898; Miles to Alger April 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1 (Appendices), 8.

¹²⁴¹ Shafter, “The Capture of Santiago de Cuba.” 614-615.

¹²⁴² An attack was considered possible by Shafter. On July 23rd, he discusses the need for four immune regiments “to make this place secure against attack if the Holguin troops remain at that place” if all of the Fifth Corps is removed. Shafter to Corbin, July 23, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 172-173.

¹²⁴³ Shafter discusses this issue in a message July 29th. General Garcia expected that Santiago would be turned over to him after surrender. In response, Shafter “extended my own lines in front of him and closed the gap, as I saw that I had to depend on my own men for any effective investment of the place.” Shafter to Alger, July 29, 1898. *Ibid.*,

to a new rebellion breaking out in Cuba. It was while the troops awaited relief that the disease struck.

When disease hit the camps outside of Santiago, it hit much harder than anyone had anticipated. Gen. Chaffee later testified:

I don't believe there was a man in the army, from the commanding general down to the youngest second lieutenant, who had any idea that we would have any such number of men fall sick as we did have. Usually, I think, they provided for something like 10 or 15 per cent of sickness in the army, whereas we must have had there something like 40 or 50 per cent of sick, so that the provision made us was about what was expected to be the average basis. I certainly did not think when we went to Cuba that we would have anything like the sickness that we did have. Our minds were somewhat bent upon yellow fever. We talked of that at Tampa as probably the disease with which we would have to compete, but we did not discuss the sickness of malaria.¹²⁴⁴

Surgeon-General Sternberg also testified that “I was aware of sickness, but I was not aware that a large portion of the men would be sick. As a matter of fact, a large portion of the men who were well on leaving Santiago got sick on the way home, and after they arrived home, from that malarial fever.”¹²⁴⁵ Despite the prewar statements of the senior commanders that universally acknowledged the likelihood of an epidemic of malaria and yellow fever, the reality was much more than anticipated. The hospital ship *Relief* arrived at Santiago on July 9, 1898 but she was

185. The Spanish were also concerned they were to be turned over to the Cubans. Shafter to Corbin, July 29, 1898. Ibid., 186.

¹²⁴⁴ Chaffee, *Dodge Commission Report*, vol. 4 (Testimony), 909.

¹²⁴⁵ Sternberg, *Dodge Commission Report*, vol. 6 (Testimony), 2841.

used primarily as a floating hospital for the wounded, rather than as a treatment center for disease.¹²⁴⁶

It is possible to track the progress of the disease from reports. Three cases of yellow fever were reported on July 9. Two days later, Shafter reported that almost half of the teamsters were sick, but the troops were described vaguely as the “men are feeling well”.¹²⁴⁷ Sternberg later reported that “Early in the second week of July a few, cases of yellow fever appeared among persons who had occupied the huts at Siboney, and day by day thereafter a steady and rapid increase of the disease was observed.” A yellow fever hospital was established, and doctors attempted to isolate cases of the disease. The Chief Surgeon, Col. Greenleaf, continued to blame the epidemic on “the large number of nonimmunes continually coming into the town and entering these infected buildings was rapidly adding to the number of these infected cases [of yellow fever].”¹²⁴⁸ In fact, although the attention at the time was focused on yellow fever, it was malaria that destroyed the fighting effectiveness of the Fifth Corps. Sternberg noted that “Remittent [malaria] and typhoid cases became exceedingly common.”¹²⁴⁹ At the time, doctors disagreed on the diagnosis. As Major Reade reported in his inspection of a regiment on July 23, it was “both affirmed and denied by medical men that yellow fever exists in this division. Cases of measles have occurred. Thermal fevers, due to heat and exhaustion, are very prevalent. Some of the medical men call these fevers dengue; some call them pernicious malarial fever; some call

¹²⁴⁶ Ibid. About 250 cases of sickness were loaded onto the ship from Puerto Rico, as it stopped there en route from Siboney to the United States. Report by Col. Greenleaf, Aug, 24, 1898, *Report of the Surgeon General, 1898*, 146.

¹²⁴⁷ Shafter to Alger, July 11, 1898 (2 messages), *Correspondence Relating to the War With Spain*, vol. 1, 125.

¹²⁴⁸ Report by Col. Greenleaf, Aug, 24, 1898, *Report of the Surgeon General, 1898*, 145.

¹²⁴⁹ *Report of the Surgeon General, 1898*, 117. Historical disease terminology is defined in “Glossary of Historical Fever Terminology,” 76-77.

them Cuban fever. ...Dysenteric and other diarrheas prevail. Some are cases of true dysentery.”¹²⁵⁰

The extent of the sickness was largely unreported at this point. Once Maj. Gen Miles arrived, he was more forthcoming about the extent of suspected yellow fever, if not the much more common malaria and “Cuban fever.” On July 13, Miles reported 100 cases of yellow fever, expected to “spread rapidly,” while Shafter reported about 12 hours later that he had 150 cases.¹²⁵¹ The fomite theory of yellow fever contagion meant that the measures taken by the surgeons and commanders was isolate the fever cases and move uninfected soldiers to supposedly uncontaminated ground. Based on his Chief Surgeon’s standard operating procedures, Miles ordered a “frequent change of camp, and in all cases the selection of fresh ground uncontaminated with the disease, and in every case, prior to occupation, the ground must be rigidly inspected and if necessary burned over” to disinfect the contaminated soil. In addition, buildings formerly occupied by the natives were assumed to be contaminated with fomites, so Miles directed that “the command must be kept away from all habitations, blockhouses, huts, and shanties of every description that have been occupied by Spanish or Cuban people.”¹²⁵² In addition, Miles ordered the entire village of Siboney burned to the ground to prevent US troops contracting the fever through contact with contaminated areas.¹²⁵³ Secretary of War Alger issued consistent guidance – “as soon as the military situation admits” troops should be moved from the infected camps to high ground “above the fever belt” near the coast. Cases of yellow fever are to be isolated, and any regiment with yellow fever cases “should not be put upon a transport until at

¹²⁵⁰ Reade, *Dodge Commission Report*, vol. 1 (Correspondence), 405.

¹²⁵¹ Miles to Alger, July 13, 1898, 2:40 AM. *Correspondence Relating to the War With Spain*, vol. 1, 134; Shafter to Corbin, July 13, 1898, 2:12 PM. *Ibid.*, 137

¹²⁵² Brig. Gen. Gilmore [on behalf of Gen. Miles] to Shafter, July 17, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 615.

¹²⁵³ *Report of the Major-General Commanding the Army*, 1898, 25.

least five days have elapsed since the last case of yellow fever.”¹²⁵⁴ Miles also suggested to Shafter that he keep the new reinforcements that arrived at the same time as the general “in separate camps on healthful ground to keep them free if possible from infection by yellow fever.” He noted helpfully, “it will also form a strong force to meet any force that might by any possibility come from Holguin.”¹²⁵⁵

The best medical guidance in 1898 called for the troops to move to new camps every second day, but in many cases they were too weak to make the trip. Inspector-General Major Reade reported that when Kent’s First Division attempted to change camp to a location a mere mile and a half away, it took the men hours to make the move. He explained: “The change of camping ground demonstrated sadly the enfeebled condition of our men. They straggled along the road; some fell out and prostrated themselves anywhere where shade could be obtained. Some of General Ames’s men, Thirteenth Infantry, completed the march and then dropped unconscious or went crazy. ...He [Ames] said that during his entire military experience and command, 1861 and succeeding years, he never saw as heavy a percentage of used-up men.”¹²⁵⁶ Despite these problems, Shafter continued to hope that relocating his forces will reduce and then eliminate the epidemic. On July 18 he told Alger that “Troops will be put in good camps as soon as possible. I put the cavalry division out this a.m., but until prisoners are sent away it will not be safe to send other troops to higher camp.”¹²⁵⁷ Miles also told Shafter on July 20 to prepare for a move “of the entire command to the highest ground practicable where the disease is not prevalent. In some

¹²⁵⁴ Corbin to Shafter, July 13, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 135-136. The comment about the Yellow fever belt is contained in a message from Corbin to Shafter, July 14, 1898. *Ibid.*, 140.

¹²⁵⁵ Miles to Shafter, July 14, 1898. Wheeler, *The Santiago Campaign*, 342-343.

¹²⁵⁶ Report of Major Reade, Inspector-General’s office, on his inspection of the First Division July 19, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 374-375.

¹²⁵⁷ Shafter to Corbin, July 18, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 158; Alger, *The Spanish-American War*, 257-258.

cases you can send the troops to the mountains.”¹²⁵⁸ Miles then informed Alger the next day that “There is not a single regiment of regulars or volunteers with General Shafter's command that is not infected with yellow fever. ...After consulting with best medical authorities, it is my opinion that the best mode of ridding the troops of the fever will be as I have directed, namely, the troops to go up as high into the mountains as possible, selecting fresh camps every day. If this does not check the spread of the disease, the only way of saving a large portion of the command will be to put them on transports and ship them to the New England coast... .”

Part of the problem in communicating the seriousness of the epidemic in Santiago is that many of the commanders of volunteer units swore that their units were disease free and ready for service in Puerto Rico. Joe Wheeler, commanding the volunteer Cavalry Division, told Miles on July 21, “My command is now on high ground and is improving. They were simply worn out by constant service and the rest they are now getting will soon restore them. There is not a particle of infection of yellow fever in this command, and has not been, I think the Cavalry Division would be of great service in Porto Rico.” Apparently some word of the truth got out, as Wheeler started to fudge a bit three days later: “We still have some sickness, but it is a fever which is by no means of the character of yellow fever and is not contagious at all. Our total sick list was 340 cases yesterday. Our command is isolated on the hills nearly 5 miles from Santiago, and there has been but one case sent from the whole Division that was regarded even with a suspicion as yellow fever. We could move to Porto Rico with 2200 or 2300 men entirely free from disease or contagion of any kind, and would be very valuable to you.” Rather ironically, in his memoirs *The Santiago Campaign – 1898*, Wheeler followed a reproduction of the last message with a note dated the same day that asked for “five or six army physicians, five stewards and twelve hospital

¹²⁵⁸ *Report of the Major-General Commanding the Army, 1898, 27.*

corps men to be detailed for service with this Division as soon as practicable. ...we have among the troops a great deal of what we call "four or five day fever," which needs careful medical treatment to prevent relapse." It's hard to determine if the Cavalry Division had yellow fever, but it's pretty clear that they were stricken with malaria, which would have had the same debilitating effect it had on other Santiago troops. Roosevelt reported in *The Rough Riders* that "My own men were already suffering badly from fever, and they got worse rather than better in the new camp. The same was true of the other regiments in the cavalry division. ... we were all very much weakened; about as much as the regular infantry..."¹²⁵⁹

The only men who could effectively replace Shafter's stricken men were those who were immune to yellow fever from previous exposure (of course this did nothing to protect against malaria, dysentery, or typhoid).¹²⁶⁰ Alger ordered two of the immune regiments (1st and 2nd Vol. Infantry (Immune)) to Santiago to replace Shafter's men. A good idea in theory, in practice it turned out that many of the "immunes" lied about their previous exposure in order to serve in the war. Almost half of the immune regiments were composed of blacks, who were assumed to be immune to yellow fever based on race (an idea partly if not wholly fallacious).¹²⁶¹ Based on this idea of racial immunity, Miles ordered the entire 24th Infantry Regiment (Colored) off of the

¹²⁵⁹ Wheeler, *The Santiago Campaign*, 354, 357-358; Roosevelt, *The Rough Riders*, 199-200.

¹²⁶⁰ Although not explicitly discussed in the debate over the creation of the immune regiments, in 1898 the blacks that composed half of the immune regiments were also assumed to have immunity against malaria. W. Sykes, "Negro Immunity From Malaria And Yellow Fever," *The British Medical Journal* 2, No. 2296 (Dec. 31, 1904): 1776-1777. See also Philip D. Curtin, "Malarial Immunities in Nineteenth-Century West Africa and the Caribbean," *Parassitologia* 36, No. 1 (Aug., 1994): 75-76.

¹²⁶¹ See the discussion on perceived racial immunity in Chapter 2. If there is some genetic immunity (which is very controversial) it is simply a matter of statistics indicating a lower infection rate, not complete immunity. Four of the ten immune regiments were manned with black soldiers (Cunningham, "The Black 'Immune' Regiments," 1).

lines to serve as attendants in the fever wards.¹²⁶² On July 19 Shafter asked Alger to hurry the two immune regiments: “Their services would be of greatest use now if here.”¹²⁶³

In Washington, the perception that the Fifth Corps was in trouble finally sank in. On July 14, 250 cases of yellow fever were reported, with five deaths. Alger then decided that the Fifth Corps can no longer be relied upon to aid in the invasion of Puerto Rico; the risk of them spreading infection to the Puerto Rico invasion force was too great. He informed troops in the United States still waiting for transport to Cuba that “yellow fever is reported to be so bad at Santiago that no more troops will be sent there or to that neighborhood for the present.”¹²⁶⁴ By July 22, Shafter reported that “Every regiment has more or less fever cases. The Seventeenth and Twenty-fifth about 200 each; many others only 8 or 10 per cent, merely normal; so far but 17 deaths from disease—3 of them dysentery and the rest fevers.” However, Shafter also stated that there is a “wide difference of opinion as to how much of it is yellow fever.”¹²⁶⁵

The situation at Siboney was extreme. Dr. Nicholas Senn described the situation when he arrived at Siboney, sent to help treat the epidemics:

Our soldiers were exposed at once to malarial infection in all of the camps. Occupation of the buildings in which yellow fever had full sway for years, and the free intermingling of the filthy Cuban refugees and soldiers with our troops could not fail in starting and disseminating this disease among our soldiers soon after landing on Cuban soil. Typhoid fever, which prevailed in all of our large camps before the army sailed for Cuba, soon gained a firm foothold at the seat of war and did its share in increasing the mortality and in

¹²⁶² Nelson Miles, *Serving the Republic*, 293.

¹²⁶³ Shafter to Corbin, July 19, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 166.

¹²⁶⁴ Greenleaf to Sternberg, July 14, 1898; Corbin to Wilson, July 14, 1898. *Ibid.*, 140. The experience of the 24th Infantry Regiment showed the error of regarding black troops as immunes. 167 men of the regiment became ill with yellow fever, 23 died, and 40 were discharged on permanent disability. *Cirillo, Bullets and Bacilli*, 92.

¹²⁶⁵ Shafter to Corbin, July 22, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 171.

shattering the efficiency of the service. Amebic dysentery and diarrhea, the two greatest enemies of the Spanish army, thinned out our ranks and crowded our imperfectly equipped hospitals. It was fortunate that the enemy yielded to our arms so early, and made it possible for our troops to return so soon to the invigorating climate of the North for proper care and speedy recuperation. Those who saw the different regiments leave our State and national camps would find it difficult to recognize and identify the soldiers of the Cuban campaign. The men left in excellent spirits. Most of them return as mere shadows of their former selves. The pale faces, the sunken eyes, the staggering gait and the emaciated forms show only too plainly the effects of climate and disease. Many of them are wrecks for life, others are candidates for a premature grave, and hundreds will require the most careful attention and treatment before they regain the vigor they lost in Cuba...¹²⁶⁶

Lt. John Parker, commanding the Gatling gun detachment at Santiago, described the suffering of the troops near Santiago after the surrender, and attributed it to four causes: “first, improper clothes; second, improper food; third, lack of shelter; fourth, lack of proper medical attention.”¹²⁶⁷ The clothes they were issued were the flannel shirts and wool pants suited to winter conditions.¹²⁶⁸ Even these were worn out by the time of the surrender, as no changes of clothing were available at the front. The food was monotonous at best; the vegetables that had been brought had spoiled in the transports. Parker stated that “It did not require professor of hygienic dietetics to predict that men fed in the tropics upon diet suited to the icy shores of

¹²⁶⁶ Nicholas Senn, *War Correspondence (Hispano-American War): Letters from Dr. Nicholas Senn* (Chicago: American Medical Association Press, 1899), 180-181.

¹²⁶⁷ Parker, *History of the Gatling Gun Detachment*, 193.

¹²⁶⁸ Teddy Roosevelt testified that “The flannel shirts were as good as any flannel shirts I have ever seen, only they are exactly what I would have used in Montana in the fall.” Roosevelt, *Dodge Commission Report*, vol. 5 (Testimony), 2263.

Greenland would become ill...”¹²⁶⁹ Some of the men were completely without shelter, and many lay out in the rain. Captain Williams of the 21st Infantry at Santiago was certain that this “contributed very greatly to the resulting sickness.”¹²⁷⁰ Parker outlined the scope of the sickness: “It was not uncommon to find twenty or twenty-five per cent of command on the sick report, and in some cases the sick-list went as high as fifty per cent. There were no well men in the 5th Army Corps. Those who refused to go on the sick-report were, nevertheless, sick. The author has yet to find single member of the expedition who did not suffer from the climatic fever. The surgeons themselves were not exempt, and the very limited supply of doctors was speedily decreased by sickness.”¹²⁷¹

Part of the problem was found in the behavior of some of the volunteer troops, who were ignorant of good sanitation and unwilling to learn. Lt. Parker described the 34th Michigan:

There were some ignorant Volunteers at Santiago, but of all the willful violation of all the laws of sanitation, camp hygiene, and health ever seen, these particular Volunteers did the most outrageous things. They threw their kitchen refuse out on the ground anywhere; half of the time they did not visit the sink at all, but used the surface of the ground anywhere instead... They raked over an abandoned camp of the Spanish prisoners on their arrival at Fort Roosevelt, and appropriated all the cast-off articles they could find, using the debris for bedding. This surgeon, a "family doctor" from the pine woods in northern Michigan, did not seem to regard these matters as of any importance. His attention was called to them, but he took no action. In short, there was no law of health which these people did not utterly

¹²⁶⁹ Parker, *History of the Gatling Gun Detachment*, 196.

¹²⁷⁰ Williams, *Dodge Commission Report*, vol. 4 (Testimony), 1477. He also testified that he had “never campaigned with troops that would be, at any time, without shelter of some kind. The lack of any changes of clothing, of course, was exceptional.” Ibid., 1478-1479.

¹²⁷¹ Parker, *History of the Gatling Gun Detachment*, 199.

ignore, no excess dangerous to health which they did not commit. Three-fourths of them were too sick for duty, and the rest looked like living skeletons. They fairly wallowed in their own filth --and cursed the climate of Cuba on account of their sickness.¹²⁷²

The extent of the debilitation from fever cannot be overstated, as noted in a letter written at Santiago on August 12, describing the state of the sick from Gen. Kent's division:

Many of these men are too ill to rise. They are 'suspected' of having yellow fever. They are suffering from Cuban malaria, and many of them from diarrhea. There was not left single bed-pan for this battalion of bed-ridden, suffering humanity, nor any well men to nurse the sick. There was not even left any to cook food for them. ... They are too sick to dig sinks; some are delirious. When the poor emaciated wrecks of manhood have to obey the calls of Nature, they must either wallow in their own filth or stagger few paces from their wet beds on the slimy soil to deposit more germs of disease and death on the surface already reeking with ghastly, joint-racking rheums. There were left less than fifty cots for these 350 sick men – men compelled by sheer weakness to lie on the ground which will soon lie on them, if enough strong men are left by that time to cover them mercifully over with the loathsome, reeking vegetable detritus which passes here for soil, and which is so fairly animate that you can see every spadeful of it writhe and wriggle as you throw it over the rotting hour-dead shell of what was free American citizen...¹²⁷³

The actual progress of the epidemic can be traced through the daily status reports that Shafter sent to Washington starting on July 26 and continuing through August 23. The information is summarized in Figure 9. The raw data is contained in Appendix A, along with the daily mortality

¹²⁷² Ibid., 177-178.

¹²⁷³ Quoted in Parker, *History of the Gatling Gun Detachment*, 203-204.

rate and the number of soldiers returned to duty each day. Not all of the deaths were from yellow fever; most are from typhoid and others malaria, dengue, and other diseases such as dysentery. It can be seen that the number of sick (overall and those with fevers) peaked at the end of July and declined during August; nevertheless 900 were still on sick report as of August 23, 1898.

Evacuation and Recuperation

The question became, what to do with the Fifth Corps troops? At first, the plan was to keep them in Cuba until the epidemic had run its course. The first guidance from the Secretary of War on July 14 was that the men “must all be put into camps as comfortable as they can be made, and remain, I suppose, until the fever has had its run.”¹²⁷⁴ The sickness meant that the men of the Fifth Corps found it increasingly difficult to perform their duty, but there were three obstacles to evacuating all or part of the troops: the need to occupy and defend the city against possible Spanish attack (or even Cuban rebel occupation), the fear of contaminating transports with fomites and bringing a yellow fever epidemic to the United States, and the need for an isolated area to quarantine and treat the affected men. All of these issues would be addressed over the next couple of months.

The large number of sick men in Santiago placed an enormous burden on the system, especially before the end of July. The first issue the doctors assigned to the corps faced was a severe shortage of medicines and supplies such as beds, blankets, pillows, clean clothing and pajamas. There was a significant shortfall in the numbers of doctors and nurses available to treat the men, which became increasingly worse as these personnel also succumbed to malaria and other diseases. Only one mobile hospital had been landed on shore, the buildings were

¹²⁷⁴ Alger to Miles, July 14, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 144.

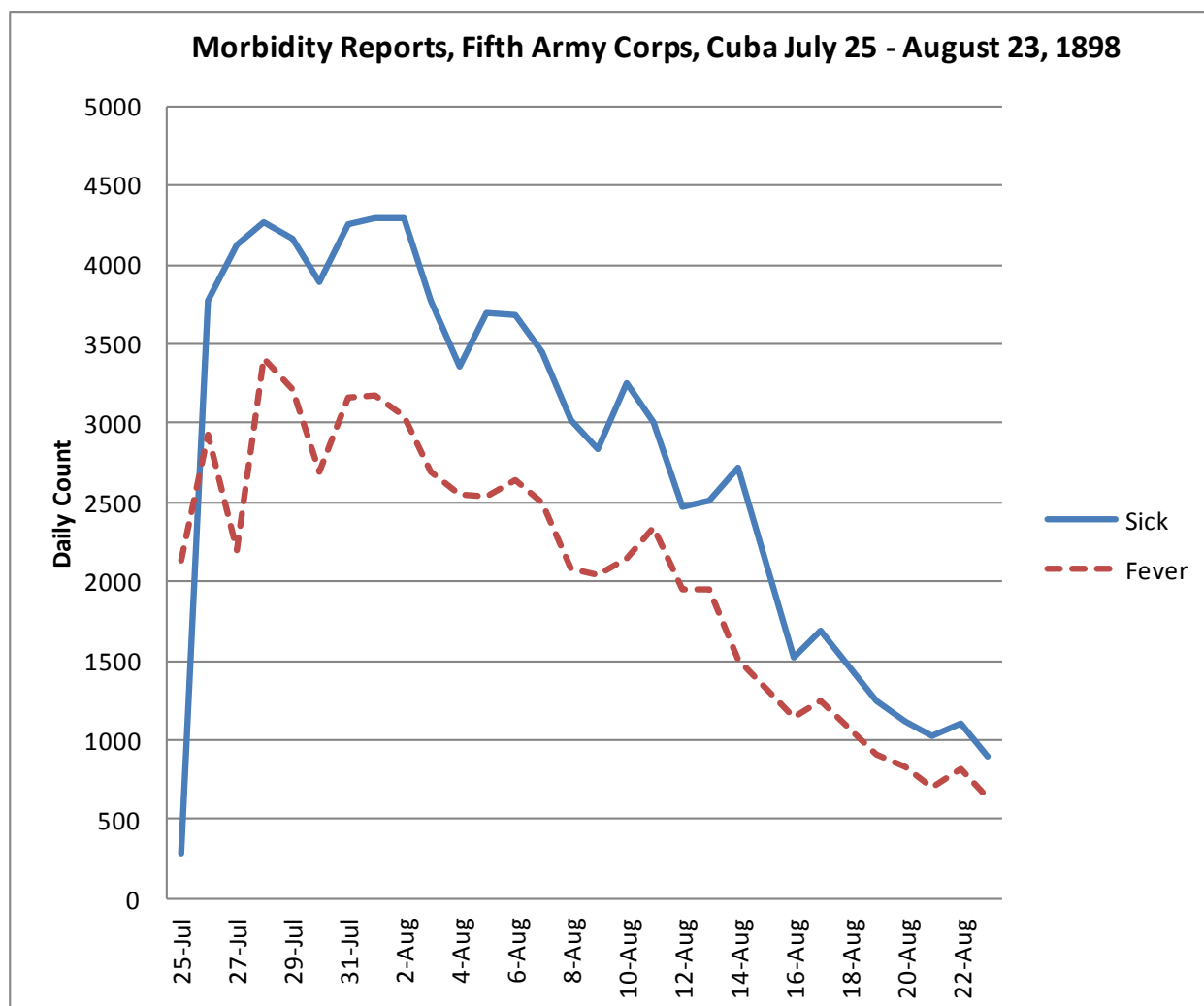


Figure 9: Morbidity Reports, Fifth Army Corps, Cuba July 25 – Aug. 23, 1898
(Source: *Correspondence Relating to the War With Spain*; Appendix A)

considered infected and thus burned to the ground (fortunately after the sick men had been moved out), and some of the hospital ships were either late to arrive or were needed to evacuate wounded personnel (as well as a limited number of sick patients). The Army was chronically short of trained hospital corpsmen and the practice of requisitioning troops from the line units to serve in this role led to the assignment of men that their commander wanted to be rid of – the incompetent, the malcontents, the rebellious who refused to be disciplined, or the just plain unfit.

The number of immune troops initially sent to Santiago was vanishingly small (it was only by coincidence that any were immune), they had immunity to yellow fever but not malaria, or they were assumed to be immune (the blacks of the 24th Infantry for example) but proved to be equally susceptible to disease as their nonimmune compatriots. In addition, there was a shortage of transportation available to move the men and materiel needed from the United States to the landing areas of Daiquiri and Siboney and thence to the lines around Santiago where the men were actually located. Not surprisingly, when transportation was available, food was the top priority.¹²⁷⁵

The question of evacuation is raised first by Shafter on July 23, 1898. It was not as straightforward as it might have appeared; Shafter recommended that the corps be moved north “as early a day as possible” but noted that some could die in transport. Nevertheless, “It can be done so quickly that but few would die in making the change, and once landed recovery would be speedy.” He concluded by noting that “up to this time but comparatively few deaths.”¹²⁷⁶ Later that day he summarized the situation: “The situation is not alarming, though there are many sick with fever—about 1,500. ... Only a small part of these sick are down with yellow fever—about 10 per cent. Slight changes of all the troops have been made to get them on fresh ground, and the artillery and cavalry have been moved about 3 miles. It is out of the question to move any more troops away until the prisoners are started for Spain and until the railroad is repaired.”¹²⁷⁷

There was great fear that ships returning to the United States from Cuba would bring yellow fever with them. The War Department was also concerned that ships could be contaminated, rendering them useless. Alger was particularly concerned about the limited number of transports

¹²⁷⁵ After the war, that is. The top priority was ammunition during the period of hostilities; reinforcements also had a higher priority before the Spanish surrender.

¹²⁷⁶ Shafter to Corbin, July 23, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 173.

¹²⁷⁷ Shafter to Corbin, July 24, 1898 (2 messages). *Ibid.*, 174-175.

getting infected with fomites from infected troops; these transports were not only needed for movement of the Fifth Corps from Cuba but also might be needed to move other troops later in the war.¹²⁷⁸ On July 25 a new procedure was instituted to guard against contamination: “All ships ... which come to Santiago hereafter must be rigidly guarded, so that by no possibility can anyone go aboard or near her or her crew and thus infect them with yellow fever.” He instructed that the regulation must be enforced “without any deviation whatever.”¹²⁷⁹

Quarantine officials in the United States were “reluctant to advise that an army infected with yellow-fever be brought to any part of the country” and Alger reported that several Senators called him personally to protest against moving infected troops to any continental location. Some factors ruled in favor of keeping Shafter and his men in Cuba. The supply situation was finally beginning to be resolved. If a delay could be supported, it would help determine the actual extent of a yellow fever menace (as opposed to malaria, typhoid, dengue, etc.) while treating their symptoms in hospitals being set up on the island. Replacement troops were needed to guard 24,000 Spanish prisoners and secure an occupation of the surrendered territory. Last but definitely not least, time was needed to set up a quarantine and treatment center in the United States with the capacity to treat tens of thousands of troops. Alger sought to reassure Shafter that he and his men would be well treated: “The desire is to help you in every way possible. As soon as it can be done with safety, etc., it is the intention to bring the entire Fifth Corps north for rest and recuperation.”¹²⁸⁰ Meanwhile, the Army Medical Department finally landed the Third Division hospital, which became the base hospital at Siboney, and it set up a separate hospital for

¹²⁷⁸ Corbin to Shafter, July 13, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 135-136. The comment about the Yellow fever belt is contained in a message from Corbin to Shafter, July 14, 1898. *Ibid.*, 140. Even the mail was disinfected for fear of transmitting yellow fever via mail contamination. A Marine Hospital Service officer was detailed for that purpose. Corbin to Shafter, July 16, 1898. *Ibid.*, 153.

¹²⁷⁹ Alger to Shafter, July 25, 1898. *Ibid.*, 179.

¹²⁸⁰ Alger, *The Spanish-American War*, 258-259. Corbin to Shafter, July 23, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 173.

isolating and caring for yellow fever patients. By mid July there was an adequate supply of medical supplies on hand as well as doctors and nurses; the physicians and nurses assigned to the yellow fever hospital were all immune to the disease.¹²⁸¹ Alger also selected a site near Montauk Point, Long Island, for the establishment of a quarantine and treatment camp for sick and convalescing soldiers. It was to be called Camp Wikoff.¹²⁸²

At this point, all might have been well, provided that a major outbreak of yellow fever could be avoided. The hospitals were still located near the coast, in areas infested with *Aedes ægypti* mosquitoes; to be safe, the army needed to be moved to healthier locations inland. At that point, only a relatively small number of cases of fever had been identified as yellow fever; more importantly, these were mild resulting in relatively few fatalities.¹²⁸³ However, things quickly began to fall apart and the Administration soon had a public relations nightmare on their hands. In the rush to send troops home for treatment, two ships, the *Concho* and the *Seneca*, were sent home without enough proper food, water or medicines for the sick and without adequate personnel to provide medical care or even help with daily necessities.¹²⁸⁴ This caused an

¹²⁸¹ *Report of the Surgeon-General of the Army, 1898*, 117.

¹²⁸² Wikoff (Brig. General, U.S.V.) was the most senior officer lost to enemy action during the war. Alger to Shafter, July 28, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 185.

¹²⁸³ The risk from mosquitoes was not known in 1898. However, it was known that Santiago was located in a yellow fever region, so the risk of additional yellow fever cases in the army's current location was considered to be very high. The doctors accompanying the Fifth Corps signed a letter stating that "there is imminent danger that the yellow fever, now sporadic and of a mild type, may any day assume a virulent type and become epidemic." (Shafter to Corbin, Aug. 3, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 201).

¹²⁸⁴ Major Pope, who was Chief Surgeon of the Fifth Corps up to July 2nd (when he became ill), testified before the Dodge Commission agreed that "it was a fact that these transports went north unprovided with medicines, principally supplied with travel rations, and scarcely anything else—in fact, with nothing else but some meal gotten from a charitable organization there—if it is a fact that they went without any medical officers but two or three convalescents, one of whom broke down after starting, and who did nothing, and another an inexperienced man, the third a representative of a charitable organization—that they went without any nurses or any means of caring for these sick, except as they cared for themselves." Pope thought it was the best they could do at the time: "nearly everyone was sick; that by sending transports north we had lost a good many of our medical officers; that our Hospital Corps men could not be spared, as there were over 3,000 patients being nursed on the line and in the hospitals at that time." A major problem is that they planned that only convalescents could go (which he defined as "men who could take care of themselves and did not require nurses or physicians"), but the ships were quickly crowded with severely ill men who wanted to go home right away. Many of the men had malaria, which relapsed en route. Pope pled ignorance of the fact that this outcome was likely, stating that "In our peace establishment we have

immediate furor in the press, greatly embarrassing the McKinley Administration and causing the President to order an immediate investigation. This was the first indication to the American public that something was wrong, and made the further revelations that were to come all the more damning.¹²⁸⁵

The next problem was that Shafter was unable to move his troops to high ground (which would have been out of the mosquito zone; at the time it was simply considered cleaner and therefore safer). The railroad to the location was damaged and was too small to transport more than 1,000 per day even if repaired. There was no water at the location, and the site was unsuitable for camping. Shafter stated, "In my opinion there is but one course to take, and that is to immediately transport the Fifth Corps and the detached regiments that came with it to the United States. If it is not done, I believe the death rate will be appalling. I am sustained in this view by every medical officer present..." He proceeded to state that although "some will undoubtedly be taken sick on the ships and die" the death rate would be greater if he tried to move upland toward the interior. His force was now "really an army of convalescents; at least 75 per cent of the men having had malarial fever, and all so much weakened by the exposure and hardships which they have undergone that they are capable now of very little exertion." His words were carefully chosen to leave Alger very little choice – "If the plan is adopted of waiting until the fever is stamped out, there will be no troops moved from here until the fever season is

very little experience with malaria fever. Malaria gave a very small return at most of our posts; it had been practically eliminated, and I think I may say we had considered it a rather trifling disease which could be easily met with large doses of quinine continued. I, for my own part, had no idea that the typical malaria, until I saw it, was such a persistent and such a deadly poison as it has proven itself to be." Pope, *Dodge Commission Report*, vol. 6 (Testimony), 3047-3048.

¹²⁸⁵ Corbin wired Shafter that "Severe criticisms are finding their way to print that the sick are being sent home not supplied with water and proper food. No ship with sick and wounded should be sent without an experienced commissioned officer in charge, one who will know before leaving that the ship is at least supplied with the necessities for the journey, including, of course, medicines." Corbin to Shafter, Aug. 1, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 191. Alger informed Shafter of the investigation in a follow-up to the earlier message. Alger to Shafter, Aug. 1, 1898. Ibid. Trask, *War with Spain*, 330.

past, and I believe there will then be very few to move.”¹²⁸⁶ This caught Alger by surprise; as he noted later in his history of the war, both Miles and Shafter had previously told him that they could and would move the troops to safer ground to wait the epidemic out. In addition, the sick rate was clearly falling (see Figure 9).¹²⁸⁷

Even this surprise could have been resolved without a public scandal if Shafter had not chosen to forward a petition signed by all of his senior officers requesting evacuation. This petition was later referred to as the “Round Robin” message, and would become infamous when a correspondent got hold of a copy and sent it in for publication before the Administration could formulate a response. Unfortunately for McKinley and Alger, the Round Robin was strongly worded: “the army is disabled by malarial fever to such an extent that its efficiency is destroyed and it is in a condition to be practically entirely destroyed by the epidemic of yellow fever sure to come in the near future. We know from reports from competent officers and from personal observations that the army is unable to move to the interior, and that there are no facilities for such move, if attempted, and will not be until too late. Moreover, the best medical authorities in the island say that with our present equipment we could not live in the interior during the rainy season without losses from malarial fever almost as badly as from yellow fever.” It went on to say “This army must be moved at once or it will perish.” A more medical and less alarmist message was also sent, signed by the corps and division senior surgeons.¹²⁸⁸

¹²⁸⁶ Shafter to Corbin, August 2, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 200-201. Alger, *The Spanish-American War*, 263-264.

¹²⁸⁷ Alger, *The Spanish-American War*, 264. Alger also noted that the number of men returned to duty as of the most recent report (for August 1st) 722 outnumbered the number of new fever cases (653). See Appendix A for the returned to duty rates.

¹²⁸⁸ The “Round Robin” is a message from Shafter to Corbin, August 3, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 202. The medical letter is Shafter to Corbin, August 3, 1898. *Ibid.*, 201. Both letters are reproduced in Appendix B, items 4 and 5.

Theodore Roosevelt was widely blamed for leaking the message to the press. At the time, the *New York Times* published a letter from Roosevelt along with the Round Robin letter, where he said “in this division there have been 1,500 cases of malarial fever. Not a man has died from it; but the whole command is so weakened and shattered as to be ripe for dying like a rotten sheep when a real yellow fever epidemic ...strikes us, as it is bound to do if we stay here at the height of the sickness season...”¹²⁸⁹ It certainly expressed his feelings; later he condemned the Administration’s plan for leaving the troops in Cuba, calling it cowardice: “the authorities at Washington, misled by the reports they received from one or two of their military and medical advisers at the front, became panic-struck, and under the influence of their fears hesitated to bring the army home, lest it might import yellow fever into the United States. Their panic was absolutely groundless, as shown by the fact that when brought home not a single case of yellow fever developed upon American soil. Our real foe was not the yellow fever at all, but malarial fever, which was not infectious, but which was certain, if the troops were left throughout the summer in Cuba, to destroy them, either killing them outright, or weakening them so that they would have fallen victims to any disease that attacked them.”¹²⁹⁰ In addition to embarrassing the Administration,¹²⁹¹ the “Round Robin” weakened the peace negotiations underway in Paris, as it revealed the weakness of the United States occupying force. McKinley, Alger and Long asked Shafter to issue a statement allaying fear: “Fresh troops reaching here in the middle of August,

¹²⁸⁹ “Nine Men out of Ten Sick.: Colo. Roosevelt Declares the Whole Army Is in Danger Unless Moved North at Once,” *New York Times*, Aug 5, 1898, 7.

¹²⁹⁰ Roosevelt, *The Rough Riders*, 204. Trask considers the allegation that Roosevelt deliberately leaked the message a fact; given the *Times* report, it seems very likely. Trask does say, however, that “a recent authority, Virgil C. Jones” claims that Shafter leaked the document. Trask, *War with Spain*, 204. Alger reported that McKinley became “excited and indignant” when he read the reports and tried vainly for months to find the identity of the leaker. Alger, *The Spanish-American War*, 271.

¹²⁹¹ One of the public relations problems was the fact that orders to the cavalry division to move to Camp Wikoff were published at the same time as the Round Robin. The public assumed that the troops were moved home only because of the pressure applied by the men who signed the letter, which implied that without the letter the Administration would have callously left them in Cuba to die. Alger, *The Spanish-American War*, 269.

with good camps, good water, and an abundance of tentage, which they will find here, need not apprehend serious danger...The regiment of immunes that recently arrived is not suffering at all..."¹²⁹² Fortunately, it had no lasting impact regarding the peace settlement.

The infamous "Round Robin" came in part from the distrust troops had that their superiors were concerned for their health and ultimately their lives: Millis cites an officer's diary: "We are all aghast! The idea, the absurd idea, of marching far up into the mountains has given us the horrors, and lack of confidence in our Washington administrators."¹²⁹³ The widening depression shared by the troops was referred to as "nostalgia" or "homesickness" by the authorities at the time. Walter W. Ward of the Second Massachusetts Volunteers called it "nostalgia,... the bane of armies,...which in the Cuban campaign helped kill more men than the bullets of the Spaniards."¹²⁹⁴ As men grew weaker from disease, this homesickness increased: "as a consequence of this debility the homesickness which is almost insupportable" was added to "the evil effect upon the well troops by the appearance among them of their debilitated comrades."¹²⁹⁵

Part of the problem of maintaining good morale was the continuing toll disease made upon the senior leadership. In the 9th Massachusetts Vol. Infantry, "Colonel F. B. Bogan took the regiment to Cuba and upon his being disabled by sickness (resulting in death six weeks later), Lt. Col. L. J. Logan took command about 10:00 P. M., July 1st; when he fell sick July 20th, Major Patrick J. Grady succeeded him, retaining command until his death July 29th, when the command

¹²⁹² "Condition of Santiago Army," *New York Times*, Aug 9, 1898, 3.

¹²⁹³ Millis, *The Martial Spirit*, 350-1. No source was provided.

¹²⁹⁴ Cited in Trask, *War with Spain*, 325-6

¹²⁹⁵ Col. Greenleaf report to the Surgeon-General Aug. 13, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 624.

devolved on Major Wm. H. Donovan, who brought the regiment back to the United States.”¹²⁹⁶

How can men stay cheerful when their leaders die one-by-one from epidemic disease?

The unrelenting heat and humidity of the tropics also took its toll, especially of troops from the Northern states. “The depressing effect of this climate upon northern men can only be appreciated by medical men who have served with them. They seem deprived of all recuperative power, and no sooner do they fall sick, even with slight ailments, than a physical and nervous depression follows, which aggravates the existing disease and renders the patient entirely unfit for service.”¹²⁹⁷ By the time the epidemic was in full swing, many men were in a panic, what Chadwick called a state of “nervous exhaustion”; he concluded that “The marvel is not that so many were sick, but so few.”¹²⁹⁸

Once the Spanish had surrendered, it became the duty of the men still capable of duty to care for the sick and dying in the yellow fever hospitals. The 8th Ohio was one regiment assigned these duties, caring for their own:

In a secluded spot a short distance from the camp, high up on the hillside and commanding a view of the red-tiled roofs of Santiago, five miles away, was the regimental graveyard. It requires a brave heart to face the momentary shock of battle where victory only is the paramount thought, but it requires a still braver heart to endure week after week without proper food and care, the inevitable diseases of the miasma laden atmosphere of the Cuban swamp, tending the sick and dying, and at nightfall to carry out to new made graves comrades who have died during the day. No sacrifice was too great for the officers and men of the Eighth to make for their suffering comrades, and in this heroic struggle against a foe

¹²⁹⁶ Capt. Peter J. Cannon, “The Ninth Massachusetts Infantry U. S. Volunteers,” in *The Santiago Campaign*, 124.

¹²⁹⁷ Col. Greenleaf reporting on the Puerto Rico campaign, *Report of the Surgeon-General, 1898*, 147; also found in *Report of the Secretary of War, 1898*, 735.

¹²⁹⁸ Chadwick, *Relations*, vol. 2, 259-260.

that would not be subdued, the Eighth Ohio continued in the performance of the most desperate duty to which they were assigned in the volunteer service.¹²⁹⁹

The Twenty-Fourth Infantry, the back regiment ordered to care for the sick and dying, suffered disproportionately. An eyewitness recalls seeing “groups of the black soldiers of the Twenty-Fourth Infantry carrying into their places the sick as they came, and carrying out the dead as they dies, and burying the infected clothing, and scrubbing the place with chloride of lime and other disinfectants. Superb as was the behavior of the Twenty-Fourth Infantry in the San Juan charge, the battle they fought for forty days in the yellow fever hospital here [Cuba] was still a more gallant fight, and one which cost more dearly in precious lives.” Sixty men volunteered to nurse the sick when they first arrived; within 48 hours of arrival 42 of them were stuck down with illness in turn. There was no shortage of brave black men to take their place. By the time of evacuation, only 24 men from the entire regiment were spared serious illness, and even some of these became ill at the recuperation camp in Montauk.¹³⁰⁰

Perhaps the greatest tribute to these men was offered by Capt. Peter Cannon of the 9th Massachusetts:

The man who gives his life for his Country and his Flag is a hero, but the boys who suffered and died from fever, pestilence and starvation are more, they are martyrs! ‘Little reck[sic] the soldier in the fullness of his pride and strength whether the hissing bullet sings his sudden requiem, or the cords of life are severed by the sharp steel,’ but he who wrestles day after day with his grim, unrelenting enemy – tropical fever each morning’s sun finding him weaker, has a lot harder, much harder to bear. The turmoil of battle with its rattle of

¹²⁹⁹ Edward Vollrath, “The Eighth Regiment of Infantry, Ohio National Guard, in War With Spain,” in *The Santiago Campaign*, 155-156.

¹³⁰⁰ Coston, *The Spanish-American War Volunteer*, 10-12. Coston was the regimental chaplain and eyewitness to the events portrayed.

musketry, rat-tat-tat of machine guns, roar of artillery, bursting of shells, and the shouts of comrades which stimulate and carry even weak spirits forward in the headlong rush towards the enemy's lines, are here lacking, and instead of these inspiring sights and sounds, whispered announcements are heard of deaths of comrades and the patient makes mental calculations as to how soon he will follow them. ... The order to any regiment under conditions which obtained in Shafter's Corps early in August, 1898, to remain behind, guard prisoners, nurse yellow and malarial fever patients, and to bury the dead, is one which would not be received with enthusiasm. Those who got out just in time to avoid the losses from fever just enumerated may well do honor to those to whom fell this unwelcome task.¹³⁰¹

Exhaustion, sickness, and the frustration of 20-hour days treating the wounded and then the sick with inadequate medicines, supplies, and food took their toll on the doctors, nurses and corpsmen as well as the troops.¹³⁰² Ships were unavailable to transport troops home; when the sick were sent to camps first in Cuba and later in the United States, food, shelter, and bedding were all inadequate at first as the number of sick far exceeded the Army's capacity for providing these necessities.¹³⁰³

Once mobilized for war, it becomes inevitable that men and materiel be demobilized at the end of the conflict. Disease became a major issue with demobilization of the men who served in the Cuba campaign. Both the men and their equipment were assumed to be contaminated with yellow fever. The War Department was concerned that the limited number of ships available to

¹³⁰¹ Cannon, "The Ninth Massachusetts," 125-126.

¹³⁰² For example, Maj. Frank Ives, Chief Surgeon of the Independent (Bates') Brigade at Siboney contracted "a mild attack of yellow fever" himself. *Report of the Secretary of War, 1898*, 822. Col Pope, chief surgeon of the Fifth Corps, had himself relieved of duty on July 23rd due to "continued illness." *Ibid.*, 788.

¹³⁰³ Cosmas, *An Army for Empire*, 253-255 (quote p. 253); 259-261.

move the troops from Cuba back to the United States would become contaminated and thus unavailable for use; this was particularly an issue during the period between the surrender of Santiago and the ceasefire, when ships were needed to replace the men in Cuba lost or too debilitated from disease to serve effectively as guards and garrison troops (essentially all of the Fifth Corps by early August) and to provide soldiers and equipment for the invasion of Puerto Rico as well as reinforcements for the same. As previously noted, a lengthy decontamination process was needed to remove the perceived danger from yellow fever fomites from any ship used to transport infected men.

The soldiers needed to be free from disease before they could be released from active duty and returned to their homes.¹³⁰⁴ The original plan called for the Fifth Corps to be isolated in “safe healthy camps” in the higher inland regions of Cuba until they could be certified as free from disease. This plan broke down as discussed previously; between the incapacity of the men to move inland and the intense political pressure from the release of the Round-Robin letter, it was necessary to move the men back to the United States immediately. However, that also ran into immediate problems. The initial attempts to remove men who were sick from disease other than yellow fever were a disaster when the ships proved to be poorly manned and equipped for the movement of seriously ill patients. Fixing the problem meant using the limited number of hospital ships (needed for the many wounded as well as sick men) or using resources (not the least of which was time) to outfit the transports as *de facto* hospital ships (which also rendered them unavailable for the Puerto Rico invasion and other military uses). Second, unbeknownst to

¹³⁰⁴ This is as true today as it was in 1898; even essential dental care is completed before soldiers are discharged.

most medical officers, the malaria affecting most of the Fifth Corps soldiers was liable to flare up when transporting the men, creating additional problems in transport.¹³⁰⁵

The Administration's solution was to build the treatment, rest, and recuperation camp, Camp Wikoff. Men suspected of yellow fever could be quarantined and treated; soldiers with malaria, typhoid, dysentery, and other diseases could be treated in hospitals especially constructed for the troops, isolated from New York City and other civilian locales to ensure that the infected men did not create a new epidemic outbreak back in the United States, especially of the dreaded yellow fever.

However, the problems demobilizing men who were wounded or sick from malaria, typhoid, dysentery, or other disease other than yellow fever paled when compared to the problems raised by the hundreds of [suspected] yellow fever patients.¹³⁰⁶ First was the issue of transport, just discussed. Next was a powerful fear by the public that bringing the troops home would cause a yellow fever epidemic wherever they landed. Even after the decision was made to return the troops home for treatment, it took time to build a detention and treatment center. By the time they began construction on Camp Wikoff at Montauk Point, it was already too late – troops had begun to arrive. The camp was isolated to prevent the possibility of a yellow fever epidemic in New York City – but that isolation caused its own problems in transport of the soldiers in from the sea and the transport of workers, building materials, and all of the contrivances necessary to build a major hospital in an area that had been sand dunes and salt air.¹³⁰⁷

¹³⁰⁵ Pope, *Dodge Commission Report*, vol. 6 (Testimony), 3048.

¹³⁰⁶ As documented previously, there was significant disagreement over the diagnosis. However, this didn't matter with respect to the demobilization problem – they would be treated as if they had the disease regardless of whether or not they were afflicted.

¹³⁰⁷ Major General John Bates, commander of Camp Wikoff, explained to the Dodge Commission why the camp wasn't ready: "just up to the time of that "round robin" that was sent out I don't think the War Department had any intention of bringing them home." Critics of the camp failed to take into account "consideration the fact that the

Each vessel transporting the sick had to undergo a USMHS quarantine inspection and decontamination. Marine Hospital Service quarantine regulations applied to all transport ships proceeding from Santiago and vicinity after yellow fever broke out among the Fifth Corps soldiers. Ships that brought sick and wounded soldiers that were free of yellow fever (the sick having malaria, typhoid, or some other disease) were still inspected and quarantined until freedom from yellow fever could be proved. The complete evacuation of the remainder of the corps to Camp Wikoff proceeded first to a quarantine (detention) zone on land before soldiers could proceed to the main hospital area. The USMHS inspectors also applied their rigorous disinfection procedures to all vessels to ensure that any possible yellow fever fomites were destroyed; this procedure was also applied to mail sent from Santiago to the United States.¹³⁰⁸ Yellow fever patients had to be isolated from those sick from other illnesses, and the wounded had to be treated separately. Even the rare soldier who remained healthy had to undergo a medical examination, be processed for discharge, and transportation had to be arranged to return that soldier to his home station.¹³⁰⁹

The scandal over the Round Robin forced the Administration to accelerate the transport of the sick Fifth Corps troops to Montauk Point, as they were accused of letting them rot in Cuba from sheer neglect. This in turn caused the next scandal of the war. Camp Wikoff was still under construction when thousands of men and animals suddenly appeared in transports offshore. Over 3,500 cavalymen and 5,000 mounts sent from Southern camps descended upon the camp,

Army were nearly all convalescent, without being sick, and were liable to relapse. I don't think that had been taken into sufficient account, and probably accounts for the lack of sufficient preparation for the sick." *Dodge Commission Report*, vol. 4 (Testimony), 989.

¹³⁰⁸ The Surgeon-General credited the USMHS quarantine officers in his report: "That it was kept out of our coast cities is due to the watchfulness of national and local quarantine officers and to the establishment and maintenance of a detention camp at Montauk." Sternberg, *Dodge Commission Report*, vol. 1 (Appendices), 179.

¹³⁰⁹ "Quarantine Safeguards Enforced in Connection with 30,000 Troops Returning from Cuba and Porto Rico," in *USMHS Report 1898*, 620-643.

blocking the trains carrying construction materials and crews from arriving. The site was a maze of lumber and partially constructed buildings, all in a state of confusion as some crews tried to complete the camp and others struck for higher pay – and thousands of men arrived without baggage or tentage to house them.¹³¹⁰ The Dodge Commission later concluded that “To send these men, over 4,000 in number, to a camp intended as one of recuperation for a large force almost completely broken down, was, medically considered, a mistake...”¹³¹¹ When sick troops from Siboney arrived, the camp was still under construction. Seriously ill troops, many too weak to care for themselves, lay on the ground under tents without bedding. Food was short and the understaffed and uncompleted hospitals were unable to properly care for the men, some of whom went without care for up to twenty-four hours at a time. The War Department worked furiously to complete the camp, and the Red Cross and other good Samaritans from the city provided food, shelter, supplies and nurses to aid the soldiers. Although conditions improved rapidly, the press reports of the initial confusion surrounding the camp stayed in the public mind. Every volunteer soldier wants to be home the day after the war ended. That was true in the Revolutionary War, is true today, and certainly was true in 1898. At the time it was typical to release ill soldiers who were not contagious to go home to recuperate, provided they were well enough to travel. The volunteers, the friends and relatives back home, and all of the politicians and officials from the local to the national level pressed the War Department to speed the process along – the families were waiting. This of course led to the release of soldiers who were not well enough to travel. When some collapsed and died on the way home, newspapers splashed

¹³¹⁰ Cosmas, *An Army for Empire*, 263.

¹³¹¹ *Dodge Commission Report*, vol. 1 (Report to the President), 182

headlines such as “Furloughed in Time to Die” across their pages and the War Department was blamed for their deaths.¹³¹²

The process of discharging soldiers after a war has always been time consuming, and there’s always controversy about who gets to go home first and who has to stay to keep the lights on. The presence of disease added a significant amount of difficulty to the process, requiring more time and effort to ensure that soldiers can safely go home (especially for the contagious, the seriously ill, and the seriously wounded). It must not be forgotten that the disease process for most of the illnesses was not understood by the medical practitioners of the day; as a result, it was not always clear when a soldier was truly free from disease or at least free from serious complications. If a healthy soldier is sent home too early, it can be an embarrassment; but if a sick soldier is sent home too early, it can be fatal.

During the war, when confronted with the appalling condition of the Fifth Corps on August 3rd, Alger immediately assumed that black troops, along with the immune regiments, could replace the stricken men. In his initial response to Shafter, Alger asks, “Cannot the colored troops in your command be safely kept at Santiago for the time being? How many of them have you? Will send immunes.”¹³¹³ After the war in his history he was more skeptical; his description of the immune law refers to “these so-called immune regiments.”¹³¹⁴

The Administration also accelerated the movement of immune regiments to Cuba to pick up the reins as the Fifth Corps departed. When the public and the men enlisted in these regiments

¹³¹² Cosmas, *An Army for Empire*, 263-266. Trask, *War with Spain*, 332-334. The Chicago Tribune reported that Corporal Alexander Clark arrived at his home “so weak that he fainted in front of the house and had to be carried in...he grew steadily weak and his disease could not be controlled...Clark was 23 years old” when he died. “TIDE OF MISERY STILL FLOWS: Sick Soldiers Return to Their Homes with Vivid Tales of Suffering in Camps,” *Chicago Tribune*, Aug. 28, 1898, 2. Most of the quote is also found in Cirillo, *Bullets and Bacilli*, 98-99.

¹³¹³ Alger to Shafter, August 3, 1898. Alger, *The Spanish-American War*, 265.

¹³¹⁴ *Ibid.*, 18.

discovered that they were actually to be exposed to yellow fever, there was a public outcry; many called the entire idea a sham. Alger reprints a letter from Senator Bacon of Georgia regarding the Third Volunteer Infantry (Immune), exposing the farce of immunity:

It is distinctly understood throughout the whole country that the 3d Regiment United States Volunteers, although called immune, are no more immune from yellow-fever than any other volunteer regiment. It is composed almost exclusively of Georgians, nearly all of whom are very young men, and many of them minors. When enlisted, the government subjected them to a rigid physical examination, but no proof was demanded or desired as to their immunity from yellow-fever. To send these young men and boys to Santiago at this time, with no enemy to fight, is to expose them to the same deadly peril from yellow-fever as is now said to confront those who, having reaped the honors, are now demanding to be sent to a Northern seaside. If more troops were now needed at Santiago, or if fighting were to be done, then the order for this regiment would be approved by all, but it is a wholly different matter to send them into a pestilence that other soldiers, who are probably more nearly immune than they, may be removed from the danger.¹³¹⁵

The St. Louis Post-Dispatch reported that "The protest of Senator Bacon against sending the Georgia "immunes" to Santiago indicates a lack of confidence in the locality from which the so-called immunes come in their ability to withstand the heat. Communications to the department from friends of some of the immunes show the feeling of anxiety which exists. The department, however, while anticipating that there will be sickness among the immunes and that some of them will have to be brought back incapacitated, does not feel that the great anxiety expressed is

¹³¹⁵ Ibid., 272-273.

warranted.”¹³¹⁶ The Army Medical Department was correct in one respect – disease did break out among the immune regiments, some even before they left the United States.¹³¹⁷ Even the black “immune” soldiers proved to be anything but immune; the 9th Volunteer Infantry Regiment (Immune) had an epidemic of “tropical fevers” that killed almost thirty men.¹³¹⁸

Despite the protests from politicians and the public, the immune regiments were the troops the Army had designated for this duty, and they were sent.¹³¹⁹ Four regiments of immunes were sent; the performance and disease experience of the four immune regiments that did was similar to the other volunteer regiments sent to Cuba. There were some significant discipline issues once the men arrived in Cuba, but these are likely the result of being assigned to risky and boring guard or occupation duty without the recompense of the status awarded to those who served in combat.

The three black immune regiments that did not deploy ran into problems when traveling through the South before and after demobilization. The Southern (and many Northern) newspapers reported these affairs from a racial perspective, giving the black immune regiments a bad reputation. The New Orleans *Times-Democrat* was typical:

¹³¹⁶ “ARE THESE SOLDIERS REALLY IMMUNES?” *St. Louis Post-Dispatch*, Aug 7, 1898, 1

¹³¹⁷ “MORE YELLOW JACK: IT BREAKS OUT IN THE FIFTH “IMMUNE” REGIMENT,” *Louisville Courier Journal*, Sep 9, 1898, 1.

¹³¹⁸ Cunningham, “The Black ‘Immune’ Regiments,” 4. In the end, the 9th lost 76 men to disease (*ibid.*, 5).

¹³¹⁹ Alger, *The Spanish-American War*, 272-273. Both the protests and the government reaction were reported in the *New York Times*. The newspaper was entirely unsympathetic, pointing out that they volunteered specifically for immune duty and to back out now was “in bad taste.” Nevertheless the article also pointed out the fact that the government acted in bad faith by not attempting to verify immunity when enlisting the men. “THE IMMUNE REGIMENTS.: Protests Against Sending Them to Garrison Santiago Ignored by the Government,” *New York Times*, Aug 7, 1898, 8. The *St. Louis Post-Dispatch* noted the advantages the immunes would have when they arrived: “The regiments sent to relieve Shafter, whether actually immune or not, will land there under much better conditions than Gen. Shafter’s army. Shafter’s forces had to land in the face of the enemy, and their rapid advance involved a sacrifice of all the comforts and many of the necessities even of field life. They were compelled to the utmost exertion and subjected to exposure and terrible hardships which affected their physical strength and rendered them readily subject to fever. The troops sent to relieve them will be provided with every comfort possible under the circumstances; will not be called upon to endure exhausting fatigue and exposure and will be provided with shelter, wholesome food and sufficient medical attention. The department will be prepared to relieve such of them as succumb to the climate.” “ARE THESE SOLDIERS REALLY IMMUNES?” *St. Louis Post-Dispatch*, Aug 7, 1898, 1.

The experience with negro troops has been exactly what the President was warned of.

Wherever they went riots and murder followed in their footsteps. Their camps were constant sources of danger to the surrounding country, and it took almost as many white men to keep the negroes in order as there were negroes in the army.¹³²⁰

The *Times-Democrat* blamed the violence on a “bad element” that had the temerity to “believe in social equality” and “seeing their race recognized as the equal of the white man in courage.” It was no wonder that the white bigots of New Orleans thought they were “uppity.”¹³²¹ The War Department was undeterred by such assertions, regarding black soldiers as more tolerant of tropical service even if not immune. Two of the twenty-five volunteer regiments being raised for the Philippine Insurrection were reserved for black recruits and company-grade officers.¹³²²

The historical record of these regiments began to be set straight in the 1960s and 1970s, when a series of articles appeared detailing the role of African-Americans in the Spanish-American War. Part of the “new history” that focused on minority and other groups previously ignored in historical accounts, these articles either discussed the experience of black units formerly part of state militias that were called up for service or discussed the role of the four black immune regiments, recruited from all of the states. In one case, the black 8th Illinois Volunteer Infantry was sent to replace the white 1st Illinois Volunteer Infantry because of this perceived racial immunity.¹³²³ The state militia articles all mention the role that the tropical disease immunity had on black recruitment, but they all assume that this immunity had no basis in fact; this conclusion was drawn from the fact that some black troops did die of yellow fever;

¹³²⁰ New Orleans *Times-Democrat*, March 19, 1899, cited in Coston, *The Spanish-American War Volunteer*, 55-56.

¹³²¹ Ibid.

¹³²² Ibid., 6-7.

¹³²³ Willard B. Gatewood, Jr., “An Experiment in Color: The Eighth Illinois Volunteers, 1898—1899,” *Journal of the Illinois State Historical Society* 65, No. 3 (Autumn, 1972): 304-5.

one drew that conclusion based on a single death.¹³²⁴ Interestingly, Millis states that McKinley was willing to send Regular Army troops into the disease environment that he would not subject volunteers to: The Regulars formed the initial force that Shafter was ordered to send to Cuba to rendezvous with Cuban forces under Gomez at the end of April. It was only later, after the yellow fever experts reassured him that it would be safe to deploy volunteers in Cuba that McKinley decided to send volunteers along with the Regulars to Santiago.¹³²⁵

The sickness and death among the troops assigned to the Fifth Army Corps became a national scandal, but it was quickly overwhelmed by the epidemic of typhoid sweeping across training camps in the United States.

“The Ghastly Echo of a Thinning and Dying Army Corps”

The specter of disease caused a very rational panic among the soldiers. The Spanish-American War provides a good example of the psychological difficulties men endured when faced with epidemic disease. Physically, the men were gaunt and weak, suffering from malarial and other fevers that in many cases caused permanent physical disability. But the moral, as to the physical in three parts out of four,¹³²⁶ effect went far beyond the physical weakness. It is hardly surprising that men began to panic when faced with widespread sickness as well as a constant (even if relatively low) death rate. What is surprising, perhaps, is how many men soldiered on, caring for their comrades and reporting for duty day in and day out despite being ravaged by illness themselves. Even the musicians became sick; Private Post recalled the scene: “Then

¹³²⁴ Hugh Blount, a member of Co. C, Third US Volunteer Infantry, died in Cuba of an “unspecified fever”; the Third US was one of the ten immune regiments. William Schellings, “Florida Volunteers in the War with Spain, 1898,” *The Florida Historical Quarterly* 41, No. 1 (Jul., 1962): 57.

¹³²⁵ The April expedition was called off once Cervera sailed for the Caribbean. Millis, *The Martial Spirit*, 166

¹³²⁶ A well-known quote from Napoleon Bonaparte. *Respectfully Quoted: A Dictionary of Quotations*. <http://www.bartleby.com/73/1213.html>, accessed 17 Feb. 2015.

reveille stopped for our regiment. Every bugler was down and out....Then one bugler recovered. Two men braced him on the hill. He blew retreat as the flag came in from the parapet. A weak quavering retreat, with missing notes and hissing gasps..." As they lay in their camp hearing the faint sounds of sick buglers, Post called it "the ghastly echo of a thinning and dying army corps."¹³²⁷ Finally, death became such a constant companion that "slight attention is paid to the three volleys and taps. Orders have finally been issued prohibiting these ceremonies, lest a depressing effect be produced by the demonstration."¹³²⁸

It was not just the morale of the deployed troops that was at stake, it was also the morale of the citizens of the United States. In his history, Alger was more concerned about the morale of the "folks back home" than of the men at the front. When commenting in the "Round Robin" message,¹³²⁹ he stated that "it afflicted the country with a plague of anguish and apprehension. There are martyrs in all wars, but the most piteous of these are the silent, helpless, heartbroken ones who stay at home to weep and pray and wait—the mother, the sister, wife, and sweetheart." Although he criticized the newspapers for publicizing the epidemic and thus "spread[ing] demoralization among our troops," his first comment was that it "brought terror and anguish to half the communities and neighborhoods in the land." A cynic might conclude that there were more voters in these neighborhoods than outside of Santiago.¹³³⁰

¹³²⁷ Post, *The Little War of Private Post*, 261

¹³²⁸ Maj. Philip Reade, report dated July 28, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 384.

¹³²⁹ As discussed in Chapter 8, the "Round-Robin" was a message sent by all of the commanding officers and the medical officers that stated in part "the army is disabled by malarial-fever such an extent that its efficiency is destroyed, and it is in a condition to be practically entirely destroyed by the epidemic of yellow-fever sure to come in the near future. ...This army must be moved at once or it will perish" (Alger, *The Spanish-American War*, 266). The problem was that it was leaked to the press before it had been sent to Washington; McKinley and Alger first read about it in the papers and were "justly indignant at the disclosure of the round robin letter" (Trask, *War with Spain*, 332). The full text of the Round-Robin is contained in Appendix B.

¹³³⁰ Alger, *The Spanish-American War*, 273, 269-70.

The epidemic in Cuba caused irrational panic across the United States. Joseph Wheeler testified to the panic:

At that time there was alarm in the country. It was feared that bringing this vast body of men infected with yellow fever would spread it through the country. In New Orleans, Alabama, and our Southern cities we do not allow any ship to land that comes from any infected place. Now, to allow ships to land with this vast amount of material, infected clothing, and send it broadcast throughout the country would have created alarm in the country and would have done great harm to the country. Even if there had not been a single case of spread of fever, the apprehension that the fever would spread would have been very damaging. If, therefore, for nothing else than to prevent this alarm going throughout the country, it was advisable to have this camp at such a place as Montauk.¹³³¹

Alger was concerned that he could lose his entire Caribbean transport fleet if he contaminated it moving the sick soldiers of the Fifth Corps home for recovery.¹³³²

For some soldiers, desertion was preferable to deployment to Cuba once disease was reported. Even black soldiers chosen for their perceived immunity were unconvinced that they could survive yellow fever. When the all-black 8th Illinois Volunteer Infantry was sent to Cuba to replace a white Illinois regiment, a few deserted rather than face the dreaded Cuban fever, although most kept their oaths of enlistment and served in Cuba.¹³³³

Toward the end of the Santiago campaign, the men and their officers felt abandoned, as men too debilitated to walk were still called on to besiege the city and later to guard the Spanish prisoners, protect the American positions against a possible attack from one or more of the

¹³³¹ Wheeler, *Dodge Commission Report*, vol. 3 (Testimony), 26.

¹³³² Cosmas, *An Army for Empire*, 255.

¹³³³ Gatewood, "An Experiment in Color," 305.

Spanish garrisons remaining on the island, and care for their sick comrades without any assurance that they would not be the next to become sick or even die from the widespread epidemics of dysentery, typhoid, malaria, and the dreaded, often fatal, yellow fever. Food and supplies were short, and transportation across the muddy rocky path that passed for a Cuban road became increasingly more difficult as packers, teamsters, and even the animals themselves were stricken with disease.¹³³⁴ The men wore filthy rags and ate food that was as monotonous as it was lacking in fresh fruits and vegetables, occupying dilapidated camps on the muddy terrain outside of Santiago. The commander of the Regular Sixteenth Infantry, Lt. Colonel Miner, reported this situation to the Inspector-General:

Since the landing of the regiment at Siboney, June 23, it has cheerfully endured almost every hardship known to military life. Sickness has made, is making, very serious inroads upon the strength and efficiency of the command. This is due to causes entirely beyond the control of the regimental commander. In the first place, the rations here have been of the most meager description. For weeks the command has subsisted on bacon, hard tack, sugar, and coffee. Canned meat was several times furnished, but without salt or vegetables. It had no savor, scant nutriment, and was but little liked. Once three or four potatoes to a man were issued, and once an onion was given to about every two men. On several occasions soldiers were without anything to eat. It was impracticable always to boil water. In the trenches fires could not be lighted, and not only was the water unboiled, but the ration of bacon was eaten uncooked. They fought by day and dug trenches by night. The climate is hot. The men were necessarily confined closely to their posts and to camp. Bathing facilities were lacking

¹³³⁴ Lt. Miley, Shafter's aide-de-camp, said that "The situation in regard to supplies for the American troops was now at its worst. The rains had been unusually heavy, and not only were the roads practically impassable for wagons, but the streams were so swollen that at times they were unfordable by pack-trains. A limited amount of food had, up to this time, been carried to the refugees, but on the 11th and 12th the supplies were entirely cut off from El Caney." Quoted in Sargent, *The Campaign of Santiago de Cuba*, vol. III, 21.

during most of the time. Facilities were lacking for change of underclothing. Under the fervid heat of a tropical sun, also in torrents of rain, they have marched, toiled, and fought on unsuitable rations. The close confinement in freshly dug trenches, the unavoidable drinking of impure water, the lack of protection from rain, sun, and dew, and the sleeping in wet clothing on the ground in mud, swamp, and trenches; the enforced personal uncleanness, have all contributed to render the men weak and unable to resist the fever and other diseases peculiar to hot climates. Every rule of hygiene has been unavoidably broken. That any should have survived only shows the excellent condition of the command at the beginning of the campaign. That many are now sick should cause no surprise. The stomach turns on a diet without vegetables, and the exposures the men have undergone have produced a fever from which few have escaped. All are weak and in no condition either for marching or fighting.¹³³⁵

Many of these problems should have been foreseen and actions taken to mitigate their effects. The Administration's plan was for the soldiers to stay in Cuba while they fought off the disease(s) ravaging their bodies, and then evacuate them once they were on the road to recovery. This was especially important for the yellow fever victims, as the available shipping was needed to prosecute the war and could not be risked to ship ill soldiers home, which would (it was thought) contaminate the ships and expose the citizens of the United States at home to the possibility of an imported yellow fever epidemic. Yet somehow no one bothered to find out if there were healthy localities to move the sick or if there was transportation available to move them – much less proactively build recuperation camps on higher ground inland before the

¹³³⁵ Report of Philip Reade, Inspector-General staff, July 23, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 379-380.

epidemics got out of hand. When pressed to move his soldiers to healthy camps, Shafter wired Alger on August 3, 1898 that such a move is practically impossible:

The railroad is not yet repaired, although it will be in about a week. Its capacity is not to exceed one thousand men a day at the best, and it will take until the end of August to make this move, even if the sick list should not increase. An officer of my staff, Lieutenant Miley, who has looked over the ground, says that it is not good camping ground. The country is covered with grass as high as a man's head when riding a horse, and up in the hills there is no water, and it will be required to pump water two miles. He also states that rainfall is twice as great as it is here, and the soil is a black loam that is not suitable for camping. Troops that have been sent to that locality have been housed in barracks. In my opinion there is but one course to take, and that is to immediately transport the Fifth Corps and the detached regiments that came with it to the United States.¹³³⁶

This was a month after yellow fever appeared in Shafter's camp; a month during which more soldiers were infected with yellow fever and other diseases (almost all soldiers eventually contracted malaria) – epidemics that were no longer hypothetical but real and increasingly widespread. By August 3 the war had been over for several weeks; engineers and replacements could have been moved to the island to build or repair the roads and other transportation links,¹³³⁷ set up the camps, and relieve men that had not been reported as sick but were known to

¹³³⁶ Shafter to Corbin, Aug. 3, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 200.

¹³³⁷ Alger hints at one possible reason why Shafter didn't plan in advance for road construction support. Secretary Alger reports that Shafter studied the 1741 British attack on Santiago. The British landed their troops at Guantanamo Bay and then marched overland. According to Alger, "The British committed the fatal mistake of exhausting the energies of their men in making and repairing roads while advancing from Guantanamo. The command met with but slight opposition from the Spaniards; yet 2,000 "died on their feet" during the march, and when the expedition was finally abandoned, a complete failure, the remnant of the army was still sixteen miles from Santiago and only forty miles from point of starting." Alger does not make this argument, and states that "General Shafter has since said that with this example before him he realized that the sole chance of success would lie in the very impetuosity of his attack." Perhaps impetuosity implied lack of infrastructure preparation to Shafter. Nevertheless, the British example

be disabled. Furthermore, it was possible to evacuate home all of the soldiers stricken with dysentery, typhoid, and/or malaria that were free from yellow fever and thus free from quarantine regulations and fears of contaminating ships and camps.¹³³⁸ A Camp Wikoff or equivalent should have been built as soon as the decision was made to send an expeditionary force to Cuba, as some recovery facility was needed somewhere and it did not make sense to establish a non-quarantine recuperation center on foreign shores.

A common saying among military professionals is that “amateurs study tactics, professionals study logistics.”¹³³⁹ Even if the quote was not used in the nineteenth century, the concept would have been familiar to anyone who commanded units during the Civil War¹³⁴⁰ – hence the generals commanding troops during the Spanish-American War. The transportation requirements for the medical logistics discussed in previous chapters were massive - and the Army planned to invade Cuba from offshore without a port or landing facilities, and then move inland across Cuban "roads" that anyone who had been there (such as the Cubans in the US, or America's Cuban rebel allies) would know were muddy trails that would not support transportation by cart.

does not excuse Shafter's unwillingness to request engineer support – an entirely different issue than using the soldiers to build roads rather than fight. It is, however, the reason why Shafter chose to land at Daiquiri and Siboney rather than Guantanamo. Alger, *The Spanish-American War*, 84. Shafter was aware of the countryside between these landing areas and Santiago, having interviewed Cuban General Garcia and others on Garcia's staff “to get from them as accurate an idea of the country to be traversed as possible.” Shafter to Corbin, Dec. 24, 1898, quoted in Alger, *The Spanish-American War*, 89.

¹³³⁸ When steps were taken to move some of the sick back to the United States in late July, ships such as the *Seneca* and the *Concho* were not properly equipped or provisioned to move seriously ill men, especially those stricken with malaria who could be expected to relapse during the voyage. Gillett, *The Army Medical Department*, 124. The Dodge Commission reported that “The unexpectedly large number of wounded, the severe sickness that rapidly developed, and the fear of and actual outbreak of yellow fever, made it necessary in Cuba to early and frequently send off hospital patients and convalescents, the large proportion of them on ordinary transports. Much and at times very serious complaint was made of the unfitness of the vessels, of their lack of cleanliness and sanitary provision, the bad quality of the water supplied, and the want of doctors, nurses, medicines, and hospital stores. From evidence submitted, the conclusion must be reached that many of the complaints were well founded.” *Dodge Commission Report*, vol. 1 (Report to the President), 186.

¹³³⁹ The Naval Supply Systems Command (NAVSUP) credited the quote to General Robert H. Barrow, USMC (Commandant of the Marine Corps) in 1980, but the author is certain that the quote was in use in the 1970s and likely before. “Logistics Quotations,” Naval Supply Systems Command (NAVSUP), http://www.au.af.mil/au/awc/awcgate/navy/log_quotes_navsup.pdf, accessed 1 July 2016.

¹³⁴⁰ For a discussion of the role of transportation in the Civil War, see Benjamin W. Bacon, *Sinews of War: How Technology, Industry, and Transportation Won the Civil War* (Novato, CA: Presidio Press, 1997).

Even if we set the needs of the sick aside, Shafter's siege almost collapsed from his inability to resupply his troops with food and ammunition. Between Commanding General Miles and his subordinate Fifth Corps commander Shafter, and Secretary of War Alger with his subordinate the Quartermaster General (responsible for transportation as well as supply), someone should have anticipated the supply problems and provided a capability to offload ships and transport supplies inland, using engineer troops to improve roads and construct a wharf. Once landed, it was obvious that help was needed to improve the existing infrastructure by improving roads, bridging streams, etc. and adding to the infrastructure by requesting additional pack mules and mule packers. The Quartermaster General's Report for 1898 does not list the transport of any engineer troops to Cuba after the initial landing; only immune regiments and several volunteer and regular regiments were shipped, to include two colored volunteer regiments.¹³⁴¹ There are no records of General Shafter requesting engineer troops after arrival in country, nor was there any attempt to request replacement mules or packers after documented losses which adversely affected the resupply of forces (100 drivers were requested, but not until July 7), although he did request shoes, nails, and blacksmith supplies for his existing mules.¹³⁴² Although the supply situation eased by mid-July, the shortages during the siege were both dangerous and unnecessary.

¹³⁴¹ Report of the Quartermaster General in *Report of the Secretary of War, 1898*, 443.

¹³⁴² Lt. Miley, Shafter's aide, reported that "The teamsters and packers as well as the troops contracted fevers, and this condition was sometimes so serious as to impair the efficiency of the transportation very much. The sick teamsters were generally replaced by soldiers, who could handle six-mule teams fairly well, but to supply the places of the sick packers was not so easy. ...The mules, as well as the horses, were affected very much like the men. Day by day these animals sickened and became unserviceable..." John D. Miley, *In Cuba With Shafter*, 88. The official record of all correspondence between Shafter and the headquarters in Washington shows that only two companies (100 men each) of engineers went as part of Fifth Corps (*Correspondence Relating to the War With Spain*, vol. 1, 33). Shafter did request lighters for unloading but no improvised port facilities. A report was made on July 4th that "The Louisiana arrived with mules and forage late on night of June 30 and was sent to Daiquiri that night, and discharged mules the following day..." indicating that some replacement mules may have been shipped, but they were clearly inadequate given reports of severe shortages. (Humphrey to Miles July 4, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 80). Shafter was offered by Alger any reinforcements he wanted that same day; he did not request transportation assets (*ibid.*, 82). On July 7, Shafter reported a shortage of lighters to offload supplies and noted that "It is with the greatest difficulty that one day's food can be issued at a time." (Shafter to Corbin, *ibid.*, 104).

Alger attempts to defend Shafter's choice not to repair the infrastructure in order to properly supply his army with the following argument:

The emergency demanded an immediate movement on Santiago, and thorough preparation was sacrificed to that estimate of the situation. ... When the army reached Santiago the necessity for precipitate action was intensified by local conditions and the question of health, in spite of innumerable difficulties of the most harassing nature. "The campaign," said General Ludlow, in his testimony before the War Investigation Commission, "was a race between the physical vigor of the men and the Cuban malarial fever that lay in wait for them, and if General Shafter had awaited to do all these things [constructing roads, docks, etc.], the army would have been on its back before the surrender instead of after, and we could not have taken Santiago as we did." Two weeks' delay, with disease as an ally, would have defeated the 5th Corps. A general less aggressive or less sensible to the necessity of an impulsive campaign would have failed by detaining his army in Cuba for preparations. Neither the necessity nor the conditions permitted a campaign on the lines laid down by tactics and military precepts.¹³⁴³

This argument presupposes that Shafter wait either offshore or at Siboney for the infrastructure to be built. If he had held up the army for days or weeks to do so, General Ludlow is correct – it would have delayed Shafter's arrival at Santiago until after the malaria epidemic (and possibly the yellow fever epidemic) was in full force. The men would have been too weak to take the Spanish defenses at El Caney and San Juan, and the campaign would have failed. However, the argument asserted herein was not that Shafter should have delayed tactical movements, just that he should have asked for reinforcements and materiel to fix his tenuous supply and transportation

¹³⁴³ Alger, *The Spanish-American War*, 294-295.

infrastructure while his troops besieged and later occupied the city of Santiago. There was no shortage of volunteer units that could have been assigned this task. Transporting these units and materiel to Siboney might have been an issue, but that merely shifts attention to another part of the deficient Quartermaster Department transportation capability, which also should have been anticipated and resolved once war seemed likely.¹³⁴⁴

Another problem preventing proper treatment of sick personnel in Cuba was a shortage of medical and other supplies. A third of the medical supplies for the Santiago campaign were not unloaded until after the surrender; some of the supplies were never unloaded. This was the fault of the Quartermaster Department, which had improperly loaded the ships and failed to provide offloading facilities or land transportation for movement of the supplies once offloaded. The Dodge Commission reported to the President, “The lack of supplies in Cuba for six weeks after the landing of the expeditionary force was so great, and its results at times so threatening”¹³⁴⁵ However, Shafter was also responsible for the allocation of these assets. Captain Munson asked Shafter for only one pack mule per regiment to transport urgently needed medical supplies, but his request was denied.¹³⁴⁶

Shafter was clearly guilty of minimizing the extent of illness in his command until it became so great that his force was militarily useless. This caught the Administration off guard and delayed remedial actions such as sending immune regiments and developing an evacuation plan.¹³⁴⁷ Gen. Miles had seen the extent of the early epidemics when he visited Santiago to assist

¹³⁴⁴ The Quartermaster Department didn’t need appropriations to search for possible shipping and to get estimates.

¹³⁴⁵ *Dodge Commission Report*, vol. 1 (Report to the President), 174-175.

¹³⁴⁶ Capt. Edward Munson, *Dodge Commission Report*, vol. 1 (Appendices), 709.

¹³⁴⁷ It wasn’t until August 1st that Shafter admitted that his command was unfit for active service. By that time, there were almost 4,300 men reported sick; many others were ill but not formally reported. Gillett, *The Army Medical Department*, 148; the number sick on August 1st is found in Shafter to Corbin, Aug. 2, 1898, *Correspondence Relating to the War With Spain*, vol. 1, 195. Alger stated in his history of the war that as late as July 29th the yellow fever situation was not severe, and that it wasn’t until August 2nd that Shafter informed him that troops needed to be

with the surrender negotiations before proceeding to Puerto Rico.¹³⁴⁸ As Commanding General, he had responsibility for the Fifth Corps and should have made certain that actions were taken to handle the increasingly ill soldiers and prevent a disaster in the making. In his history of the war, Alger stated that “history, as well as our own experience... has certainly demonstrated what was already known to the War Department before the war with Spain: that operations in the tropics by unacclimated troops during the rainy season are invariably accompanied by epidemics of sickness and great mortality the world over.”¹³⁴⁹ Shafter likewise testified that he expected significant illness from sending troops to Cuba during the rainy season, based on his study of prior campaigns: “I had no doubt that very soon we should be confronted with all the diseases incidental to that [tropical] climate.”¹³⁵⁰ Despite these statements, neither Alger nor Shafter took any steps beforehand to ensure that the troops would be properly cared for once the epidemics began. As a result, when Shafter reported that he could not establish recuperation camps in Cuba on August 3rd, it “was a great surprise” to the Secretary.¹³⁵¹

The result was sickness, suffering, and scandal. Both commanders and troops were so concerned about the current disease climate as well as the Sword of Damocles dangling overhead in the form of a lethal yellow fever epidemic that they wrote a damning public statement later referred to as the “Round Robin.” The suffering in camps in Cuba was intense, as detailed in the previous section. Troops died onboard ships not properly equipped for moving seriously ill soldiers, and they died on the trains leaving Camp Wikoff when discharged prematurely. The

moved as quickly as possible to avoid an anticipated yellow fever epidemic. Alger, *The Spanish-American War*, 262.

¹³⁴⁸ Miles stated that “before leaving Washington, I had been made aware of the appearance of yellow fever among our troops in Cuba and the serious situation which that fact presented. On arriving there I found that the contagion had increased rapidly, and the importance of immediate and decisive action was abundantly apparent.” Miles, “The War With Spain – II,” 755.

¹³⁴⁹ Alger, *The Spanish-American War*, 57.

¹³⁵⁰ Shafter, “The Capture of Santiago de Cuba,” 614.

¹³⁵¹ Alger, *The Spanish-American War*, 264.

newspaper headlines screamed of neglect – “Nine Men Out of Ten Sick” at Santiago, while the “Tide of Misery Still Flows” from Montauk Point.¹³⁵² Although much of the sickness was unavoidable once the decision was made to fight in Cuba during the summer sickly season (the typhoid and dysentery were avoidable in theory, although nineteenth century armies inevitably had large numbers of soldiers become sick and die of these two diseases), the suffering from inadequate, poorly constructed and poorly supplied camps was avoidable. Once again, the knowledge of what would happen was there, but the will to act on that knowledge was lacking.

¹³⁵² “NINE MEN OUT OF TEN SICK.: Col. Roosevelt Declares the Whole Army Is in Danger Unless Moved North at Once,” *New York Times*, Aug 5, 1898, 7; “TIDE OF MISERY STILL FLOWS: Sick Soldiers Return to Their Homes with Vivid Tales of Suffering in Camps,” *Chicago Daily Tribune*, Aug 28, 1898, 1.

We Also Served – Training and Typhoid in the United States

When McKinley issued two calls for volunteer troops in 1898, the first for 125,000 men and the second for 75,000, the number of soldiers mobilized was far in excess of what was needed and what the War Department could provide for. The first call-up was intended to cover the entire peacetime National Guard, part of a political compromise in Congress to allow for the expansion of the peacetime Army for war service. Although the call-up was for individuals, not for entire units, the War Department allowed Guard units to stay intact (with their own officers) if the majority of the individuals in the unit volunteered. The second call allowed for the enlistment of additional men to fill out the vacancies in these units created when men either failed to volunteer or failed the physical examination upon induction. The second call also allowed for ten regiments of immunes, five consisting of whites recruited in Southern states, the remainder of blacks who were presumed to have genetic immunity to yellow fever.¹³⁵³ The volunteer units were primarily sent to four large mobilization and training camps located across the South: New Orleans, Mobile, Tampa, and Chickamauga National Park in Georgia.¹³⁵⁴ The southern locations were chosen to allow troops to acclimatize for service in the Caribbean.

As discussed previously, the War Department assumed that the National Guard units would be fully armed, equipped, and clothed by their respective states before entering federal service. When this turned out not to be true, the War Department had to scramble to order arms, ammunition, clothing, tentage, quartermaster and medical supplies, etc. for these units, using an antiquated system of stovepiped bureaus laboring under cumbersome peacetime regulations. Not

¹³⁵³ The mix was later revised to four black, six white. Cunningham, “The Black ‘Immune’ Regiments,” 1.

¹³⁵⁴ Units mobilized and assigned to the Eighth Army Corps for service in the Philippines were sent to San Francisco before shipment overseas. Most of these were volunteer units from Western states.

surprisingly, most units were short of these items for the first few months of federal service and a lot of the items provided as a stopgap measure were of poor quality. For example, good canvas or other heavy-duty cloth was simply unavailable at the start of the mobilization. Cloth for uniforms was likewise in short supply; there was no khaki cloth in the United States and no manufacturer that knew how to produce it. Alger lists the number of items supplied by the Government in the few months between May and August, many items in the tens and hundreds of thousands.¹³⁵⁵

Although the National Guard units were supposed to be well trained, when the call-up was issued for the members to enlist in federal service, up to half of the members of each units either failed to enlist or failed the physical. As a result, both the first and the second call for troops inducted large numbers of untrained civilians, which meant that the units themselves were incapable of executing military drills and maneuvers.¹³⁵⁶ These civilians in uniform (when they were finally provided with uniforms) were also unfamiliar with Army regulations and many simply refused to obey orders they found inconvenient when they had a chance. By the end of May 1898, not a single volunteer unit in the First, Second, or Third Army Corps was ready for deployment.¹³⁵⁷ As discussed previously, the corps commanders saw their duty as preparation for command in the field, not command of training camps in the United States. Everything was considered temporary, and both men and commanders expected to be deployed at any time. As a

¹³⁵⁵ The list includes “546,338 blankets, 390,775 blouses, 523,203 trousers, 476,705 campaign hats, 153,167 canvas field uniforms, 782,303 shoes, 588,800 leggings, 622,211 dark-blue flannel shirts, 1,257,002 undershirts, 1,210,682 drawers, 38,963 axes, 4,888 trumpets, 34,344 camp-kettles, 58,662 mess-pans, 64,980 various kinds of tents, exclusive of shelter-tents, 372,379 shelter-tent halves, 16,618 horses, 20,182 mules, 5,179 wagons, 28,012 sets of single harness, and other articles of every kind in like proportion.” Alger, *The Spanish-American War*, 24-25.

¹³⁵⁶ Inspector-General Breckinridge reported that “In First Division over 30 per cent are raw recruits, and over 20 per cent more, while not absolutely raw, have seen less than one year's service in militia, and over 50 per cent have had no target practice.” The units were “not yet well in hand nor instructed in the first practical requirements of campaign and battle, such as marksmanship or extended order.” Breckinridge report to the Commanding General, May 29, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 276.

¹³⁵⁷ Cosmas, *An Army for Empire*, 119-120.

result, they failed to establish proper campsites and the infrastructure to support troops for months at a time, such as reliable and pure water supplies, sinks and latrines for the disposal of waste, and healthy campsites in locations with good drainage and sufficient sunlight.¹³⁵⁸

A particular problem in these camps was camp sanitation. Part of the problem was structural, as the responsibility for sanitation was split. The medical officers had the responsibility to oversee the sanitation procedures and ensure that camps, sinks, wells, etc. were located properly to prevent disease, but they could not order any company, battalion, or regimental commander to institute proper procedures or correct unsafe practices; they could only advise.¹³⁵⁹ The commanders had the authority to issue these orders, but many of the volunteer commanders were poorly trained and many saw no need for the restrictive measures pushed by their medical officers. Finally, the Army's inspector-general officers assigned to the divisions and corps were supposed to inspect regiments to ensure that they were following regulations, but they had no ability to rectify matters when they saw regulations being ignored or broken. They, too, could only report the situation to the commanders. In peacetime these reports would have gone to the Inspector-General of the Army (Breckinridge), but he accepted a volunteer Major General's commission at the start of the war and many of his subordinates took volunteer line commissions as well. The result of this was, in hindsight, very predictable. The volunteer commanders focused on deployment; for example, why move your campsite to a better campsite when you could be ordered to Cuba or Puerto Rico at any moment? Many commanders ignored their medical

¹³⁵⁸ See testimony in the *Dodge Commission Report*, vol. 3 (Testimony), 535, 542, 553; Trask, *War with Spain*, 159-160; Cosmas, *An Army for Empire*, 122-125.

¹³⁵⁹ The situation was described in testimony by Col. Van Hoff, Chief Surgeon, Third Corps: "Then, if a responsibility attaches for the dissemination of fever in that way, it would not be attached to anyone in your department for your failure or neglect to do what was necessary to be done, but to the company commanders for not seeing that their men obeyed these orders, or to the men themselves in disobeying the orders to that effect. Is that a fact? A. Of course the medical department in matters of that kind is powerless. We have no power to enforce our orders. We simply advise the proper military authorities that the droppings of typhoid fever are very dangerous to the camp and should be stopped, but there our responsibility stopped." Van Hoff, *Dodge Commission Report*, vol. 3 (Testimony), 261.

officers and the volunteer sites became filthy, strewn with feces and breeding grounds for typhoid fever.¹³⁶⁰ It was later determined that some units had brought the disease with them from state mobilization camps; when crowded together in the four mobilization centers the disease became epidemic.¹³⁶¹

One of the characteristics of the Spanish-American War is that many of the soldiers called up and trained for war, as well as some that fought, were volunteers. Professionals understood that more soldiers died of disease than enemy action during this era, but volunteers expected only glory, never disease or wounds, much less death.¹³⁶² An outbreak of sickness could cause panic, as happened to a regiment encamped at Fernandina, Florida:

Soon after our arrival three scores of men became sick, and from what the surgeons tell me I believe it was from infection brought up from Tampa, and we did all we could to get them in shape and treated them and all that, but there was difficulty about getting medical supplies and getting division hospitals organized, etc., but it seemed to strike the men with a panic, and they probably supposed they struck a place that was unhealthy and wrote to their friends, and there was a great deal said about it, and everybody thought they were going to

¹³⁶⁰ The inspector of the First Division, Third Corps, Major Benson, described the refusal of volunteers to obey sanitation regulations: "There was considerable trouble in getting the camp of the Third Tennessee properly policed. It required almost daily application to the brigade commander for a detail, and on one or two occasions they had nearly a whole battalion turned out for policing. All through, however, the entire time, the men would defecate in the woods near their camps; would pass in some cases directly beyond the sinks and then defecate. Charges were preferred, but when they came to trial you could do nothing with them. The courts would find a man not guilty or release him from the guardhouse without further punishment, and make such a travesty of it that it was useless to arrest men." Benson, *Dodge Commission Report*, vol. 4 (Testimony), 701-702. See also Cosmas, *An Army for Empire*, 268-269; Trask, *War with Spain*, 169.

¹³⁶¹ For example, the First Mississippi Vol. Infantry had developed typhoid fever in Jackson, Miss., before it was sent to Camp Thomas. They were the first to be diagnosed with typhoid at Chickamauga. Van Hoff, *Dodge Commission Report*, vol. 3 (Testimony), 263.

¹³⁶² Except perhaps a minor wound indicating a "Red Badge of Courage" *à la* Stephen Crane.

get sick, and as a result of this agitation the War Department thought it advisable to move the troops.¹³⁶³

Part of the sickness was self-inflicted, as the volunteer troops were notorious for ignoring sanitation regulations and defecating everywhere.¹³⁶⁴ A journal article reported the attitude of the typical volunteer at that time: he “had little discipline, and a slight knowledge of sanitation. He was willing to fight, as he had enlisted for that purpose, but he rather resented as an invasion of personal rights, any attempt to dictate what he should eat or drink. He did not accept in full faith the germ theory of disease, and was skeptical about the existence of bugs he could not see.”¹³⁶⁵ Lt. Parker’s evaluation of the 34th Michigan was an indictment of many volunteer units: “there was no law of health which these people did not utterly ignore, no excess dangerous to health which they did not commit.”¹³⁶⁶ Chief Surgeon Col. Greenleaf despaired of any improvement in the short term: “it is my opinion, in spite of the sanitary precautions, the percentage of sick will increase until the discipline of the volunteer troops has so far improved that we may be assured of compliance with the orders that are given for the preservation of their health.”¹³⁶⁷

Once disease did break out, conditions would get even worse. The soil at Chickamauga posed a particular challenge:

The soil is not adapted to camping. It is, as a rule, hard, tenacious clay. Such soil does not absorb. Slops, dirty water, grease, saliva, urine, vomit, etc., which it is impossible to keep from the ground in a closely packed camp, are not carried into the lower strata by

¹³⁶³ Brig. Gen. Louis H. Carpenter, *Dodge Commission Report*, vol. 3 (Testimony), 726.

¹³⁶⁴ This occurred both in the training camps and in combat. Captain Henry Romeyn agreed that the troops in Tampa “defecated promiscuously on the ground” but he added “not so much as they did in Cuba. At Siboney the filth was fearful.” Romeyn, *Dodge Commission Report*, vol. 4 (Testimony), 1091.

¹³⁶⁵ Gregory Dean Chapman, “Army Life at Camp Thomas, Georgia, During the Spanish-American War,” *The Georgia Historical Quarterly* 70, No. 4 (Winter, 1986): 651.

¹³⁶⁶ Parker, *History of the Gatling Gun Detachment*, 178.

¹³⁶⁷ Letter from Col. Greenleaf to the Adjutant-General July 7, 1898. *Report of the Secretary of War, 1898*, 740.

subsequent rains, but are confined to the thin layer of mold, 1 or 2 inches thick, which lies on the surface. This surface layer, in consequence, in a short time becomes thoroughly infected, breeding maggots, stench, and disease. ...It was a peculiar feature of this camp that all troops on arriving here were at once affected with a continuous and more or less severe diarrhea. Practically none escaped, whether officers or men, veterans or recruits. This intestinal derangement kept up for two or three weeks, sometimes longer, and there can be no doubt that in many cases by weakening and deranging the system it prepared the way for more serious ailments.¹³⁶⁸

Every single regiment in the First, Second, Third, Fourth, Fifth, and Seventh Army Corps had cases of typhoid fever during their time in federal service (there was no Sixth Corps). All but the Fifth Corps represented epidemics occurring at their base camps in the United States, which had higher mortality rates than the epidemics on the battlefield.¹³⁶⁹ Overall, about 82% of all sickness in the war was due to typhoid, resulting in 20,738 cases and 1,590 deaths from the disease.¹³⁷⁰ Although many Army medical officers blamed the typhoid outbreaks on the fact that Northern troops were moved to southern camps and were not acclimatized to the disease, the Typhoid Board established just after the war to study the epidemic determined that typhoid was so widely distributed across the United States that any regiment, regardless of location, was likely to have one or more cases occur within eight weeks of mobilization. This led the board to conclude that “there is not much difficulty in accounting for the origin of typhoid fever in our national encampments.”¹³⁷¹ Historically, typhoid fever had broken out within eight weeks of nineteenth century military campaigns in Africa; the board cited the Galeaka-Gaika war in South

¹³⁶⁸ Inspector Maj. James Parker on Camp Thomas Aug 19, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 423.

¹³⁶⁹ Cirillo, “Fever and Reform,” 363.

¹³⁷⁰ Reed et al., *Abstract of Typhoid Board Report*, 167. This was a summary of the work of the “Typhoid Board.”

¹³⁷¹ *Ibid.*, 172-173.

Africa (1877-78), the Zulu War (1878-79), the Afghanistan campaign of 1878-1880, the Egyptian campaign in 1882, the Nile campaign (1884-85), and French operations in Tunis (1881).¹³⁷²

What made the typhoid outbreak epidemic was a combination of overcrowding, poorly located camps, poor leadership, and above all misbehavior of the volunteer troops who disobeyed sanitary regulations and common sense, befouling their camps and making the spread of the disease all too easy. The Board concluded that “camp pollution was the greatest sin committed by the troops in 1898.”¹³⁷³ Although many doctors blamed the outbreak on contaminated water, the Board concluded that it was not an important factor in this epidemic. According to the report, flies were the carriers of the disease as well the persons and clothing of men who were carriers of typhoid; in addition, there was some dissemination from fecal dust in the air. It was estimated that the 60,000 men assigned to Camp Thomas generated 9.4 tons of feces and 21,000 gallons of urine each day, a tremendous disposal problem in camps that were considered temporary.¹³⁷⁴ Nevertheless, if Surgeon-General Sternberg’s recommendations on camp sanitation had been implemented (which required that feces in the sinks be covered with quicklime or dirt, punishment of men who failed to use the sinks, and disinfection of any waste from typhoid patients), the bodily wastes generated by these large bodies of men could have been safely handled and the spread of disease prevented. Once typhoid had broken out, the nineteenth century practice of simply moving troops to new encampments was not effective in preventing

¹³⁷² Ibid., 175. Note that the Typhoid Board is using the British and French experience with disease in Africa upon which to base their findings.

¹³⁷³ Ibid., 179.

¹³⁷⁴ Cirillo, “Fever and Reform,” 367-368.

the disease.¹³⁷⁵ In addition, one of the problems encountered by the Army Medical Corps in 1898 was the misdiagnosis of typhoid as malaria. The Typhoid Board reported that only half of the cases of typhoid were correctly diagnosed during the war.¹³⁷⁶ Sternberg later testified that “failure to make an early diagnosis, mistaking typhoid fever for malarial fever, led very largely to the camp infection.” He noted that this was not just an Army problem; “the profession all over the country have been making mistakes; it is a fact that in civil as well as in military life this is the case...”¹³⁷⁷

Once the typhoid outbreak reached epidemic proportions, it became a public relations nightmare for the McKinley Administration and a major morale and discipline problem for the Army. The press swarmed all over the camps, calling several a “pest hole.”¹³⁷⁸ The inevitable finger pointing began, with the press outdoing each other in an orgy of name-calling and scapegoating while the authorities rushed to avoid the blame.¹³⁷⁹ The *New York Herald* cited a visitor who called Camp Thomas “a perfect Hell on Earth. War itself would have been a paradise compared with the peace of this camp. I saw many awful sights there - men dying under the trees for want of a glass of water. I found men who had been sick with typhoid fever for days, and who had not received any medical attention. No one had even taken their temperature. It was

¹³⁷⁵ Reed et al., *Abstract of Typhoid Board Report*, 178-186. Surgeon-General Circular No. 1, April 25, 1898, *Report of the Surgeon-General of the Army, 1898*, 139-140. Part of the problem was that the circular was considered guidance to the commanders, and did not have the status as an order or regulation.

¹³⁷⁶ Reed et al., *Abstract of Typhoid Board Report*, 189-190.

¹³⁷⁷ Sternberg, *Dodge Commission Report*, vol. 6 (Testimony), 2822. See also Cirillo, “Fever and Reform,” 373.

¹³⁷⁸ “CAMP ALGER A PEST HOLE,” *New York Times*, Aug 6, 1898, 2. The *Times* blamed it on contaminated water, in line with the view that water was the means of transmission for typhoid. “In all the camp not more than two or three wells are at a decent distance from the dumping grounds into which goes all the refuse from a camp of 1,353.” The *Chicago Tribune* headed a section of an article on the camps “Camp Thomas a Pesthole” (“TIDE OF MISERY STILL FLOWS: Sick Soldiers Return to Their Homes with Vivid Tales of Suffering in Camps,” *Chicago Tribune*, Aug. 28, 1898, 2) See also Donna Thomas, ““Camp Hell”: Miami during the Spanish-American War,” *The Florida Historical Quarterly* 57, No. 2 (Oct., 1978): 141-156.

¹³⁷⁹ Millis, *The Martial Spirit*, 367.

awful.”¹³⁸⁰ When the governor of New York visited the camp of the 8th New York and announced that everyone who was sick could go home, 400 men suddenly appeared on sick call the next day.¹³⁸¹

If the epidemic had occurred in combat, similar to the malaria and yellow fever outbreak in the Fifth Corps, the soldiers and the public might have been more forgiving, regarding the sickness an inevitable outcome of military service; but the typhoid epidemic occurred among soldiers that were denied their chance for martial glory and instead relegated to drill, poorly cooked food, filthy camps, and now epidemic disease. The effect on morale was also predictable. Lt Arrasmith of the Second Infantry reported, “a great many of those young men came down here, lots of good material, and full of patriotism, anxious to go the front, and they were expected to leave from day to day ...when peace was declared, I never saw the bottom fall out of anything like it did here. It seemed that everybody was homesick, or wanted to go home, and there was nothing to keep that army together but discipline, and there was a great scarcity of it.”¹³⁸² An inspector reported from Chickamauga, “This park as a camping place is incurably infected. Every breeze carries a stench. The sick report mounts day by day. A general lassitude is apparent in men and officers.” Soldiers wrote their Congressmen for discharge, failed to obey their officers, and displayed a bored, even homesick, appearance; one regiment even mutinied. The commander of the Second Division, 2nd Corps, put as fine a face on the matter as he could; morale was good, he said, as good as it could be “considering the fact that there are in every

¹³⁸⁰ Statement from Chaplain Father James Dooley, quoted in the testimony of Brig. Gen Boynton, *Dodge Commission Report*, vol. 3 (Testimony), 74, reprinted in the New York Herald. Also cited in Chapman, “Army Life at Camp Thomas, Georgia,” 651. Boynton implied in his testimony that Dooley had been mislead; he cites an example where he was told (in Dooley’s presence) that 6,000 men were unfit to move from the camp, and when he checked, the “sick list of the entire army was 2,500” that day. Boynton, *Dodge Commission Report*, vol. 3 (Testimony), 74-75.

¹³⁸¹ Alger, *The Spanish-American War*, 423, citing a speech by Brig. Gen Boynton made on Sept. 20, 1900.

¹³⁸² Arrasmith, *Dodge Commission Report*, vol. 4 (Testimony), 850.

regiment in the service a large number of men who do not wish to remain in service, and who, knowing the war is over, wish to go home.”¹³⁸³

The temporary training camps in the South had hazards other than typhoid. Col. Thompson of the 2nd South Carolina testified to the Dodge Commission about the camp at Jacksonville, Florida. In complaining about the excessive rain, he stumbled across a different problem:

Q. Do you know of any special reason why your regiment should have so much sickness?

A. There were about 6 acres of rain water around there. Q. How long does it lie on the

ground? A. I saw this rain water gathering about; I investigated, and found it had been there

since Sunday two weeks ago. Mosquitoes were swarming over it, and men told me that it

had been there all summer. Q. A disagreeable odor arose from it? A. Yes, sir; but I did not

notice that as much as I did the mosquitoes.¹³⁸⁴

The Commission was concerned about the possible miasma from the “disagreeable odor,” but it is clear today why the soldiers had problems with malaria and possibly yellow fever in the camps.¹³⁸⁵

The Inspector-General of the Army reported that “Shortly after the signing of the protocol orders came for sending some of the regiments home to be mustered out. Those not so ordered became more discontented than over, and began to importune their people at home and elsewhere, by private letters and by letters written to the press, to get their regiments mustered out also.” It got so bad that he suggested a personal review of the command by the President of

¹³⁸³ James Parker, inspector at Camp Thomas. *Dodge Commission Report*, vol. 1 (Appendices), 424. Cosmas, *An Army for Empire*, 269. Brig. General Davis, *Dodge Commission Report*, vol. 4 (Testimony), 1264.

¹³⁸⁴ Testimony of Col. Thompson, *Dodge Commission Report*, vol. 3 (Testimony), 358-359. Thompson testified that his regiment suffered from fever, “but I never heard they had typhoid. They probably had measles and mumps, and a large number had fever, but whether it was typhoid I do not know” (Ibid.). There was definitely malaria in Southern camps; for example, Asst. Surgeon C. C. McCulloch, Jr. testified that he had 57 cases in his Fourth Corps hospital ward in West Tampa. (Ibid., 439)

¹³⁸⁵ Thompson, *Dodge Commission Report*, vol. 3 (Testimony), 358-359.

the United States. Breckinridge told the President that “There is much to be said showing how beneficial and needed such a visit is: but you will appreciate better than I can tell the disappointment and consequent depression many men must feel, especially the sick, when they joined together for a purpose and have done so much to show their readiness and worthiness to serve their country in the field, but find themselves leaving the military service without a battle or campaign.” McKinley declined.¹³⁸⁶ By August, when it was clear to the men in these camps that they would be denied an opportunity for active service, they “became discontented, and the order for breaking it [the camp] up was hailed with great satisfaction.”¹³⁸⁷

So bad it was impossible to walk

The previous discussion has shown that there is ample testimony available indicating that the senior leadership of the Army expected disease epidemics to occur among the troops deployed. What was not expected, however, was that epidemics among the troops mobilized and assigned to training camps within the United States would prove to be the major source of both illness and death during the Spanish-American War. Table 5 breaks down the number of cases and deaths by disease based on the Surgeon-General’s official report. Note that the total deaths (1,715) do not match the previously reported numbers derived from Adjutant-General (AG) reports (2,565), as the data were incomplete at the time the table was constructed – it is useful only as a means of

¹³⁸⁶ J. C. Breckinridge, “REPORT OF TOUR OF DUTY BY MAJ. GEN. J. C. BRECKINRIDGE, U. S. VOLUNTEERS, AS COMMANDER OF THE SEPARATE ARMY IN THE FIELD, WITH HEADQUARTERS AT CAMP GEORGE H. THOMAS; AND AS COMMANDER OF THE FIRST ARMY CORPS WITHIN THE UNITED STATES, WITH HEADQUARTERS AT LEXINGTON, KY,” *Report of the Secretary of War, 1898*, Appendix C, 603. Breckinridge to McKinley, Aug. 10, 1898. Ibid.

¹³⁸⁷ *Dodge Commission Report*, vol. 4 (Testimony), 209.

comparing relative cases and deaths by disease rather than for absolute numbers. In general, the AG numbers should be considered more reliable.¹³⁸⁸

Table 5: Sick Reports and Deaths by Disease

Disease	Sick	Death	Sick % 1389	Death % 1390
Typhoid	12,125	640	7%	0.4%
Malaria	38,833	97	23%	0.1%
Dysentery	33,715	39	20%	0.0%
All ¹³⁹¹	158,460	1,715	95%	1.0%
Mean Strength	167,168			

(Source: *Report of the Surgeon General, 1898*, 133)

It is apparent from Table 5 that the majority of deaths were from typhoid, although the majority of admissions were from malaria. Table 6 provides a further breakdown of typhoid cases by location. From Table 6, the total number of typhoid cases at Santiago and in Puerto

Table 6: Cases of Typhoid Fever by Location

Camp or district.	Regimental hospitals.		Field hospitals.		General hospitals.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Camp Wikoff	85	1	24		552	105
Camp Meade	956	43	1,347	31		
Camp Alger	653	11	80		450	57
Camp Thomas	1,380	79	1,094	74	952	113
Tampa and Jacksonville, Fla	1,797	14	2,037	245	1,193	65
Santiago, Cuba	58	2	116	3	68	
Puerto Rico	204	4	343	25	381	34
Total	5,133	154	5,041	378	3,596	374

(Source: *Dodge Commission Report*, Vol. 1 (Appendices), 177)

¹³⁸⁸ The Surgeon-General's report states that "The fact that the mean strength for September is only 130,763 shows that all the reports for that month have not as yet been received" (*Report of the Surgeon General, 1898*, 132). The Dodge Commission Report was prepared later in 1898 by the Adjutant-General (AG) These totals also differ with Table 9: Casualties During the War With Spain, 1898, which is also based on the data reported to the Dodge Commission by the AG. As the AG has the responsibility for tracking who is and isn't in the army, his numbers are generally considered to be the official numbers for the Army.

¹³⁸⁹ Measured as Number Sick / Mean Strength

¹³⁹⁰ Measured as Number Deaths / Mean Strength

¹³⁹¹ No breakout data is provided for yellow fever deaths

Rico was 1,170 or 8.5% of the total and number of deaths was 68 (7.5% of total), leaving 91.5% of the cases and 92.5% of the deaths occurring in the United States at the various training camps. It is hardly surprising that the first major investigation at the end of the war was the Typhoid Board investigation into the causes of the wartime typhoid epidemics.

The Typhoid Board drew 57 conclusions from its investigation. In addition to valuable deductions about the cause and spread of typhoid (ruling out miasma and pythogenesis for example), it identified the major contributing factors to the epidemic. First, every regiment had carriers for the disease: “Typhoid fever is so widely distributed in this country that one or more cases are likely to appear in any regiment within eight weeks after assembly... A man infected with typhoid fever may scatter the infection in every latrine in a regiment before the disease is recognized in himself.”¹³⁹² However, typhoid might not have appeared in epidemic form if sanitary regulations had been properly enforced, although it could not have been entirely prevented.¹³⁹³ The greatest contributor was the poor discipline of the volunteer soldier: “Camp pollution was the greatest sin committed by the troops in 1898,” aided by poor placement of campsites, a failure to relocate campsites, and poor disposal techniques for fecal material.¹³⁹⁴

The Dodge Commission testimony contains repeated tales of campsites strewn with feces. Major Benson, an inspector for the 3rd Corps, described the behavior of the volunteers: “the entire time, the men would defecate in the woods near their camps; would pass in some cases directly beyond the sinks and then defecate.... I went out on six or seven occasions to witness maneuvers, battle exercises, etc., and throughout other portions of the whole camp at

¹³⁹² Conclusions 6, 8, 9, and 14. Reed et al., *Abstract of the Typhoid Board Report*, 174-179.

¹³⁹³ “With typhoid fever as widely disseminated as it is in this country the chances are that if a regiment of 1,300 men should be assembled in any section and kept in a camp, the sanitary conditions of which were perfect, 1 or more cases of typhoid fever would develop.” Conclusion 11. Ibid., 178.

¹³⁹⁴ Conclusions 15-19, 22. Ibid., 179-181.

Chickamauga. In some places it would be so bad that the men would find it almost impossible to walk.” Col. Frank Baldwin testified that the air in and around the regiments was so disagreeable because of the fecal matter scattered about that in some cases it “caused him to turn aside.”¹³⁹⁵ Much of the fecal matter was contaminated with the typhoid bacillus; which made it easy to contaminate foodstuffs through flies, direct contact, and possibly airborne dust. In his *Notes on Military Hygiene* (1898), which was unfortunately required reading material only for the Regular Army officers attending the Infantry and Cavalry School, Woodhull noted that the use of latrines (sinks) “should be strictly enforced. There is no more distinct sign of ill-disciplined troops than the soil pollution that follows their neglect.” The 1904 edition added “apart from its intrinsic nastiness it is a powerful factor in the spread of disease.”¹³⁹⁶ The Volunteer line officer likely never heard of Woodhull’s book, making sanitary inspections by Army Medical Corps professionals and the enforcement of sanitation procedures by the senior officers (who were Regulars) all that more necessary.

The limited understanding of typhoid by the nineteenth century doctor also contributed to the epidemics. Col. Greenleaf, chief surgeon for the armies in the field and one of the senior doctors in the Army Medical Corps,¹³⁹⁷ reported on the epidemics:

By far the most serious, is typhoid fever, of which in each camp there are a number of cases, which, in spite of preventive precautions, is steadily on the increase. As this is a water-borne disease, the greatest care has been exercised in the selecting of the sources of water supply and of the examination of the water by every means known to science, the result showing

¹³⁹⁵ Benson, *Dodge Commission Report*, vol. 4 (Testimony), 701-702; Baldwin, *ibid.*, 969-970.

¹³⁹⁶ Woodhull, *Notes on Military Hygiene* (1898), 162; Alfred Woodhull, *Notes on Military Hygiene for Officers of the Line* (New York: John Wiley & Sons, 1904), 121.

¹³⁹⁷ Greenleaf was also one of 14 Civil War veterans still serving in the Medical Corps. Gillett, *The Army Medical Department*, 118.

that the regular water supply at the several camps is as yet free from any dangerous element, and there is a consensus of opinion among the medical officers that the germs of the disease are obtained from infected water sources outside the camp limits, such as wells in the neighboring farms and infected water in adjoining towns which are constantly visited by the troops.¹³⁹⁸

Unfortunately for both Greenleaf and the troops, the Typhoid Board later concluded that water was not the culprit; direct contact and flies accounted for most of the person-to-person transmission.¹³⁹⁹ By looking at the water supplies and not attempting to control the campsite contamination, the flies, and the dust, preventive measures were directed at the wrong target – and thus ineffective.

Surgeon-General Sternberg bears some of the blame for the outbreaks. He later defended his record by comparing statistics from the war to earlier outbreaks during the Civil War, noting that troops “only suffered at the rate of 12.37 per thousand of strength during the twelve months [of 1898], whereas the troops of the Civil War suffered at the rate of 19.71 per thousand. It can be attributed only to the active preventive measures that were instituted, and especially to moving the troops to fresh camp sites and the greater care exercised in the disposal of excreta.”¹⁴⁰⁰ There are two problems with this analysis: first, he violates a rule many learned from their parents – “Don’t justify bad behavior by pointing to other bad behavior.” If the progress of medical science means anything, then the results of 1898 should have been better than 1861-1862;¹⁴⁰¹ the fact that they were not significantly better is troubling. Second, by using a twelve-month

¹³⁹⁸ Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613.

¹³⁹⁹ Reed et al., *Abstract of Typhoid Board Report*, 178-186.

¹⁴⁰⁰ George Sternberg, “Sanitary Lessons of the War,” *Journal of the American Medical Association* XXXII, No. 23 (June 10, 1899): 1287-1288.

¹⁴⁰¹ He also draws his numbers for the Civil War from the initial months of the war (1861-62), which were a steep learning curve for the medical profession and thus represented the worst case.

average, he obscures the high sickness rates in the late summer months (although to his credit he does explicitly provide the data to include a graph of rates by month, shown in Figure 10). It is true that sanitation measures, when finally enforced in the fall, sharply reduced the number of typhoid cases – but the peak numbers never should have occurred, as they represented gross negligence on the part of the commanders and the Medical Department. Sternberg failed to have inspectors report the situation in the camps during the summer when the epidemic was beginning, acting only after it had gotten totally out of control. Although he did not have the authority to rectify the matter himself, lacking command authority over the camp sanitation enforcement (a prerogative of the line commanders), he did have the ear of the Commanding General and the Secretary of War, either of whom could have forced corrective action down the chain of command – which did occur after the scandal began over the high disease and mortality rates combined with the inadequate medical facilities early in the camp epidemics.

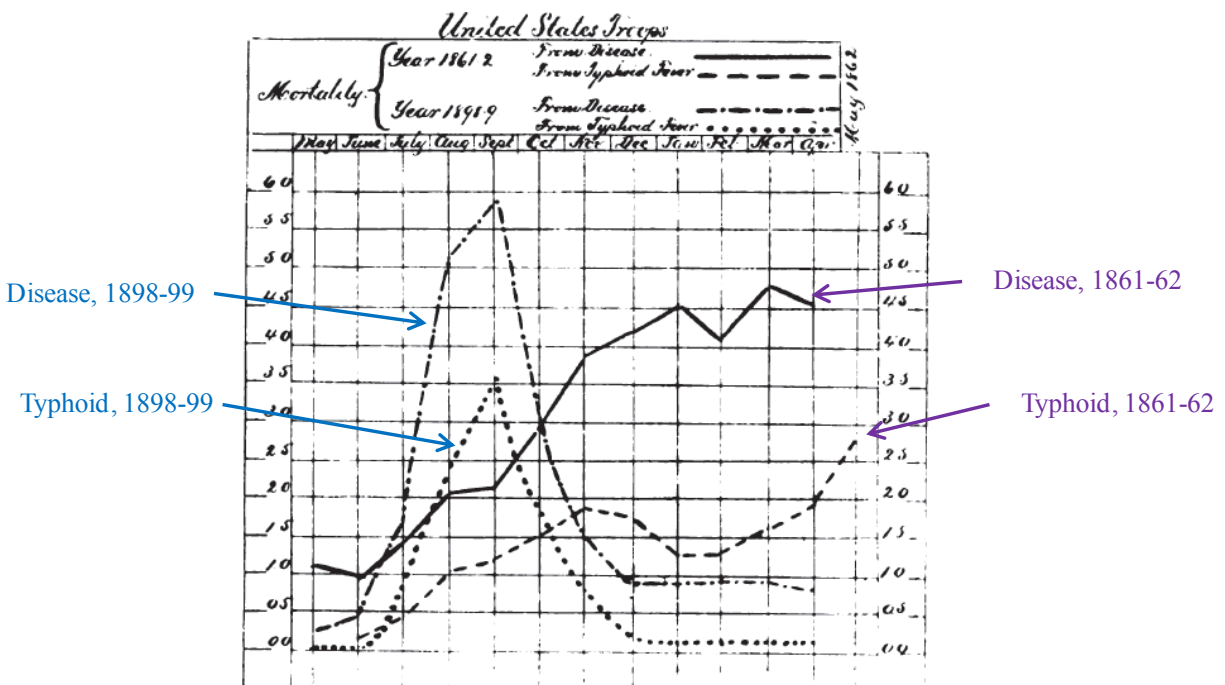


Figure 10: Disease Mortality Rates, 1898-1899 versus 1861-1862
(Source: Sternberg, "Sanitary Lessons of the War," 1287)

Sternberg attempted to defend his record in his annual *Report of the Surgeon General* in 1899, revisiting the issues of 1898.¹⁴⁰² His report on the sanitary habits of the volunteer soldier included the following:

The officers and enlisted men of our volunteer regiments were, as a rule, intelligent, patriotic, and brave, but they were not disciplined. Trained officers can not at once establish discipline among untrained troops; and when both officers and enlisted men are without military experience, it is evident that, with the best material, time will be required for the establishment of discipline. And in the absence of discipline it is impracticable to enforce proper sanitary regulations in camp. The Surgeon-General may formulate sanitary regulations, and the general commanding an army corps or a division may issue the necessary orders, but in the absence of discipline these orders will not be enforced. A reckless recruit will drink the water which has been condemned as unsafe, and at night will defile the ground in the vicinity of his tent rather than visit the company sink, which possibly is in a disgusting and unsanitary condition because of a failure to carry out the orders to cover the surface of excreta with fresh earth or quicklime or ashes three times a day.¹⁴⁰³

He also blamed the Volunteer Army for recruiting men aged 18 – 21 years, which he claimed would “break down readily under the strain of war service,” and for recruiting “men distinctly unfit for active service...because they had a record of several years' service in the National Guard.”¹⁴⁰⁴ He drew public attention to the publication of his circulars, which specified

¹⁴⁰² Before 1976, the United States operated on a July – June fiscal year (FY), so the 1898 fiscal year ended June 30, 1898. However, the 1898 report was not submitted until November 10, 1898 so it included a full section on the war, and most data ran through September. However, since the latter part of the war actually occurred in FY 1899, it was also reported on in the 1899 report submitted October 12, 1899.

¹⁴⁰³ *Report of the Surgeon-General, 1899*, 208

¹⁴⁰⁴ *Ibid.*, 37.

disinfection or covering of fecal material; Circular #5 issued on August 8 stated that “The attention of medical officers is invited to Circular No. 1...the extensive prevalence of typhoid fever in camps of instruction indicates that the sanitary recommendations made in this circular have not been carried out.” This was followed by Circular No. 7 (September 5, 1898) drawing “the attention of chief surgeons and of all medical officers on duty with troops in the field” to several paragraphs on the disposal of waste from the Manual for the Medical Department.¹⁴⁰⁵ What Sternberg would not admit was that any leader needs to do more than issue directives; he also has to make sure those directives are carried out.

In his “Sanitary Lessons of the War,” Sternberg provided the following defense, in addition to reprinting the various circulars and other missives:

The medical officers of regiments were appointed by the governors of States, and as a rule were competent professionally, but they were called upon to assume new responsibilities for which they had no special training. Unfortunately, hygiene and practical sanitation are subjects which receive little attention in our medical schools or from physicians and surgeons engaged in the practice of medicine. But even in those cases in which the regimental surgeon was fully aware of the importance of camp sanitation and urgent in his sanitary recommendations, he was unable to control the sanitary situation unless the regimental and company officers enforced the necessary measures for protecting the health of the command.¹⁴⁰⁶

He then reprinted his comment from his annual report on the sanitary habits of the volunteer cited previously. His comments are all true, and call attention to some of the deficiencies of the citizen-soldier, that ideal soldier so zealously proclaimed by those ideologically inclined to fear

¹⁴⁰⁵ The circulars were reprinted in Sternberg, “Sanitary Lessons of the War,” 1289.

¹⁴⁰⁶ Sternberg, “Sanitary Lessons of the War,” 1290.

the professional. However, “he doth protest too much”; Civil War veterans like himself should have been all too familiar with the habits of the American volunteer, and the Boys of ‘98 were fundamentally the same as the Boys of ’61: enthusiastic, but sure of their rights and resentful of being told what to do, especially with respect to personal habits.¹⁴⁰⁷

However, Sternberg should not be blamed for matters out his control. At least equal blame lies with the chain of command, from the Commanding General through the corps and divisional commanders to the regimental commanders that set up the camps and enforced (or failed to enforce) the sanitary and other regulations. Sternberg’s statistics show that the typhoid declined markedly when commanders finally acted, moving troops out of the filthy malodorous camps to clean sites with rigidly enforced sanitation. There is no excuse for not having acted sooner, and the blame is shared between the medical professionals who either did not act or too quickly accepted the indifference of the line commanders and those commanders who failed to care sufficiently about the rising number of cases of serious illness among their troops. The typhoid Board also noted deficiencies in the early 1898 understanding of typhoid, particularly in its spread outside of contaminated water supplies, and the difficulty of differentiating between typhoid and malaria.

One of Sternberg’s other lessons from the war was the issue of diagnosis, as he noted:

The differential diagnosis of typhoid and malarial fevers can be made at an earlier date and with much greater certainty by a microscopic examination of the blood and the application of the Widal test than was practicable before the discovery of the malarial parasite and of the specific agglutinating action of blood serum from a typhoid case upon a culture of the bacillus. But these scientific studies are so recent that the profession generally still depends upon specially trained experts for their application to the diagnosis of doubtful cases. It is to

¹⁴⁰⁷ Chapman, “Army Life at Camp Thomas,” 651.

be hoped, however, that the time is not far distant when every qualified practitioner of medicine will be prepared to apply these invaluable means of diagnosis.¹⁴⁰⁸

His final lesson implicitly allocates part of the blame for the errors of 1898 on another actor also culpable for the problems of mobilization: Congress, and the American people who chose and directed the actions of their representatives. “A trained medical corps hardly adequate for an army of 25,000 men can not control the sanitary situation when this army is quickly expanded to 250,000” Sternberg noted, and the small inadequately prepared Medical Corps and the Army too small for its new role on the international stage was the direct result of the parsimonious Congresses of the Gilded Age and especially the Democratic/Populist opponents of a professional army capable of expanding for wartime missions. These decisions were made based on the political wishes of a sizable portion of the electorate, but the outcomes of those decisions cannot be blamed on the democratic process, but rather on the men¹⁴⁰⁹ who made those decisions. For better or worse, a tiny standing army without sufficient trained, qualified reserves and extensive stockpiles for wartime consumption cannot adequately respond to the political whims of a Government that decides to go to war and only then authorizes preparations for the military to prepare for war. Reliance on the citizen-soldier is a virtue only when the nation is prepared to accept the limitations of the untrained volunteer; in 1898 those limitations became all too apparent in the field of Medicine as they were in the field of War.

¹⁴⁰⁸ Sternberg, “Sanitary Lessons of the War,” 1292-1293.

¹⁴⁰⁹ At that time, only men had national suffrage and served in Congress.

CHAPTER 13

THE END OF THE ERA OF DISEASE

Ending the War

The cessation of hostilities between Spain and the United States on August 12, 1898 left the disposition of the Spanish overseas empire to the negotiators of the peace treaty in Paris. The United States had humiliated Spain with overwhelming victories in Cuba, Puerto Rico, and the Philippines. The Spanish Caribbean squadron under Admiral Cervera and the Spanish Asiatic Squadron under Admiral Montojo were destroyed in one-sided battles that left the Spanish fleets beached or sunk, and the American fleets intact. Over 24,000 Spanish soldiers in Eastern Cuba had surrendered, and the remainder in Havana and elsewhere had little appetite for renewed battle. Although the invasion of Puerto Rico had been halted not long after it had begun, American forces had triumphed on every battlefield (howsoever small) and had been left in possession of large portions of the island. In the Philippines, the Spanish garrison had surrendered itself and the capital of the colony the day after hostilities had finished. Although the Spanish later protested that the act had occurred after the ceasefire had begun, the United States had *de facto* possession of the capital (and thus the islands) by force of arms.¹⁴¹⁰ Even if the United States had completely yielded the islands back to the Spanish crown, their sovereignty

¹⁴¹⁰ Henry Cabot Lodge laid out the Spanish situation at the end of the war: “Her [Spain’s] sea power was shattered and entirely gone in the Pacific and in American waters. Manila bay was in the hands of Dewey, and the surrender of the city waited only for his demand. Cuba could not be relieved; Santiago province was in American hands, and the rest of the island would go the same way as fast as the United States could land troops and capture ports. Puerto Rico was half gone, and the American columns were marching as rapidly as possible to complete conquest of the island... Clearly it was high time for peace...” Lodge, *The War With Spain*, 222.

was near an end; Spanish garrisons across the island had already surrendered to Filipino rebels and there were no additional forces to be sent from Spain.

Despite the successes of American forces during the brief war, not even the United States was sure what it wanted, much less what it could negotiate from Spain. As reported previously, the aim of the McKinley Administration for the Philippines was at various times a naval base; the capital, Manila; the main island, Luzon; and the entire archipelago.¹⁴¹¹ The Teller Amendment prohibited our annexation of Cuba, but there was widespread sentiment that the Cuban rebels were incapable of self-government. For example, General Shafter told a reporter soon after the war that the Cubans “are no more fit for self-government than gunpowder is for hell.” The *New York Times* editorialized that “We are bound by a pledge which we must observe in good faith to allow the people of the Island of Cuba to set up a Government of their choice. They are obviously incapable of doing this at once.”¹⁴¹² Puerto Rico, on the other hand, had been strongly recommended as center for American naval power by Alfred Thayer Mahan and others, but no formal decision had been made.¹⁴¹³

When McKinley convened his cabinet to discuss the basis upon which to make terms with Spain, the independence of Cuba, the annexation of Puerto Rico, and the cession of an island in the Ladrones for coaling (most likely Guam, already under American occupation) were all

¹⁴¹¹ Trask discusses the evolution of the President’s aims in *The War With Spain*, 454-455.

¹⁴¹² *New York Times*, Dec. 19, 1898, 2; *New York Times*, Aug. 12, 1898, 6. Both quoted in Louis A. Pérez, Jr., “Cuba between Empires, 1898-1899,” *Pacific Historical Review* 48, No. 4 (Nov., 1979): 484-485.

¹⁴¹³ “Puerto Rico, considered militarily, is to Cuba, to the future Isthmian canal, and to our Pacific coast, what Malta is, or may be, to Egypt and the beyond; and there is for us the like necessity to hold and strengthen the one, in its entirety and in its immediate surroundings, that there is for Great Britain to hold the other for the security of her position in Egypt, for her use of the Suez Canal, and for the control of the route to India. It would be extremely difficult for a European state to sustain operations in the eastern Mediterranean with a British fleet at Malta. Similarly, it would be very difficult for a transatlantic state to maintain operations in the western Caribbean with a United States fleet based upon Puerto Rico and the adjacent islands.” Alfred Thayer Mahan, *Lessons of the War with Spain And Other Articles* (Boston: Little, Brown, and Co., 1899), 28-29.

agreed to without discussion.¹⁴¹⁴ It was the Philippine question that would dominate this and later discussions within the Administration. If the United States took any action other than annexation of the islands on a temporary or permanent basis, what would happen to the rest of the former colony? A return to Spain would lead to the continuation of the civil war in the islands; as in Cuba, the natives were considered to be incapable of self-rule. In addition, if the United States did not take control of the island, there was a significant risk that other nations would step in – particularly Germany.¹⁴¹⁵ The surrender terms called for the United States to “occupy and hold the city, bay, and harbor of Manila, pending the conclusion of a treaty of peace which shall determine the control, disposition, and government of the Philippines.”¹⁴¹⁶

In the end the President finally weighed in, having changed his mind about the wisdom of annexing the entire archipelago:

It is undisputed that Spain's authority is permanently destroyed in every part of the Philippines. To leave any part in her feeble control now would increase our difficulties and be opposed to the interests of humanity. The sentiment in the United States is almost universal that the people of the Philippines, whatever else is done, must be liberated from Spanish domination. In this sentiment the president fully concurs. Nor can we permit Spain to transfer any of the islands to another power. Nor can we invite another power or powers

¹⁴¹⁴ The President gave the Spanish terms upon which he would end the war: (1) relinquishment of sovereignty over Cuba and the evacuation of Spanish troops from the island; (2) cession of Puerto Rico and “an island in the Ladrones to be selected by the United States; and (3) US occupation of Manila pending a peace treaty that will settle the future status of the Philippines. Secretary Day to Spanish Foreign Minister Almodovar del Rio, July 30, 1898. *Foreign Affairs 1898*, 821

¹⁴¹⁵ Trask, *War with Spain*, 428-429; Lodge, *The War With Spain*, 227-229.

¹⁴¹⁶ *Correspondence Relating to the War With Spain*, vol. 2, 751; Lodge, *The War With Spain*, 224-225. Also quoted in Chadwick, *Relations*, vol. 2, 427; 432.

to join the United States in sovereignty over them. We must either hold them or turn them back to Spain.¹⁴¹⁷

The United States was to annex the entire archipelago, sweetening the negotiations with Spain by offering the sum of twenty million dollars for the islands. A peace treaty was signed on December 10, 1898. Spain yielded all claims to Cuba on the basis of an American occupation. She ceded to the United States the islands of Puerto Rico, Guam, and the entire Philippine island archipelago. Various other terms were included, such as the United States paying for the transportation of all Spanish troops including those garrisoned in the Philippines and America assuming all properties in these islands formerly belonging to the Spanish Crown. The US and Spain mutually relinquished all indemnity claims for Cuba, although the US agreed to settle all claims for losses in Cuba made by American citizens.¹⁴¹⁸

The long-term status of Cuba was left unsettled by the peace treaty, although the Teller Amendment prohibited annexation of the island by the United States. In the end, the US occupied the island under a military government from 1899 to 1902 under the Platt Amendment.¹⁴¹⁹ There was considerable resentment of the American occupation by the former Cuban rebels, but unlike the Philippines, it never broke out in an insurrection against the United States government.¹⁴²⁰ The Cuban Liberation Army dissolved, seeking new opportunities for

¹⁴¹⁷ Mr. Hay to Mr. Day, *Foreign Affairs 1898*, 937. Also quoted in Chadwick, *Relations*, vol. 2, 462.

¹⁴¹⁸ Mr. Moore to Mr. Hay, Dec. 10, 1898. *Foreign Relations*, 1898, 965.

¹⁴¹⁹ The Amendment (which was also ratified by the Cuban government in 1901) gave the US a right to intervene in Cuban affairs and the right to a coaling and naval station in Cuba (which became the lease on Guantanamo Bay). It ceased to be valid by mutual agreement in 1934. "The United States, Cuba, and the Platt Amendment, 1901," Office of the Historian, US State Department, <https://history.state.gov/milestones/1899-1913/platt>, accessed Feb. 5, 2015. The province of Santiago was occupied from August 1898 to the end of that year simply by right of conquest; that occupation was formalized in the treaty between Spain and the United States.

¹⁴²⁰ There was, however, some talk of it among dissident former rebels. See Pérez, "Cuba between Empires," 473-500.

civil employment.¹⁴²¹ Pursuant to the Teller Amendment, the Military Government of Cuba ended and the island was returned to its inhabitants in May 1902.¹⁴²²

The final outcome of the war was a series of investigations into the cause and responsibility for the various disasters occurring during the mobilization, training, deployment, combat, and follow-on treatment of the sick. These included the shortage of supplies, uniforms, and food at the front, the manifold problems of supply in Cuba to include all of the equipment either left behind at Tampa or never unloaded from the transports, the shortages of doctors and medicines in Cuba and during the transport of sick soldiers home, and the lack of readiness of the quarantine and hospital areas at Camp Wikoff. The major brunt of the investigations, however, was over the large numbers of sick and dying soldiers from typhoid in the mobilization camps and from malaria and yellow fever in the Fifth Corps in Cuba. The investigation into the typhoid epidemic was discussed previously (the Typhoid Board), but the most important post-war investigation was created by the President in September, 1898. He established an investigating commission consisting of active and retired Army officers aided by a few civilians. The commission was chaired by former Civil War Maj. Gen. Grenville Dodge, later a well-known railroad engineer and former Republican congressman. Formally designated as the “Commission Appointed by the President to Investigate the Conduct of the War Department in the War With Spain” it is better known as the Dodge Commission. It produced eight lengthy volumes of reports, to include six volumes of testimony (3,800 pages total), obtaining testimony from all of the senior officers in the war and anyone else who wished to testify, from the lowliest private to

¹⁴²¹ At one time there were plans for the Liberation Army to be absorbed into a colonial military; this would keep the former rebel soldiers employed and occupied, while freeing up US Army regulars for transfer to the Philippines. However, an economic boom after the end of the rebellion and war negated the need for a colonial force. There was, however, a paramilitary Rural Guard formed under US supervision. Louis Perez, Jr., “Supervision of a Protectorate: The United States and the Cuban Army, 1898-1908,” *The Hispanic American Historical Review* 52, No. 2 (May, 1972): 250-271.

¹⁴²² Wood, “The Military Government of Cuba,” 30.

the well-wishing civilians that visited the hospitals and camps during the war.¹⁴²³ This investigation produced one of the greatest sources of first-person testimony ever gathered for an American conflict, and was a major source of information for this dissertation. The findings of this commission have been included in the sections of the dissertation dealing with each issue; for example, the findings with respect to mobilization are found in Chapter 8.

The Spanish-American War demonstrated the growing pains of a nation and an army that had spent decades focused internally on its growth as a major economic power. At the start of the war, the United States had one of the smallest armies of any industrialized nation, although a major shipbuilding effort in the 1880s and 1890s had given it a powerful navy. As many of the historians have labeled it, the Spanish-American War marked “the Emergence of America as a Great Power” with “an Army [fit] for Empire.”¹⁴²⁴

The deficiencies of the war brought major changes to the U.S. Army after the conflict. America was now an imperial power (like it or not), and needed a military commensurate with that role. As discussed previously in Chapter 6, many officers within the Army had been urging major reforms, from Emory Upton in the 1870s to General Sherman during and after his time as Commanding General. The fight with the National Guard over expansion, along with the significant deficiencies found in the manning, training, and equipping of these units dictated a major relook at the Guard and its role in America’s defense. Many in the Guard, who were well aware of the problems encountered in the war, now favored expansion of the Regular force. The separation of the staff bureaus from the line and the anomalous role of the Commanding General

¹⁴²³ *Commission Appointed by the President to Investigate the Conduct of the War Department in the War With Spain*, 8 volumes (Washington: GPO, 1900), referred to as the *Dodge Commission Report*; discussion of testimony, *Dodge Commission Report*, vol. 1 (Report to the President), 108.

¹⁴²⁴ Book titles say it all. See May, *Imperial Democracy: The Emergence of America as a Great Power* and Cosmas, *An Army For Empire*.

versus the Secretary of War also needed revision. The devil, of course, was in the details. Competing bills were introduced in Congress in late 1898, coming from Representative Hull, Maj. General Miles, and former General George McClellan, now a New York Representative (and Democrat). Various Senators also entered the fray, making the sound of competing voices so cacophonous that none could be heard. The Dodge Commission Report, especially a section investigating a feud between Alger and Miles over “embalmed beef,”¹⁴²⁵ blackened the reputations of both. The Democrats further complicated matters by tying Army reform to their opposition to the annexation of the Philippines. They also denounced the Republican plans, which had called for a standing army of 100,000 men, using the familiar tropes of its threat to liberty and its cost to the taxpayer. By the time revised bills came into consideration the Philippines had been annexed and the Philippine Insurrection had begun. The Democrats threatened to filibuster any bill enlarging the army, which meant that it would revert to its smaller size, too small for the war in the Philippines. This threat forced the Republicans to compromise on a force of 65,000 Regulars and 35,000 Volunteers, but only until July 1, 1901, when the Army would revert to 39,000 men with no volunteers. The final bill forced by maverick Democrats reduced the permanent size of the Army to 29,000, about what it had been before the war. The session was nearing an end, so this bill passed and was signed into law in March 1899. The idea of reforming the Army had been abandoned entirely, but the 100,000 man temporary army enabled the Army to fight the Filipino insurgents during the first two years of the war.¹⁴²⁶

¹⁴²⁵ Miles charged that the Army had been provided beef that was heavily doctored with preservatives, calling it “embalmed beef.” The Commissary-General was so enraged by this charge that he called Miles various names in testimony, resulting in a court-martial for insubordination. The Dodge Commission did extensive sampling of beef from the transports and elsewhere in the Army and found no trace of preservatives. In spite of this, the outcry over his accusations against Alger became so great that a New York Times editorial called Alger “the man who has done more than anybody else in memory to debauch and demoralize the army...” *New York Times*, Dec. 9, 1898, also quoted in Graham A. Cosmas, “Military Reform After the Spanish-American War: The Army Reorganization Fight of 1898-1899,” *Military Affairs* 35, No. 1 (Feb., 1971): 12-18.

¹⁴²⁶ Cosmas, “Military Reform After the Spanish-American War,” 12-18.

Permanent reform would have to wait until Elihu Root's 1905 reforms, which brought a General Staff to the United States, with the Chief of Staff the senior Army authority under the Secretary of War.¹⁴²⁷

The Spanish-American War furthered America's involvement in world affairs. Although waves of isolationism (especially between the two World Wars) would push the nation toward a dangerous indifference to international threats, the acquisition of the Philippine Islands (as well as Guam and the separate annexation of Hawaii) would force the nation to focus on the Pacific Ocean and orient its forces toward the defense of its overseas empire. Although American forces proved fatally weak in Asia at the end of 1941 and early 1942, the requirement to defend and then to recapture American Pacific territories meant that America could no longer be a continental nation. The American Army was forced to become an Army for Empire; despite Congressional parsimony that guaranteed an eventual failure in that role, it became the mission of this nation's Army as a legacy of the brief war against Spain in 1898.

¹⁴²⁷ The fight over the Chief of Staff's authority did not end with the General Staff Bill of 1905. It wasn't until World War I that real reforms began to occur. The Dick Act of 1903 followed by the Militia Act of 1908 began to formalize the National Guard's role under federal service. Millet and Maslowski, *For the Common Defense*, 327-330.

Walter Reed, William Gorgas, and the Defeat of Yellow Fever

The first duty of the occupation troops arriving after the end of the Cuban campaign was care of the sick (US troops yet to be evacuated, Spanish soldiers who had surrendered, and civilians in and around Santiago de Cuba), feeding the starving, and cleaning up the city, both from a general cleanliness perspective and from a public health perspective.¹⁴²⁸ The occupation troops were initially immune regiments, but very quickly volunteer regiments from the Seventh Army Corps were sent to occupy Havana. At the start of the military occupation of the entire island (January 1, 1899) there were about 23,000 American troops; that number climbed to 45,000 by the end of the month. When the occupation of Cuba proceeded smoothly without any significant Cuban resistance, the volunteers were mustered out and only about 11,000 Regular Army soldiers remained by the end of the year.¹⁴²⁹

The significant problems of disease endemic to Cuba became an American problem as the island became a protectorate. The first epidemic (smallpox in the fall of 1898) was treated by massive vaccination. The American Army also had the opportunity to establish a sanitation regimen on the notoriously unhealthy city of Havana as well as other port cities on the island. The focus of the sanitation campaign was the suppression of yellow fever and malaria. Based on the work of Munson and Ross discussed previously, suppression of malaria began with the isolation of patients stricken by the disease inside of screened rooms “in order to protect the patient from mosquitoes, and in thus protecting him, the inoculation of the mosquito and the subsequent spread of the disease among neighboring individuals was prevented.” Yellow fever,

¹⁴²⁸ The latter included draining “certain unhealthy surroundings of the city.” Wood, “The Military Government of Cuba,” 1-30.

¹⁴²⁹ Cosmas, *An Army for Empire*, 309.

on the other hand, was still considered to be spread by contact with dirty, contaminated areas. When an epidemic broke out in Santiago in the summer of 1899, all of the best medical and sanitation measures were implemented. Houses containing yellow fever victims were triply disinfected; even the streets were disinfected using a “corrosive sublimate.” The fact that yellow fever persisted in spite of the rigorous sanitary procedures caused Governor Leonard Wood and his medical staff to question their assumptions about the spread of the disease. Wood stated that “When this epidemic broke out, Santiago was as clean as a town can be kept. There was absolutely nothing in the condition of the city itself to account for the outbreak of the yellow fever.” Similar problems were encountered in Havana that year and among the garrisons of Pinar del Rio and Santa Clara in 1900, as well among 12,000 newly arrived Spanish immigrants to Cuba.¹⁴³⁰ It was clear that something had to be done about yellow fever – right away.

On May 29, 1900, Surgeon-General Sternberg ordered Walter Reed to join Asst. Surgeons Lazear and Agramonte to chair a Board which was to “give special attention to questions relating to the etiology and prevention of yellow fever.”¹⁴³¹ This was the beginning of one of medicine’s great discoveries – the determination that yellow fever was spread by the *Aedes (Stegomyia) ægypti* mosquito. Reed began by demonstrating that Sanarelli’s bacillus was simply the bacillus of hog cholera *Bacillus cholerae suis*, ruling out Sanarelli’s work as a pathway to understanding

¹⁴³⁰ Wood, “The Military Government of Cuba,” 15-17. The US Marine Hospital Service had concluded in 1897 that “it is only reasonable to suppose that careful application of the most ordinary sanitary measures [in Havana] would at least meet with a certain measure of success. It is at least worth a trial, for in the past decades nothing of the kind has been attempted.” H. D. Geddings, “Yellow Fever from a Clinical and Epidemiological Point of View and its Relation to the Quarantine System of the United States,” in *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1897* (Washington: GPO, 1899), 240.

¹⁴³¹ It also instructed the Board to study “other infectious diseases, and especially of the malarial fevers prevailing in the island of Cuba.” George Miller Sternberg, Memorandum to Walter Reed: May 29, 1900, reproduced in *Military Medicine* 166, No. 9 (Sep., 2001): 20.

the etiology of yellow fever.¹⁴³² That left two other possible approaches: the study of the bacteria found in the blood and organs of yellow fever patients and Carlos Finlay's mosquito hypothesis. A coincidence that occurred that year when a yellow fever outbreak was reported among the Army garrison at Pinar del Rio led Reed to emphasize the theory of mosquito transmission. A prisoner confined in a jail cell with eight other soldiers died from yellow fever. He could not have contracted the disease from contact with fomites from the military barracks; furthermore, he should have contaminated his bunk and portion of the jail cell if the fomite theory was correct, but none of the other prisoners (one of whom had taken the victim's bunk) were sick. Walter Reed stated that "it was conjectured at the time that, perhaps, some insect capable of conveying the infection, such as the mosquito, had entered through the cell window, bitten this particular prisoner, and then passed out. This, however, was only a supposition." He also noted that individuals who undoubtedly came into contact with fomites failed to contract the disease. Reed concluded "the time had arrived when the plan of our work should be radically changed and that the search for the specific agent of yellow fever, while not abandoned, should be given secondary consideration, until we had first definitely learned something about the way or ways in which the disease was propagated from the sick to the well."¹⁴³³ Thus began the Board's inquiry into the transmission of yellow fever by means of the mosquito.

Reed's experiments established several things. First, they discredited the fomite theory – yellow fever was not caught from contact with filth. Second, the bite of the female *aedes* mosquito could transmit the disease. Finally, the mosquito is only infected by biting a victim

¹⁴³² Walter Reed and James Carroll, "Bacillus Icteroides and Bacillus Cholerae Suis," in *Yellow Fever – A Compilation of Various Publications*, Senate Document 822 (Washington: GPO, 1911), 53-54 (originally published in *Medical News* 74, No. 17 (1899): 513-14).

¹⁴³³ Walter Reed, "The Propagation of Yellow Fever – Observations Based on Recent Researches," in *Yellow Fever – A Compilation of Various Publications*, Senate Document 822 (Washington: GPO, 1911), 93-94. See also Kelly, *Walter Reed and Yellow Fever*, 125-126.

during the first three days of infection, which in turn can be transmitted further through mosquito bite after the infection has passed the twelfth day.¹⁴³⁴

Once the Board had released its findings, the US Army waged a war on the mosquito in the city of Havana. Under the direction of Major William Gorgas, the Chief Sanitation Officer of the city, soldiers poured oil on water sources and screened in houses; the houses within which a yellow fever outbreak had occurred were fumigated with formaldehyde gas.¹⁴³⁵ Between March and September 1901 there were only six yellow fever cases in the city; there were none at all from September to June the next year. Yellow fever, which had been endemic to Havana since 1761, had been conquered. Gorgas went on to apply similar techniques in Panama in 1905, after an epidemic had threatened to shut down construction of the canal, as a similar outbreak had done earlier when the French attempted to build the canal.¹⁴³⁶ The role of the mosquito was finally understood; by 1902 it was possible for Leland Howard of the US Dept. of Agriculture to publish *Mosquitoes: How They Live; How They Carry Disease; How They Are Classified; How They May Be Destroyed*. The book had chapters about the mosquito as a carrier of malaria, the mosquito as a carrier of yellow fever, and how mosquitoes can be controlled.¹⁴³⁷

The United States Army also established a Tropical Diseases Board in the Philippines to continue the study of tropical infectious diseases long after the American occupation of Cuba ended in May 1902. The Board is credited with the discovery that dengue fever was caused by a filterable virus in 1907 and was not a contagious disease. Its experiments on the role of

¹⁴³⁴ Nancy Stepan, "The Interplay between Socio-Economic Factors and Medical Science: Yellow Fever Research, Cuba and the United States," *Social Studies of Science* 8, No. 4 (Nov., 1978): 411.

¹⁴³⁵ Cirillo, *Bullets & Bacilli*, 118

¹⁴³⁶ "Epilogue: The U.S. Army Yellow Fever Board of 1900," *Military Medicine* 166, No. 9 (Sep 2001): 80; Wood, "The Military Government of Cuba," 19; Freeman, "The Mosquito of High Crimes," 1-9; George Sternberg, letter to the Secretary of War, March 25, 1898, 2.

¹⁴³⁷ Leland Howard, *Mosquitoes: How They Live; How They Carry Disease; How They Are Classified; How They May Be Destroyed* (New York: McClure, Phillips & Co., 1902).

mosquitoes in the transmission of dengue were inconclusive, but later studies in the 1920s confirmed that the *Aedes aegypti* mosquito carried dengue as well as yellow fever.¹⁴³⁸ The Board also discovered the cause of beriberi, an endemic disease in the Philippines that affected more than 12% of the Philippine Native Scouts (a local force created by the US in 1902) during the year 1902 alone. They discovered that the milling of rice to remove the husk and bran (polishings) resulted in beriberi amongst those relying on the rice as a main dietary staple; an extract of the rice polishings cured beriberi the same way lime juice cured scurvy. Over 30 years later, the missing ingredient was identified and given the name vitamin B₁ (now called thiamin).¹⁴³⁹

This medical research was a direct result of the Spanish-American War and the subsequent Philippine Insurrection, partly due to the loss of life to disease during the conflict and partly due to the need to prevent the occurrence of infectious diseases in the tropical regions that became US territories as a result of the war. Although the loss of lives during the war is regrettable, many thousands of lives were ultimately saved from this final conflict of the Disease Era.¹⁴⁴⁰

¹⁴³⁸ Duane J. Gubler, "COMMENTARY: Ashburn PM, Craig CF. Experimental Investigations Regarding the Etiology of Dengue. *Journal of Infectious Disease* 1907;4:440–75," *Journal of Infectious Diseases* 189, No. 9 (May 1, 2004): 1744-1783.

¹⁴³⁹ Cirillo, *Bullets and Bacilli*, 121-122.

¹⁴⁴⁰ As discussed previously, the Boer War was also part of the disease era; both the Boer War and the Philippine Insurrection ended in 1902. The Boer War was also marked by significant, largely preventable disease epidemics. The British Army experimented with an anti-typhoid inoculation that was later adopted as a mandatory vaccination by the US Army in 1911 – the first army in the world to require the vaccination. This was also a consequence of the Spanish-American War and the large loss of life from typhoid during the conflict. *Ibid.*, 123-125.

Lessons Learned – Disease and the Spanish-American War

The Spanish-American War was the last major conflict involving the United States where disease killed more soldiers than enemy action. Yet that outcome was not necessarily inevitable. Two major decisions precipitated the circumstances which, with a considerable number of shortcomings and questionable decisions, resulted in a large number of disease deaths and a much larger number of soldiers incapacitated from disease. The first decision was McKinley's order to conduct a land operation in Cuba during the rainy season. That decision was driven by Spanish actions: the decision by Spanish Admiral Cervera to anchor his fleet in the harbor of Santiago de Cuba. However, the decision to besiege the city in order to neutralize the fleet was not the only option available to McKinley. The other option would have been to maintain the blockade of Cuba, using the Navy to ensure that Cervera either remained in Santiago or to destroy Cervera's ships once he decided to sortie from the harbor. In retrospect, that is exactly what happened; the Navy maintained the blockade and eliminated his squadron once he decided to exit the protected waters near the city's defenses. Of course, Cervera's decision to leave the city (in obedience to an order by Governor-General Blanco) was precipitated by incipient starvation and illness within the city which were the consequences of the siege by the American Fifth Corps. Although the blockade would have put the defenders on short rations, they would have retained access to the city's water supply and whatever food that could be gleaned from the countryside. Eventually, the Spanish might have been starved out, but that appeared to be a very long drawn-out process to the decision makers in Washington in May and June of 1898.

McKinley's decision was also driven by a desire to force Spain to a rapid resolution of the war. The decisions to mount simultaneous land offensives in the Caribbean and the Philippines,

as well as the third offensive against Puerto Rico, were all designed to force Spain to recognize that it would continue to lose more territory the longer the war continued. However, decisions have consequences. The prewar planning all called for a naval blockade until the end of the rainy season; only then would a land action be contemplated. There were also very practical reasons for delaying land operations until the fall. The nation only had enough smokeless ammunition for the modern Krag-Jorgenson rifles for two hours of combat. The older Springfield rifles could be used, but the black powder rounds used for the older weapons rendered the firer a deadly target for Spanish sharpshooters. Every time a black powder weapon was fired in the Cuban jungles, it not only betrayed the position of the firer but often the position of other nearby units who possessed the modern smokeless powder. Many of the more experienced soldiers in the National Guard units refused to enlist; as a result the Volunteer Army was largely composed of raw recruits. These men needed extensive training before they could be entrusted with combat – and training took time. Of course, General Miles also emphasized the dangers of disease to the President, objecting to the orders which sent Shafter's Fifth Corps to Cuba at the end of June. He was overruled by McKinley and Alger, neither of whom particularly respected Miles' advice.

The other decision was also made by President McKinley: the decision to call up 125,000 volunteers, followed quickly by an additional 75,000. This was done without consulting the chiefs of the Army bureaus, who all expressed surprise at the size of the mobilization. The decision to start with 125,000 volunteers was driven by politics, as it appealed the powerful National Guard Association and their Democratic allies in Congress, which allowed bills raising the volunteer force and temporarily expanding the Regular Army to pass into law.¹⁴⁴¹ However, the number called into service in the initial call-up was far in excess of what was needed for the

¹⁴⁴¹ Cosmas, *An Army for Empire*, 90-93; Cosmas, "From Order to Chaos," 117-119.

war and more importantly far more than could be accommodated by the War Department. The additional 75,000 man call-up simply exacerbated the problem. The excessive mobilization created many of the problems (detailed in Chapter 8) that would not only cause a scandal but would contribute to an epidemic that killed thousands of young men – an unnecessary sacrifice to the God of War.

The loss of life during the war was almost entirely due to disease; more than 7 men died of disease for every one killed by enemy action. Military actions are traditionally evaluated in terms of military objectives won or lost, and how effectively a commander achieved the objectives without unnecessary loss of life. The latter is typically measured in terms of casualties resulting from battle. However, during the Disease Era that prevailed before the twentieth century, far more lives were lost due to non-battle casualties – as just stated, more than seven times as many during the Spanish-American War.¹⁴⁴² It seems appropriate that wars during this era be evaluated in terms of the losses due to disease, and this dissertation has attempted to do just that. Casualties are an inevitable consequence of going to war, so the criteria must be set in terms of unnecessary casualties; those resulting from avoidable mistakes rather than from the fundamental outcomes of the conflict. It is the thesis of this dissertation that many of the casualties of the war were unnecessary. They were unnecessary because the senior military and medical leadership failed to incorporate available knowledge on the effects of disease on military operations in the planning, mobilization, training, and execution of military campaigns in tropical regions during the war. However, it is necessary to be fair to the men who led the nation's armed forces and those that served in the Medical Corps; they could not be expected to act in ways not known to nineteenth century medicine, or to react to military lessons learned in actions taking place after

¹⁴⁴² The actual ratio was 7.4:1, slightly greater than 7:1. *Cirillo, Bullets and Bacilli*, 32.

the war. If they are to be judged upon the knowledge that was available to them, it is necessary to define just what that knowledge base was.

This is one area where this dissertation has added to the scholarship on the Spanish-American War. No existing history of the war has attempted to explore the state of medical knowledge at the time of the war and the knowledge about the effects of disease gained from previous military campaigns that would also be available to the military and medical leadership.¹⁴⁴³ The war occurred right in the middle of a significant transformation in our knowledge of infectious diseases. The Bacteriological Revolution had begun in the 1870s and 1880s, shifting most doctors and medical researchers toward support of germ theory, the idea that living organisms were the cause of human infectious disease. However, that transformation was incomplete in 1898. Table 3 illustrates the extent of knowledge about the major infectious diseases. Diseases caused by bacteria such as cholera, dysentery, or typhoid, detectable using the optical microscopes of the nineteenth century, had their disease-causing organism identified. However, knowledge of the germ causing the disease is not sufficient to understanding how the disease is contracted and spread, and thus how that spread might be restricted. Malaria is the best example of this; although the malaria plasmodium had been identified, the means of transmission had not. The prevailing wisdom still attributed its spread to miasma,¹⁴⁴⁴ which made its mechanism of contagion even more confusing. It is fairly easy to understand how a chemical poison can be spread through the air, but less clear how a bacterium could propagate through the air. Although

¹⁴⁴³ To be fair, most histories mention the 1741 and/or 1762 British campaigns in Cuba, listing the losses incurred during those actions. However, that is the extent to which that issue has been previously explored in military histories. In addition, Cirillo's *Bullets and Bacilli* presents a detailed examination of the state of medical knowledge on typhoid at the time of the war. However, he applies it only to discuss the impacts on the epidemics in the United States (not overseas). He does not examine the state of knowledge for malaria or yellow fever, the lessons learned from previous military campaigns, or how this information affected decisions made before, during, or after the Cuban campaign.

¹⁴⁴⁴ By 1898 many doctors suspected that the mosquito might be involved based on Manson's work with filariasis but this remained uncertain until Ross' discovery, which was reported after the Cuban campaign. Guillemin, "Choosing Scientific Patrimony," 387-388.

some doctors suspected mosquitoes could be involved, that was not enough to cause them to recommend mosquito control as a means of avoiding malaria. Even typhoid, which is most commonly transmitted through contaminated water, a mechanism understood by 1898, was not fully understood. In this case flies (as well as airborne dust and direct contact) were suspected of being carriers, but the military medical profession still concentrated on the known, common mechanism of water contamination which led them to underestimate the role of flies in vastly multiplying the typhoid cases in the sanitary-challenged training camps in the United States.¹⁴⁴⁵

Although the bacterial diseases were well on their way to being understood, viral disease remained a mystery in 1898. Yellow fever remained a mystery to Surgeon-General Sternberg, arguably the world expert on the disease in 1898. He was certain it was not caused by any of the bacteria previously identified as the cause of the disease, but what the organism was that caused the disease was unknown. Between the mystery of its cause, its lethality, and the lack of any effective treatment, yellow fever was the disease most feared by the doctors and the generals during the war. The preoccupation with yellow fever is likely part of the reason the real military threat, the debilitation caused by malaria, was largely ignored in the planning and preparations for the Cuban campaign.

With the exception of Carlos Finlay, medical authorities stayed with the concept of contagion via contact with fomites for yellow fever and miasma for malaria. It is easy to criticize doctors for these associations from our modern perspective rooted in germ theory. However, the nineteenth century began in the era of sanitation, driven by medical statistics,¹⁴⁴⁶ and the knowledge of medicine rooted in that background was hard to shake even with the new

¹⁴⁴⁵ Report of Greenleaf to Corbin, July 7, 1898. *Dodge Commission Report*, vol. 1 (Appendices), 613; Reed et al., *Abstract of Typhoid Board Report*, 178-186

¹⁴⁴⁶ Susser and Susser, "Choosing a future for epidemiology," 668-669.

discoveries of men such as Pasteur and Koch. It is normal for humans to seek patterns in experiences (captured in medical statistics). Everyone knew that malaria was contracted when individuals went into low-lying marshy areas during warm seasons when the rains came. Everyone who had visited such an area was familiar with the mists and fogs and the unpleasant smell of decomposing organic matter. These associations had been built from years of experience; when people entered these misty smelly areas they contracted the disease; those that avoided these areas did not. What is more logical than to assume that malaria is caused by these mists and smells? After all, our body is genetically primed to associate bad smells with decaying meat or vegetation which is harmful to eat. Furthermore, our minds are also primed towards confirmation bias; evidence supporting miasma for malaria or filth and infected fomites for yellow fever would be noticed and evidence against would be considered an exception, or to be caused by extraneous factors.

It is in this light that the decision to raise immune regiments from African-American men seems reasonable by 1898 standards. The British experience using freed slaves had resulted in markedly lower losses to yellow fever in the Caribbean and later in Africa. Although the association of race with genetic immunity (rather than acquired immunity from being raised in an area where the disease is endemic) seems suspect today, that association was accepted into the early twentieth century.¹⁴⁴⁷ The decision to raise white regiments among individuals previously exposed to yellow fever is as sound today as it was in 1898. However, the War Department failed to verify if any of the recruits for these regiments were actually immune, which negated the effectiveness of these regiments.¹⁴⁴⁸ Immune troops were desperately needed to care for and

¹⁴⁴⁷ W. Sykes, "Negro Immunity From Malaria And Yellow Fever," 1776-1777.

¹⁴⁴⁸ This should have been apparent from the criteria, which were reported by the Los Angeles Times in May 1898. The applicants were asked about "the time, if any, the applicant has lived in tropical climates, and the general nature of his experience in such climates." This is well short of verifying a previous yellow fever attack. "THE IMMUNE

replace the sick men of the Fifth Corps in July and August of 1898; sending non-immune troops simply added new victims to the current epidemic. Only the extraordinarily low mortality rate for yellow fever during the war (which has caused some to suspect that it was not actually yellow fever) saved the country from a much greater disaster in terms of lives lost.¹⁴⁴⁹

However, we can expect the decision makers of 1898 to act on the knowledge that was available to them. Even if the cause of malaria or yellow fever was imperfectly known, the fact that they were present in Cuba was well known. Centuries of experience told them, correctly, that the disease environment of the tropics was hazardous to Europeans or North Americans raised in temperate climes. George Sternberg prepared a document for Secretary Alger and President McKinley outlining the history of yellow fever in Cuba (item 1 in Appendix A); Santiago is listed as “endemic” for the disease. Malaria was also a known hazard for the area. It was not necessary to go back a century or more to understand the dangers of disease in Cuba; the Public Health Service reported the Spanish Army losses to epidemic disease the previous year (1897) on April 29, 1898: “fully 7,000 men were lost to the Spanish army from malarial influences” with an additional 30,000 cases of yellow fever.¹⁴⁵⁰ The statistics from the Civil War, readily obtainable from the voluminous documentation printed in the three medical volumes of the *Medical and Surgical History of the War of the Rebellion*, showed the significance of malaria

REGIMENTS.: War Department's Rules for Examination of Applicants,” *Los Angeles Times*, May 28, 1898, 2. The St. Louis Post-Dispatch reported in August that “The so-called “immunes” who will take the place of Gen. Shafter's forces at Santiago are not in many cases, it is believed, really immune and it, therefore, is probable that some of them will fall victims to the climate.” “ARE THESE SOLDIERS REALLY IMMUNES?” *St. Louis Post-Dispatch*, Aug 7, 1898, 1.

¹⁴⁴⁹ The ratio of deaths to cases was 12.3% *Report of the Surgeon-General, 1899*, 227.

¹⁴⁵⁰ Almost 8,600 died from yellow fever in 1897. Brunner, “Morbidity and mortality in the Spanish army,” 410-411.

during the Civil War. The reasons why malaria was overlooked were documented in previous chapters, but this was one of the major errors of medical judgment during the war.¹⁴⁵¹

The reality was that anywhere from 75 – 90% of the Fifth Corps soldiers were incapacitated from malaria by late July. The epidemic began as early as the first week of July,¹⁴⁵² although Shafter did not begin to report the number of fever cases until July 25 when the number exceeded 2,000. As discussed in Chapter 10, both Shafter and Miles urged Washington to accept a limited conditional surrender of the city as early as July 9, citing the beginning of the yellow fever epidemic.¹⁴⁵³ Although the malaria was apparently the *vivax* strain which was not deadly, it did incapacitate; the descriptions of the men and their weakness are vivid (Chapter 12). Men who were too weak to contemplate moving inland to higher elevations were certainly too weak to fight an active enemy. It is clear that within days of the surrender the American army outside of Santiago was no longer fit for duty. This proves the other contention of this dissertation: that the United States came close to losing the Cuban campaign of the Spanish-American War due to epidemic disease. Just a few days delay would have spelled the difference between victory and defeat. The delay could have happened in a variety of ways, from Toral simply deciding to hold out a little longer (although low on food, he had not yet run out) to more elaborate possible scenarios such as a forward Spanish defense outside of Daiquiri and Siboney delaying the advance. The success of the United States in the campaign for Santiago was due as much to

¹⁴⁵¹ General Chaffee's testimony before the Dodge Commission is probably the most revealing: "certainly did not think when we went to Cuba that we would have anything like the sickness that we did have. Our minds were somewhat bent upon yellow fever. We talked of that at Tampa as probably the disease with which we would have to compete, but we did not discuss the sickness of malaria." Chaffee, *Dodge Commission Report*, vol. 4 (Testimony), 909.

¹⁴⁵² The civilian epidemic at El Caney began July 5th; clearly the mosquitoes were out and biting. Müller y Tejeiro, *Battles and Capitulation of Santiago de Cuba*, 147.

¹⁴⁵³ At that point there were only three cases, but as Shafter told Alger, "if it gets started, no one knows where it will stop." Shafter to Alger, July 9, 1898, 9 AM. *Correspondence Relating to the War With Spain*, vol. 1, 117.

Spanish decisions not to defend aggressively and to surrender rather quickly as it was to any feat of arms or good leadership on the part of the United States.

Once the decision had been made to send the Fifth Corps to Cuba in June, epidemics of malaria and yellow fever were inevitable; every lesson from every war to include the ongoing war between the Spanish and the Cuban rebels should have made this clear. However, no one seems to have properly prepared for these epidemics. Sternberg thought that the normal division hospitals and the hospital ships would be enough – but these were not staffed with immunes in advance and transportation of troops suspected of having yellow fever (which would require quarantine and ship disinfection) was not planned for in advance. It was unrealistic to expect the Fifth Corps to manage itself while encamped in the interior of Cuba for enough weeks for the yellow fever epidemic to burn out, especially given the tenuous supply situation. The list of all of the requirements for care of thousands of men seriously ill from malaria and yellow fever was provided in Chapter 4, from hospitals to medicines to care providers to food and more; the transportation network was simply incapable of providing this support away from the port at Siboney. No one appeared to have made any contingency planning for this care; instead the War Department was beginning to construct a camp on Long Island while men, horses and mules were arriving in the thousands. Sick men lay on the ground while crews were hammering and sawing a building around them.

The largest loss of life was due to the typhoid epidemic that swept the training camps across the country¹⁴⁵⁴. The Typhoid Board later reported that every regiment outside those deployed to the Philippines was stricken with typhoid. In the better disciplined regiments, the number of

¹⁴⁵⁴ 86.24% of the total deaths were from typhoid fever. Reed et al., *Abstract of the Typhoid Board Report*, 192.

cases was small and the deaths even fewer.¹⁴⁵⁵ However, the Typhoid Board investigation clearly showed that that leading cause of typhoid was “camp pollution,” mainly in the form of fecal matter which in many places was “so bad that the men would find it almost impossible to walk.”¹⁴⁵⁶ Both Surgeon-General Sternberg and the Dodge Commission attributed the cause of the camp pollution to be the poor discipline within the volunteer units, and the fact that their commanders were ignorant of the effect of poor sanitation on the health of their commands.¹⁴⁵⁷ These deaths were almost entirely preventable. What is appalling is the fact that virtually everyone allowed the conditions that facilitated the epidemics to happen, which indicates systemic causes and not just individual negligence. The indeterminate status of the corps commanders led them to focus on future wartime command opportunities (which never materialized) rather than on running their training establishments. They were obviously never told about the Administration’s strategy, or they would not have expected orders to deploy to appear at any moment. This short-term thinking permeated the chain of command, leading many commanders to conclude that there was no need to improve their camps if they would depart at any time. Sternberg and the Medical Corps chief surgeons for the divisions and corps should not have relied on orders and circulars to ensure actual compliance with sanitary procedures, and Sternberg did not initiate an inspection regimen until well after the typhoid epidemic had reached crisis proportions. The doctors in the various regiments and camps not only failed to convince the line commanders of the need for good hygiene (which is more the commander’s fault than the doctors), but also failed to report the matter up the chain of command. The general officers from Miles down failed to force the volunteer units to comply with sanitary procedures that the Regulars had learned from years of experience and for some learned at the

¹⁴⁵⁵ The Dodge Commission cited the 8th Massachusetts as an example of a well-run, healthy regiment. *Dodge Commission Report*, vol. 1 (Report to the President), 178.

¹⁴⁵⁶ Benson, *Dodge Commission Report*, vol. 4 (Testimony), 701-702.

¹⁴⁵⁷ *Dodge Commission Report*, vol. 1 (Report to the President), 178; *Report of the Surgeon-General, 1899*, 38-39, 42-44; Sternberg, “Sanitary Lessons of the War,” 1290-1291.

Infantry and Cavalry School at Fort Leavenworth.¹⁴⁵⁸ The generals were all Civil War veterans; they of all people should have been aware of what raw volunteer recruits were like. The behavior of the men was much the same in 1898 as it was in 1861. The fact that the camps were properly run starting in September shows that command pressure could have led to the same result in June, July, and August.¹⁴⁵⁹ This too, demonstrated the difference between the knowledge available, as contained in Army regulations and Woodhull's *Notes on Military Hygiene*, and the actual decisions made by the chain of command.

The War of 1898 was in many ways a transitional war. It had many of the same elements as the Civil War some 35 years prior – the same reliance on a small Regular force augmented with a large volunteer force made up largely of untrained recruits,¹⁴⁶⁰ senior leadership that had fought in the previous war leading men that otherwise came from civilian life or a peacetime Army, and tactics that were largely unchanged from that previous conflict. But the nation, and the world, was changing, as was the field of medicine. The country was still largely agrarian in 1861, but it was an industrial nation that created the army and navy that fought against Spain. The Navy was completely transformed to an all-steel juggernaut that could decisively defeat a once-powerful major European power in one-sided battles without a single loss of ships and very few losses of life. However, the problems that arose during the war were not based on weapons or tactics or in many ways were not based on war itself; instead, they resulted from the transformations of the country and the international environment rooted in industrialization. American society and the American state were in the process of changing as a reaction to the demands of industrialization.

¹⁴⁵⁸ These lessons were contained in Woodhull's *Notes on Military Hygiene* (1898), based on lectures presented at the school.

¹⁴⁵⁹ Sternberg's graph in the *Sanitary Lessons of the War* (Figure 10) shows the impact of the command emphasis once the epidemics became public and the chain of command started to take the issue seriously.

¹⁴⁶⁰ There were more individuals with some experience in the militia than there were in 1861 but the bulk of the recruits were untrained.

Various authors have written about the process of the changes in society and government during the latter part of the nineteenth century; to Robert Wiebe it was the development of a middle class bureaucracy; to Olivier Zunz it was the development of the corporate state that reached full flower later in the mid-twentieth century; to Stephen Skowronek it was the development of the administrative state.¹⁴⁶¹ All express a common portrait of America turning toward a professional class that was also reflected in the professionalization of the military and the shift in focus for that military from the domestic missions of Indian fighting and coastal defense to an international view of power projection and competing with the major world powers in a contest for empire. However, these adaptations by the government and by the military were mediated by the realities of a political system that was actively contested between the newly resurgent Democratic South and the internationalist Republican Party. Party politics caused the parsimonious Congresses that resulted in a tiny Army too small and weak to feature in a German study of the armies of the world. The Army was too small and too regulated by peacetime regulations aimed at economy and bureaucratic compliance to have the capacity to expand properly when challenged with war. Party politics ensured a patchwork approach to creating an army to fight Spain, with a volunteer component to placate the Democratic states' rights forces with their belief in the virtues of a militia and a somewhat expanded Regular component that nevertheless was temporary and expired once the war was over. All of the challenges with mobilization and planning and preparing for war can ultimately be traced to these politically driven decisions; they became active problems when combined with the short-sightedness of a leadership incapable of rising fully to the occasion. The internationalist forces succeeded with the Navy, building an offensive arm that could decisively defeat Spain and render the defense of

¹⁴⁶¹ Robert Wiebe, *The Search for Order, 1877-1920*; Olivier Zunz, *Making America Corporate* (Chicago: Univ. of Chicago Press, 1990); Stephen Skowronek, *Building a New American State*, cited previously.

her overseas colonies impossible. Bereft of reinforcements and blocked from even the necessities of food to feed the armies based on a landscape blasted from years of rebellion, Spain had little choice but to surrender once its navy was defeated.

Medicine was similarly in a transitional state, partly still rooted in the sanitarian viewpoint that looked to filth as the cause of disease and partly looking toward germ theory as a mechanism through which to understand the process of disease formation and transmission. Military medicine was the application of these concepts of medical science applied to the conditions created by the military in combat and in large training encampments. Some of the disease casualties from the war reflected the inability of nineteenth century medicine to understand certain disease processes, especially viral diseases, but most resulted in a failure to apply the available knowledge to the war – from a failure to prevent disease in the training camps to a failure to anticipate the large numbers of sick resulting from epidemics that were unpreventable given the state of medical knowledge.

The Study of War and Disease

This dissertation has attempted to combine the information available from medical and epidemiological histories with the information available from conventional military histories. This interdisciplinary approach has yielded some insights when applied to the Spanish-American War. The conventional historical view of the war has varied over time and between authors much as the history of any era or event varies as history is reinterpreted for new audiences. However, the role of disease during the war has generally been minimized; it becomes prominent after the surrender at Santiago and in the typhoid epidemics at home. In this view, the war was so brief that given incubation times and the time it takes a few cases to become an epidemic, there was not time for disease to have a major impact.

The participants of the war would likely find this viewpoint surprising. One of the facts that becomes really visible when reading their memoirs and early histories of the war is the level of concern that they all had over possible disease epidemics. That fear of disease is rooted in the history of almost all previous attempts by nations located in the temperate latitudes to engage in battle in tropical regions. That history is bleak; even when battles were won thousands of men died from microbes that could not be seen but were all too real to the soldier or sailor of the past: “Thus with our Melancholly Camp a fatal desease enters tent after Tent, and with irresistable force strikes hands with soldier after Soldier, and with hostile violence Seizes the brave, the bold, the hearty and the Strong, no force of arms, no Strength of Limbs, no Solemn vows, no piteous moans, no heartrending Groans, no vertue in means, no Skill of Physicians can free from the Tyrant hand, but death cruel death that stands Just behind, draws the Curtain... .”¹⁴⁶² One cannot help but feel the

¹⁴⁶² Gardiner, “The Havana Expedition of 1762,” 182; spelling as in original.

powerlessness of the writer, faced with this invisible death, made all the more tragic by the fact that the writer himself died that “death cruel death” just a few days later. That was an account of a battle that was won; one cannot find an account from the army Napoleon sent to recapture Saint Domingue – that army was lost, the colony was lost, even the dream of a French empire in the New World was lost. Lost not for want of a nail but for want of a medicine. Even today there is no treatment for yellow fever or its much more common cousin dengue fever.

That very real fear influenced wars in ways not seen by a simple account of orders given and battles won or lost. Campaigns were planned around the sickly season; the men of the Fifth Army Corps could tell what happens when they were not. Men who are sick require far more resources than those that are killed. A body bag takes up little space compared to a hospital bed with its associated doctor, nurse, attendant, medicines, food, Napoleon simply abandoned his sick when retreating from Moscow; almost 90 years later just the mention of potential issues in evacuating the army outside Santiago (the “Round Robin”) caused an uproar, a crisis, and a panicked response from the government once it hit the newspapers. Wars fought during the Disease Era must be examined with one simple fact in mind: more men will die from disease than from enemy action, and every man from general to private knew it. That knowledge shaped how the war was perceived by those who participated in it as well as how it was fought.

Some combinations such as “military + intelligence” invite bad jokes and discussion of the definition of “oxymoron.” Other combinations do not, and the author would humbly suggest that “military + medicine” is a combination worthy of the attention of the historian.

APPENDICES

APPENDIX A

Morbidity and Mortality Reports

Major General William Shafter provided daily summaries on the health of his command between July 26, 1898 and August 23, 1898. The daily summaries provided the total number of men reported as sick for each day, the number of those cases that were diagnosed as “fever” (this would include malaria, enteric fever (typhoid), and yellow fever), the number of men previously reported as sick that returned to duty, and the number of deaths from disease.¹⁴⁶³ There are some exceptions to the way in which the data was reported, which are footnoted.

The first two columns (Sick and Fever) were used to generate Figure 9 (Chapter 12).

Table 7: Daily Morbidity and Mortality Reports, Fifth Corps, July 25 – August 23, 1898

Date	Sick Cases	Fever Cases	Returned to duty	Deaths
July 25	287	2,138	412	1
July 26	3,770	2,924	538	10
July 27	4,122	2,193	542	2
July 28	4,274	3,406	599	1
July 29	4,164	3,212	792	10
July 30	3,892	2,692	815	6
July 31	4,255	3,164	722	9
August 1	4,289	3,179	679	15
August 2	4,290	3,038	705	11
August 3	3,778	2,696	385	9
August 4	3,354	2,548	549	15
August 5	3,697	2,532	601	14

(Source: Data extracted from reports by Shafter to Corbin July 26 to August 23, 1898. *Correspondence Relating to the War With Spain*, vol. 1, 182-253)

¹⁴⁶³ Actual names and diagnoses are included for deaths. The deaths from all diseases have been aggregated for the table.

Table 7 (cont'd)

Date	Sick Cases	Fever Cases	Returned to duty	Deaths
August 6	3,681	2,638	477	9
August 7	3,445	2,498	406	11
August 8	3,017	2,086	390	11
August 9	2,830	2,043	327	14
August 10	3,255	2,151	235	9
August 11	3,010	2,340	279	15
August 12	2,475	1,951	358	14
August 13	2,514	1,947	357	9
August 14	2,715	1,506	226	22
August 16	1,516	1,139	236	6
August 17	1,689	1,246	202	4
August 19	1,245	915	136	10
August 20	1,111	827	178	3
August 21	1,025	698	129	10
August 22	1,101	817	91	7
August 23	900	631	85	8

Table 8: Morbidity and Mortality from Typhoid Fever in the United States, by Command

Command	# of Regiments	Mean strength	Cases Typhoid Fever		Typhoid Deaths	All Disease Deaths	Morbidity Rate ¹⁴⁶⁴	Mortality Rate ¹⁴⁶⁵
			Certain	Certain & Probable				
1st Corps	22	27,380	2,912	5,921	344	397	21.6%	1.3%
2nd Corps	18	19,807	1,807	2,226	212	259	11.2%	1.1%
2nd Corps	12	13,962	1,799	2,690	150	168	19.3%	1.1%
3rd Corps	17	20,568	1,741	4,418	417	469	21.5%	2.0%
4th Corps	7	7,507	440	1,498	99	112	20.0%	1.3%
7th Corps, 2nd Div.	9	10,759	1,729	2,693	248	281	25.0%	2.3%
7th Corps, 3rd Div.	7	7,990		1,292	120	146	16.2%	1.5%
Grand Total	92	107,973		20,738	1,580	1,832	19.2%	1.5%

(Source: Reed et al., *Abstract of the Typhoid Board Report*, 193)

¹⁴⁶⁴ Certain & Probable Cases / Mean Strength

¹⁴⁶⁵ Typhoid Deaths / Mean Strength

Table 9: Casualties During the War With Spain, 1898¹⁴⁶⁶

Location	Killed	Wounded	Disease
Cuba	260	1431	
Puerto Rico	3	40	
Manila	17	106	
US Army May 1- Sept 30, 1898	280 ¹⁴⁶⁷	1577	2565

(Source: *Dodge Commission Report*, vol. 1 (Appendices), 265)

¹⁴⁶⁶ Data as of Oct. 3, 1898.

¹⁴⁶⁷ An additional 65 died from wounds

APPENDIX B

Correspondence

1. Letter from the Surgeon-General to the Secretary of War, March 25, 1898¹⁴⁶⁸

FROM GEN. J. R. KEAN, WAR DEPARTMENT,

SURGEON GENERAL'S OFFICE, WASHINGTON, March 25, 1898.

To the Honorable THE SECRETARY OF WAR,

Sir-,

In view of the possibility of war with Spain and of military operations in Cuba, I have the honor to invite attention to the following facts relating to the prevalence of yellow fever in that island. The data given are taken principally from the report of the Havana Yellow Fever Commission of 1879, of which Prof. Stanford L. Chaille, M. D. of New Orleans, was chairman and I was a member.

TEMPERATURE.

This is conceded to be the climatic element of greatest importance and the "annual mean" to be the chief factor. Throughout the West Indies the mean annual temperature, near the sea, is from 78° to 80°, the mean daily range is only about 6°, and the extreme annual range does not usually exceed 20°. At Havana the mean annual temperature varies in different years from 77° to 79°; the mean temperature of the hottest months, July and August varies from 82° to 85°: and of the coldest months, December and January, from 70° to 76°. The minimum temperature is very

¹⁴⁶⁸ Surgeon-General Sternberg, letter to the Secretary of War, March 25, 1898. The Philip S. Hench Walter Reed Yellow Fever Collection, University of Virginia, <http://etext.lib.virginia.edu/etcbin/fever-browse?id=14304001>, accessed 9 October 2014.

rarely as low as 50°, and the maximum as rarely exceeds 100°; in fact, the thermometer, in the shade, seldom rises above 94°. There are no records nor any tradition of frost having ever occurred except on December 24 and 25, 1858, it is alleged that even in the sparsely inhabited mountains in the east of Cuba, where the Tarquino peak reaches an altitude of about 8,000 feet, frost rarely occurs, and snow never.

RAINFALL AND HUMIDITY.

During the sixteen years, 1859-'74, the average number of rainy days at Havana was 113; the minimum number, 97 days, occurred in 1869, and the maximum number, 141 days, occurred in 1862. The average amount of rain for the sixteen years was 49 inches, the minimum was 42.5 in 1861, and the maximum was 70 inches in 1857. The maximum amount of rain falling in any one day was 8 1/4 inches on April 7, 1869. The so-called rainy season is from May to September, inclusive, but especially during August and September. The rain then descends with such rapidity that it runs off in torrents; but as is seen, the usual belief that the annual rainfall is excessive is erroneous. The annual mean relative humidity varies in different years from about 73 to 74.5, and that of the different months of the year from 66 to 79; the minimum occurring in any day of the year may be as low as 34, and the maximum as high as 96. Evaporation is extremely rapid.

PREVALENCE OF YELLOW FEVER AT PORTS OF ENTRY.

1. Havana. -- Annual prevalence since 1761, the chief center of infection, and most dangerous to the shipping.

2. Matanzas. -- Annual prevalence certainly since 1828, and probably much longer; an important center of infection, but less dangerous to shipping than Havana.
3. Cardenas. -- Annual prevalence certainly since 1836, and it was not founded until 1828. It is an important center of infection, but not [e]specially dangerous to shipping, because of the distance vessels anchor fr[om] shore.
4. Cienfuegos. -- Annual prevalence since at least 1839, and it was not founded until 1819-1825. It is a dangerous center of infection, but like Matanzas, has a very large harbor, and is less dangerous than Havana to the shipping.
5. Sagua. -- Some cases of yellow fever occur annually, but vessels are very rarely infected, as these anchor several miles distant from the coast, and Sagua is 10 miles inland.
6. Baracca. -- Yellow fever occurs occasionally as an epidemic, but not annually as an epidemic.
7. Ceibarien. -- Cases of yellow fever occur frequently, but not every year. Very little dangerous to vessels, as these anchor many miles distant
8. Trinidad. -- Annual prevalence certainly since 1838, and probably longer. The harbor is not believed to be [e]specially dangerous to vessels
9. Cuba. -- Annual prevalence certainly since 1851, and probably very much longer It is a noted center of infection, and its small harbor is very dangerous to the shipping. This, next to Havana, is probably the most dangerous place to shipping in the whole island.
10. Manzanillo. -- Annual prevalence. It is in constant communication with Cuba, Trinidad and Cienfuegos. As vessels anchor in the open sea, several miles from shore, they probably suffer little.

11. Nuevitas. -- Annual prevalence. Vessels anchor a mile or more distant, and are in little danger.

12. Guantanamo. -- Annual prevalence. The town is about seven miles from the harbor, and vessels are probably little exposed to infection

13. Gibara. -- Cases of yellow fever do not occur every year. Vessels anchor distant from the shore, and are in little danger.

14. Zeza. -- Cases of yellow fever do not occur every year. Vessels are probably in very little danger.

15 Santa Cruz. -- Cases of yellow fever occur in the majority of, but not in all, years. Vessels anchor far from shore, and are in little danger.

SEAPORTS WHICH ARE NOT PORTS OF ENTRY

16. Babia Senda -- Yellow fever is not endemic, is even said to be "unknown", and to present no cases "either indigenous or imported"

17. Satabano. -- Very few cases occur.

18. Cabanas. -- Cases occur very rarely, and the diseases is not endemic

19. Isle of Pines. -- Cases very seldom occur, and it is as remarkably free as is Bahia Honda from the disease.

20. Mariel -- Yellow fever is not endemic here.

21. Puerto Padre -- The disease is not endemic.

INLAND TOWNS.

22. Bayazo. -- Occasionally epidemic, but not annually endemic.
23. Bejucal suffers little with yellow fever.
24. Ciego de Avila -- Not endemic.
25. Cobre -- Yellow fever is not endemic.
26. Colon -- Yellow fever is not endemic.
27. Guanabacca -- Cases occur annually.
28. Guanajay -- Cases occur in the majority of years.
29. Guines -- Yellow fever is not endemic.
30. Holguin -- Several epidemics since 1851, but cases do not occur every year.
31. Jaruco. -- Endemic.
32. Marianao -- Endemic.
33. Mayari -- Not endemic.
34. Palma Soriano. -- Not endemic.
35. Pinar del Rio -- Not endemic
36. Puerto Principe -- Endemic.
37. Remedios -- Endemic
38. San Antonio -- Endemic.
39. Sancti Spiritus -- Endemic
40. San Jose de las Lajas -- Endemic.
41. Santa Clara -- Cases occur in the majority of years.
42. Santiago -- Endemic
43. Victoria de las Tunas -- Cases occur in the majority of years

The above forty-three places are all those from which trustworthy information was secured, and it appears that of 21 seaports, yellow fever occurs annually in 10 of them and does not occur annually in the remaining 11; while of 22 inland towns, the disease occurs every year in 9 of them, and not every year in the remaining 13. A larger proportion of the seaports exceed the inland towns in the extent of their commerce with permanently infected centers, and in the number of immigrants, so that the above list tends very strongly to prove that seaports in Cuba are no more liable to yellow fever, solely because located on the sea, than are inland towns. Yet the contrary has long been taught.

The Isle of Pines, Bahia Honda, Cabanas, Mariel, Zaza, and other preeminently maritime places in Cuba suffer little, if at all, with yellow fever.

1648. "In this year there occurred in Havana, and in the fleet of Don Juan Pujados, a great 'pest of putrid fevers' which remained in the port almost all the summer. A third part of the garrison and a larger part of the crews and passengers in the vessels died." -- (Pezuela, v. 3, p. 23.)

1849. "In the spring of 1849 an unknown and horrible epidemic, imported from the continent of America, caused consternation in Cuba.

The 'Unpublished History of the Island' says: 'A third part of its population was devoured, from May to October, by a species of putrid fever, which carried off those attacked in three days. In the capital (Havana), where the Governor, Villalva, came near dying, there died, at short intervals, the counselor of the Governor, Francisco de Molina, and the lawyers Pedro Pedroso, Fernando de Tobar, and Pablo de Olivares, who successively replaced each other. By this can be judged the ravages which the contagion must have inflicted on other classes and towns. In that of

Santiago (de Cuba) it increased during the following summer, so that the people fled for safety to the country." -- (Pezuela, v. 5, p. 182).

1658-'54 "The epidemic was renewed with equal fury during this time, in spite of precautions taken to prevent communication between the towns, which were, however, better protected by their distance from each other, and by the bad roads, than by these precautions." (Ib., v. 3. p. 182)

1854-'55 "This was an epoch of rivalry and disasters. In the capital the pest continued to carry away its victims, without regard to rivalries and passions." -- (Ib., v. 3, p. 183.)

When it is considered that in the early history of yellow fever it was most frequently designated "the pest", that the above scanty records indicate some of the characteristics of the disease while omitting any contra indications, and that historical records prove the existence of the disease during some of the years, 1648-1654, in Barbadoes, Guadeloupe, Martinique, St. Christophe, and probably in San Domingo, "the cradle of yellow fever", it is difficult to disbelieve that yellow fever did visit Cuba, as an epidemic, during the above recorded years. This probability renders still more remarkable the fact that, after 1654, no other historical indications of yellow fever visitations to Havana are to be found until 1761, more than one hundred years." On the contrary, there are repeated records of the great salubrity of the climate and the absence of epidemic diseases." [quotes as original]

1781. "Although Havana is situated on the northern boundary of the Torrid Zone, it was very justly considered one of the most healthy localities on the island before its invasion, in a permanent manner, by the vomito negro (yellow fever), imported from Vera Cruz in the summer of 1761." -- (Pezuela, v. 3, p. 18)

"In May, there came from Vera Cruz, with materials and some prisoners destined for the works on the exterior fortifications of Havana, the men-of-war Heina and America, which communicated to the neighborhood the epidemic known by the name of the 'vomito negro'. At the end of the following June there were stationed in this port nine men-of-war, dispatched from Cadiz, and sent to the chief of the squadron, Don Gutierre de Hevia; they brought a re-enforcement of 2,000 men. To the epidemic, more than 3,000 persons succumbed on this, the first appearance of the vomito; from May to October occurred the greater number of victims in the garrison and in the squadron" -- (Pezuela, v. 3, p. 27.)

1765. "On June 30 the Conde de Riola was relieved by Field Marshall Don Diego Menrique, who died with vomito July 13." -- (Pezuela, v.3, p.51.)

1779. In July and August there arrived from Spain, because of its war with Great Britain. "an array [army] of 3,500 men, who were immediately decimated by the vomito." -- (Ib., v. 3, p. 52.)

1780. On the 3rd to 5th August a large squadron brought an array [army] of 8,000 men. "In the two following months they suffered a loss of about 2,000 men with the vomito" (Ib., v. 3, p. 52); and Surgeon Romay reports, "the same epidemic was renewed in 1780, there being in this city an armament and numerous garrisons on account of the war with Great Britain."

1794. "On the 9th of June the squadron of Aristizabal returned to repair damages at this port, where had arrived from Cadiz, as re-enforcements, four ships, with the chief of squadron, Don Jose Ulloa. The vomito appeared so severely this summer that, solely of the garrison and of the squadron, more than 1,800 victims were taken, one of these being Ulloa. It was indispensable to resort to a general levy to replace the losses on the vessels." -- (Pezuela, v. 3, p. 53.)

The statistics published in this report to the United States National Board of Health date back to 1851, and conclusively prove the annual prevalence of yellow fever from that date to the present time, not only in Havana, but also in numerous other places in Cuba

So far as Havana is concerned, the statistics, published herewith together with the official manuscript reports of the military hospitals in Havana, and of the Cuban superior board of health, prove such more than the annual prevalence of yellow fever; for they prove that, during the 408 months, from January, 1856, to January, 1880, there was but one single month, viz., December, 1888, exempt from an officially reported case of the disease.

Now, the combined reports referred to begin only with 1868, and they refer from 1858 to 1869 solely to the military and civil hospitals, exclusive of the very numerous cases of yellow fever in the preponderating civil population not treated in the hospitals; hence, the facts stated justify the conclusion that yellow fever has prevailed in Havana monthly, not only for the past twenty-four years, but also, in all probability, for many years anterior to 1858.

ANNUAL DEATHS FROM YELLOW FEVER IN HAVANA, 1870, '79.

Year. Military and civil population. Civil population.

1870	685	277
1871	991	796
1872	515	372
1873	1,244	1,019
1874	1,435	1,256
1875	1,001	94
1876	1,612	904

1877	1,374	587
1878	1,559	738
1879	1,444	737
Totals . .	11,837	8,780

CASES AND DEATHS OF YELLOW FEVER IN THE SPANISH NAVY.

Year.	Cases.	Deaths.
1870	1,094	231
1871	105	41
1872	192	37
1873	133	33
1874	325	129
1875	831	203
1876	324	75
1877	429	158
1878	526	183
First six months 1879 . . .	305	90
Total	4,084	1,158

ISLE OF PINES.

This island appertains to the province of Havana It is about 90 miles from the city, and 54 from Batabano, whence a steamer runs once or twice a week. It contains about 540 square miles, a mountain range with a peak 1,650 feet high, and "the most wonderful mineral springs in the

world," as is alleged. It has two villages on the north coast, which contained in 1882 a population of 1,293 out of a total population on the island of 2,082. The population of the island in 1877 is reported to have been 1,693. Panuela reported in 1854 that "cases of yellow fever, of small pox, and of cholera have not been seen at the Isle of Pines."

The military hospital statistics. Table No. 46, embrace the 28 years, 1854-1878, and show a remarkable freedom from yellow fever. There were no cases until 1855, and then only two cases: only in 1856, 1859, and 1864 were the cases at all numerous; and during the recent 13 years, 1856-1878, there had not been one case The records of the military hospitals at Cuba show no exemption comparable to this at any other place except at Bahia Honda.

YELLOW FEVER CASES AND DEATHS IN THE CIVIL POPULATION OF MATANZAS FROM JULY, 1857, TO AUGUST, 1879, AS RECORDED BY THE BOARD OF HEALTH.

Years.	Cases.	Deaths.	Remarks.
1857, six months of	436	132	Only for July to Dec., 1857.
1858	546	843	Of these, 142 cases and 53 deaths in January.
1859	34		
1860	192		
1861	813	30	
1862	262	56	Of these, 77 cases and 18 deaths in January, February and March.
1863, 9 months of ...	2	1	No records for June, September, October
1864	766	160	
1865		91	

1860, no months of, recorded . No cases in military hospital.

1867 202 36

1868 88 7

1869, four months of 33 10 For March, April, May, June, only

1870, eight months of 13 7 No records for January, February, March and September

No records.

Years.	Cases.	Deaths.	Remarks.
1871	56	8	
1872	20	1	
1873	329	52	
1874	239	47	
1875	24	8	
1876	24	6	In addition, 313 cases of soldiers.
1877	86	21	
1878	201	97	In addition, 299 cases of soldiers.
1879, first 7 mo. of	53	27	

Respectfully submitted:

(Signed) Geo. M. Sternberg, Surgeon General, U. S. Army.

2. Memorandum from Commanding General Miles to Secretary of War Alger, April 18, 1898¹⁴⁶⁹

Headquarters of the Army, Washington, D. C, April 18, 1898.

To the Honorable the Secretary of War.

Sir; Referring to my former letters concerning healthful camps for the troops and the uncertainty of Congress requiring an army to move to Cuba at this season of the year, I would respectfully call attention to the letter of the Surgeon- General of the Army, dated Washington, March 25 of this year, as to the danger of putting an army in Cuba during what is known as the "rainy" or "sickly" season. That opinion is also confirmed by reports of Dr. James Guiteras, of Philadelphia, a well-known authority on yellow fever, and others. In my opinion, it is extremely hazardous, and I think it would be injudicious, to put an army on that island at this season of the year, as it would undoubtedly be decimated by the deadly disease, to say nothing of having to cope with some 80,000 troops, the remnant of 214,000, that have become acclimated, and that are equipped with 183 guns. And still another element of extreme danger would be to place an army there with, the possibility of our own Navy not being able to keep the waters between our own territory and that island clear of hostile ships or fleets.

By mobilizing our force and putting it in healthful camps and using such force as might be necessary to harass the enemy, and doing them the greatest injury with the least possible loss to ourselves, if our Navy is superior to theirs, in my judgment we can compel the surrender of the army on the island of Cuba with very little loss of life, and possibly avoid the spread of yellow fever over our own country.

¹⁴⁶⁹ *Correspondence Relating to the War With Spain*, vol. 1, 8-9.

There is still time, if this is favorably considered, to put a small force of regular troops, numbering approximately 18,000 men, in healthful camps until such time as they can be used on the island of Cuba with safety.

Very respectfully,

Nelson A. Miles, Major-General Commanding.

3. Surgeon-General Circular No. 1, April 25, 1898¹⁴⁷⁰

Circular) War Department, Surgeon-General's Office,
No. 1.) Washington, April 25, 1898.

In time of war a great responsibility rests upon medical officers of the Army, for the result of a campaign may depend upon the sanitary measures adopted or neglected by commanding generals of armies in the field. The medical officer is responsible for proper recommendations relating to the protection of the health of troops in camp or in garrison, and it is believed that, as a rule, medical officers of the United States Army are well informed as to the necessary measures of prophylaxis and the serious results which infallibly follow a neglect of these measures, especially when unacclimated troops are called upon for service in a tropical or semitropical country during the sickly season. In Cuba our armies will have to contend not only with malarial fevers and the usual camp diseases—typhoid fever, diarrhea, and dysentery—but they will be more or less exposed in localities where yellow fever is endemic and under conditions extremely favorable for the development of an epidemic among unacclimated troops. In view of this danger, the

¹⁴⁷⁰ *Report of the Surgeon-General of the Army, 1898*, 139-140

attention of medical officers and of all others responsible for the health of our troops in the field is invited to the following recommendations:

When practicable, camps should be established on high and well-drained ground not previously occupied.

Sinks should be dug before a camp is occupied or as soon after as practicable.

The surface of fecal matter should be covered with fresh earth or quicklime or ashes three times a day.

New sinks should be dug and old ones filled when contents of old ones are 2 feet from surface of ground.

Every man should be punished who fails to make use of the sinks.

All kitchen refuse should be promptly buried and perfect sanitary police maintained.

Troops should drink only boiled or filtered water and coffee or tea (hot or cold), except where spring water can be obtained which is pronounced to be wholesome by a medical officer.

Every case of fever should receive prompt attention. If albumin is found in the urine of a patient with fever, it should be considered suspicious (of yellow fever) and he should be placed in an isolated tent. The discharges of patients with fever should always be disinfected at once with a solution of carbolic acid (5 per cent) or of chloride of lime (6 ounces to gallon of water) or with milk of lime made from fresh quicklime.

Whenever a case of yellow fever occurs in camp, the troops should be promptly moved to a fresh camping ground located a mile or more from infected camp.

No doubt typhoid fever, camp diarrhea, and probably yellow fever are frequently communicated to soldiers in camp through the agency of flies, which swarm about fecal matter and filth of all kinds deposited upon the ground or in shallow pits and directly convey infectious material,

attached to their feet or contained in their excreta, to the food which is exposed while being prepared at the company kitchens or while being served in the mess tent. It is for this reason that a strict sanitary police is so important. Also because the water supply may be contaminated in the same way or by surface drainage.

If it can be avoided, marches should not be made in the hottest part of the day – from 10 a. m. to 5 p. m.

When called upon for duty at night or early in the morning, a cup of hot coffee should be taken.

It is unsafe to eat heartily or drink freely when greatly fatigued or overheated.

Ripe fruit may be eaten in moderation, but green or overripe fruit will give rise to bowel complaints. Food should be thoroughly cooked and free from fermentation or putrefactive changes.

In decidedly malarious localities from 3 to 5 grains of quinine may be taken in the early morning as a prophylactic, but the taking of quinine as a routine practice should only be recommended under exceptional circumstances.

Light woolen underclothing should be worn, and when a soldier's clothing or bedding becomes damp from exposure to rain or heavy dews the first opportunity should be taken to dry it in the sun or by fires.

Geo. M. Sternberg, Surgeon-General United States Army

4. The “Round-Robin”: Message from Shafter to Corbin, Aug. 4, 1898¹⁴⁷¹

Santiago de Cuba, via Haiti, August 3, 1898. (Received August 4, 1898—1.13 a. m.)

ADJUTANT-GENERAL, U. S. A., Washington:

Following letter giving the views of the general officers of this command is sent for the consideration of the War Department:

"To Maj, Gen. W. R. Shafter, Commanding United States forces in Cuba:

"We, the undersigned general officers commanding various brigades, divisions, etc.. of the United States army of occupation in Cuba, are of the unanimous opinion that this army must be at once taken out of the island of Cuba and sent to some point on the northern seacoast of United States; that this can be done without danger to the people of the United States; that there is no epidemic of yellow fever in the army at present—only a few sporadic cases; that the army is disabled by malarial fever to such an extent that its efficiency is destroyed and it is in a condition to be practically entirely destroyed by the epidemic of yellow fever sure to come in the near future. We know from reports from competent officers and from personal observations that the army is unable to move to the interior, and that there are no facilities for such move, if attempted, and will not be until too late. Moreover, the best medical authorities in the island say that with our present equipment we could not live in the interior during the rainy season without losses from malarial fever almost as badly as from yellow fever. This army must be moved at once or it will perish. As an army it can be safely moved now. Persons responsible for preventing such a move will be responsible for the unnecessary loss of many thousands of lives. Our opinions are the result of careful personal observations and are also based upon the unanimous opinion of our medical officers who are with the army and understand the situation absolutely.

¹⁴⁷¹ *Correspondence Relating to the War With Spain*, vol. 1, 202.

(Signed) Jos. Wheeler, major-general, volunteers; Samuel S. Sumner, commanding Cavalry Brigade; William Ludlow, brigadier-general, United States Volunteers, commanding First Brigade. Second Division; Adelbert Ames, brigadier general, United States Volunteers, commanding Third Brigade, First Division; Leonard Wood, brigadier-general, United States Volunteers, commanding City Santiago; Theodore Roosevelt, colonel, commanding Second Cavalry Brigade, J. Ford Kent, major-general, volunteers, commanding First Division, Fifth Corps; J. C. Bates, major-general, volunteers, commanding Provisional Division, Fifth Corps; H. W. Lawton, major-general, volunteers, commanding Second Division, Fifth Corps; C. McKibbin, brigadier-general. United States Volunteers, commanding Second Brigade, Second Division."

SHAFTER, Major-General

5. Circular from Fifth Corps Medical Officers; Shafter to Corbin, Aug. 3, 1898¹⁴⁷²

Santiago de Cuba, via Haiti, August 3, 1898—10.05 p. m.

Adjutant-General, U. S. A., Washington:

Following letter giving the opinion of the medical officers of this command is sent for the consideration of the War Department;

"The ADJUTANT-GENERAL FIFTH ARMY CORPS.

"Sir: The chief surgeon of the Fifth Army Corps and the chief surgeons of divisions consider it to be their imperative duty, after mature deliberation, to express their unanimous opinion that this army is now in a very critical condition. They believe that the prevalent malarial fever will

¹⁴⁷² *Correspondence Relating to the War With Spain*, vol. 1, 201.

doubtless continue its ravages and that its mortality will soon increase; that there is imminent danger that the yellow fever, now sporadic and of a mild type, may any day assume a virulent type and become epidemic. They unanimously recommend that the only course to pursue to save the lives of thousands of our soldiers is to transport the whole army to the United States as quickly as possible. Such transport they consider practicable and reasonably free from danger. The proposed move to the plateau of San Luis they believe dangerous and impracticable.

"Very respectfully,

"V. HAVARD, Major and Surgeon, United States Army, Chief Surgeon.

"H. S. KILBOURNE, Major and Surgeon, Chief Surgeon Second Division, Fifth Corps.

"M. WOOD, Major and Chief Surgeon First Division, Fifth Corps.

"Frank J. IVES, Major and Surgeon U. S. Vols., Chief Surgeon Provisional Division,

"H. S. T. HARRIS, Major and Surgeon U. S. Vols., Chief Surgeon Cavalry Division."

SHAFTER, Major-General

6. General Orders No. 2, establishing Fifth Corps Standard Operating Procedure for the prevention of yellow fever, June 2, 1898¹⁴⁷³

[General Orders, No. 2]

HEADQUARTERS FIFTH ARMY CORPS,

Tampa, Fla., June 2, 1898.

The following is published for the information of this command:

Suggestions to commanding and medical officers for the prevention of yellow fever, and the preservation of the health of the United States forces in the Tropics, by Dr. John Guiteras, United States Army.

The general hygienic rules for the government of military camps should be enforced. Your attention is called to the following special points:

The use of quinine.—The regular administration of quinine for the prevention of malaria is of doubtful advantage. Quinine, however, should be used when the individual is subjected to extraordinary depressing influences, such as traumatism, exhaustion. Several substitutes for quinine have been used by the Cuban army, but with little effectiveness. The best is probably a decoction of coffee and lemon.

Alcohol.—The excessive use of alcohol is specially deleterious in the tropics. Diluted wines, with the meals, are generally used, and with advantage. Stronger liquors internally, and in the form of frictions, may be recommended after prolonged exposure to wet. The aguardiente produced in the country is used with advantage in slight diarrheal troubles. In the treatment of

¹⁴⁷³ *Report of the Surgeon General 1898*, 203-205.

the later stages of yellow fever effervescing alcoholic drinks are useful, but we can not prescribe the large doses employed in typhoid fever and pneumonia.

Fruits.—We would especially recommend the cocoanut water when the nut is green (may be found throughout the year), the sugar cane (from November to April), the sugar apple (August and September), the orange (during the winter months), and the mango (June and July). The latter fruit should be especially avoided when green or overripe. The sapodilla (May and June), the mammey apple (August), the banana (all the year round), and the pineapple (November and December) are less easily digested and should be eaten sparingly. The alligator pear (July and August) should be eaten with the meals, and not to excess. The tamarind and the ripe guava (the latter most abundant from June to November) are laxative.

The vegetables of the country—the yam, the yuca, the malanga, and the sweet potato—should be thoroughly cooked. Rice and plantains properly cooked are favorite dishes with the natives. They are nourishing and easily digested. I recommend that the method of preparation should be learned from the natives.

Water.—The spring waters in Cuba are usually good and abundant in many sections of the island. Yellow fever is not conveyed in the water, but typhoid fever and probably also malaria, dysentery, and some of the parasitic diseases are transmitted in the drinking water. Unless the water be obtained directly from the springs it should be boiled.

Bathing.—Bathing every day in the running streams is safe, and to be recommended. The best hour for bathing is about 11 a. m.

Clothing.—Light linen or cotton should be worn next the skin. Wool irritates the skin, promotes excessive perspiration, and prevents the cooling effect of evaporation. The danger of chilling by

the rapid cooling of the surface under wet linen can be prevented readily by a change of clothing, or by an outer dry garment, or the woolen blouse, when the body is exposed to drafts of air.

The bed covering should be comfortable. Wet clothing and wet feet should be especially avoided during sleeping hours.

The tent flooring.—The hammock may be more comfortable than the floor, and it will certainly afford protection against troublesome insects, but there is no proof that the elevation of 2 or 3 feet from the ground will prevent the introduction into the body of the miasms of disease. If it be not practicable to swing large bodies of troops, there will be found in Cuba an abundance of tall grass that may be used in lieu of straw.

Work.—No exercise or exposure to the direct rays of the sun should be permitted between the hours of 11 a. m. and 3 p. m. The morning hours are the best for marching. The heavy showers and thunderstorms occur usually in the afternoon after 2 o'clock. The mornings are usually clear. Continuous rain storms are cyclonic, and they occur mostly in September and October.

The site of the encampment.—The ordinary rules should govern us in the selection of a camp site. The ground should be high. The prevailing winds are from the northeast, and the slopes of the hills fronting to this quarter should be selected. The privies should be located to the northwest of the camp.

With respect to yellow fever, two important facts should be borne in mind: (1) Yellow fever prevails habitually (so-called endemicity) only in a few and small sections of the island. (2) Yellow fever may be carried to, and when so carried may spread in, all sections of the country. The sections referred to under No. 1 are the populous centers, especially the seaport towns of commercial importance, such as Havana, Matanzas, Cardenas, Sagua, Santiago de Cuba,

Manzanillo, Cienfuegos, Batabano. The large towns in the interior that have a free communication with the above are also frequently the seat of epidemics. In the country districts yellow fever is an imported disease.

The troops, then, should be kept, as far as it is practicable, out of the cities, and every precaution must be taken to prevent the introduction of yellow fever into the camps.

The means of conveyance of the disease into the camp will be through supplies, through prisoners of war, through detachments of our troops that may have been forced to occupy infected districts, through the smuggling of things into the camp. Against all these dangers we must institute the rules governing a strict quarantine. Our supplies should come from the north, and if depots for such supplies must be established on the island we should select noninfected places for this purpose. Prisoners of war should be corralled in a place of detention, guarded, if possible, by immune troops. The clothing of the prisoners should be disinfected at once. If no other measures of disinfection are available, we can place much reliance upon fresh air and sunlight, provided the exposure of every piece be complete. The period of detention and observation of these prisoners should extend over seven days.

The presence of a case of yellow fever in a camp is no evidence that the camp is, or that it will become, infected. Yellow fever is not directly transmissible. If the house, the room, the tent where a case of yellow fever is found [to] be not infected, individuals may come in contact with such a case or cases without contracting the disease. Large yellow-fever hospitals have been managed without a single case occurring among the attendants, though these were not immune.

In the detention camps established by the Marine-Hospital Service near large epidemic centers the disease has never spread among the refugees. Of course, a certain proportion of these refugees are stricken down with the disease. They have contracted it in the epidemic center, and

when they arrive in camp they are going through the process of incubation. The disease, therefore, breaks out within the first five days after arrival. The permanent residents of the camp—the attendants and the refugees who have been detained in camp longer than seven days—never contract the disease from these imported cases. This means that the camp has not become infected.

The measures taken to prevent the infection of these camps are twofold. (1) The baggage of these people is disinfected immediately upon arrival in camp. (2) A careful watch is kept upon these new arrivals and upon everybody in the encampment. On the first appearance of suspicious symptoms the individual affected is removed to a hospital especially provided for this purpose. The safety then depends upon the prompt recognition of the symptoms and the immediate isolation of the cases.

Our military camps should be divided from the start into two distinct and separate parts—one a main camp, the other a hospital camp. The latter should be situated from one-fourth to one-half a mile to leeward of the main camp.

A few tents should be placed about 100 yards from the hospital camp for the care of suspicious cases in which the diagnosis may be uncertain. This should be called the probation camp.

The hospital camp should be surrounded by a barbed-wire fence, and should be carefully guarded.

Even the hospital camp does not necessarily become infected. Disinfection of the clothing and the dejecta should be instituted to prevent this. The probation hospital should be carefully guarded against infection. When a case has been recognized as one of yellow fever and has been removed to the hospital camp, the walls of the tent should be washed down with a solution of

bichloride of mercury, 1:2000, and the ground should be burned by a Barber asphalt furnace.

Patients may be returned to the main camp ten days after the establishment of convalescence and after disinfection of the clothing.

If there be evidence that cases of yellow fever have originated in the main camp, it should be moved.

The diagnosis of yellow fever is based upon the following three cardinal symptoms: The characteristic appearance of the face, which may show itself with sufficient distinctness in the first twenty-four hours; and the albumin in the urine, and the peculiar discrepancy between the pulse and temperature. The two latter symptoms may not appear until the third or fourth day of the disease.

By command of Major-General Shafter:

E. J. MCCLERNAND,

Official.

Assistant Adjutant-General.

APPENDIX C

Bibliographic Essay

This appendix is intended to provide an overview of the major sources on the Spanish-American War and on the topics of the development of military medicine, nineteenth century medicine, and studies of disease and military operations. It is organized by topic and type of source (government documents, memoirs, academic histories, etc.)

There are a wide variety of epidemiological and medical books and papers available that deal with disease during the Spanish-American War. These fall into two broad categories – medical/epidemiological histories and medical/epidemiological studies of diseases that were of interest before the twentieth century. The major sources in these categories will be discussed below. Within the medical/epidemiological category of sources, books and journal articles written before 1900 (or very shortly thereafter) can be considered primary sources for our understanding of medicine during this period (1750-1900), while the modern medical histories can be considered secondary sources. Modern medical journal articles may also be used to reflect a current understanding of the disease processes present during historical epidemics.

Histories of relevance to this dissertation fall into several categories. The historiography of the Cuban insurrections is rich enough to deserve a section in this essay. Histories of the Spanish-American War itself can be divided between the popular histories written during and just after the war (providing a broad spectrum from the amateur to the sensationalistic to the serious), memoirs (especially by the senior leaders such as Alger, Long, Miles, and Shafter), and academic histories. The major academic sources were discussed in Chapter 1 as part of the

historiography of the war; this essay will include some discussion of the lesser titles within this category.

There are many primary sources available on the war, most published by the U.S. government. The most important sources are discussed below; the complete bibliography is given at the end of this document.

Government Sources

There are a wide variety of primary source materials from the war published as Executive branch reports or Congressional reports by the Government Printing Office (GPO). Much of the official correspondence from the war is contained in the reports of the Secretary of War and the Secretary of the Navy for 1898, part of the annual reports of the War Department and the Navy Department.¹⁴⁷⁴ Included in the War Department Report, Part 1, are reports from all of the staff branches and the report of the Secretary of War. The report includes much of the correspondence from the major subordinate commanders to and from the War Department during the war as well as their reports on battles, etc. given to the Secretary of War during their respective campaigns. The entire period of the war is included, despite the fact that the report technically ends on June 30, 1898 at the end of Fiscal Year 1898.¹⁴⁷⁵ The Adjutant-General's report (one of the staff bureaus included in the report) includes all of the regulations, directives, circulars, general

¹⁴⁷⁴ Department of War, *Annual Reports of the War Department for the Fiscal Year Ended June 30, 1898, Report of the Secretary of War* Volume 1 Miscellaneous Reports, Part 1 (Washington: Government Printing Office, 1898).

¹⁴⁷⁵ The report itself is dated Nov. 29, 1898. In general the report includes figures through September 1898, although the war correspondence ends with the declaration of peace (Aug 12, 1898) and Miles' final war-related message (Aug. 21, 1898). Some subordinate reports include data through mid-November 1898, while some data such as appropriations information run into 1899. Although hostilities ended on August 12, 1898, the war period technically extended until the Spanish ratification of the peace treaty on March 19, 1899. Information for war-related activities after August 12, 1898 is contained in the *Annual Reports of the War Department for the Fiscal Year Ended June 30, 1899, Report of the Secretary of War* Volume 1 Miscellaneous Reports, Part 1 (Washington: Government Printing Office, 1900); the 1899 report also offers Surgeon-General Sternberg's defense of the Medical Department during the war.

orders, and other official actions taken during the war (as well as during the rest of Fiscal 1898). Of particular interest for this dissertation is the Surgeon-General's report, which includes all sickness and casualty figures as well as information about how the medical department handled epidemic outbreaks during the war, both in combat (in Cuba, Puerto Rico, and the Philippines) and in the training camps at home (in particular the typhoid epidemic).¹⁴⁷⁶

Part 2 of the War Department report is the *Report of the Major-General Commanding the Army*, also published separately.¹⁴⁷⁷ This part contains reports from Army commanders from the Commanding General of the Army down to individual unit commanders. In peacetime, the lower level units included in the War Department report are the Commanding Generals of the military departments that geographically encompass the United States. In 1898 Part 2 included reports from the three expeditionary forces created to execute the ground combat during the war – the Fifth Army Corps under Maj. General Shafter, who commanded the Cuba campaign, the Eighth Army Corps under Maj. General Merritt, who commanded the Philippine campaign during the war, and the First Army Corps under the command of Maj. General Miles,¹⁴⁷⁸ who commanded the Puerto Rico campaign. The report of the war from the perspective of the Army Commanding General is different from that of the perspective of the Secretary of War (found in Part 1 of the War Department Report), although much of the correspondence between the two is duplicated. These differences amplify the ambiguous split nature of the Army command (between the Secretary of War and the Commanding General of the Army) before and during the war. The

¹⁴⁷⁶ This includes statistical tables that compare disease rates during the war to previous peacetime periods, broken out by period, location, disease, and race (*Report of the Secretary of War, 1898*, 645 -687),

¹⁴⁷⁷ Department of War, *Annual Reports of the War Department for the Fiscal Year Ended June 30, 1898, Report of the Major-General Commanding the Army* (Washington: Government Printing Office, 1898). Also published as *Annual Report of the Major-General Commanding the Army to the Secretary of War, 1898* (Washington: Government Printing Office, 1898).

¹⁴⁷⁸ The First Corps commander was Maj. Gen. Brooke, but he was directly under the command of Gen. Miles during the campaign.

post-war occupation of Cuba, Puerto Rico, and the Philippines, as well as the reorganization of the Army and the National Guard is found in the *Reports of the Secretary of War* for 1899 – 1903, conveniently published in a single volume in 1904.¹⁴⁷⁹

The Navy Department under the Secretary of the Navy was completely independent of the War Department before the end of the Second World War, so it published its own set of reports. The *Annual Report of the Secretary of the Navy* is very similar to the *War Department Report Part I, Report of the Secretary of War* – it covers the activities of the Secretary and the staff functions under his purview, such as the Naval Intelligence Service.¹⁴⁸⁰ The operations of the navy during the war are found in the *Appendix to the Report of the Chief of the Navigation Bureau of the Navy*, reflecting both the Caribbean and the Asiatic (Philippine Islands) theaters of war.¹⁴⁸¹ The history of the war prepared by (then) Captain French Ensor Chadwick, chief of staff to the Commander of the North Atlantic Fleet, is also very helpful in understanding the naval history of the war; this history is discussed in Section V (Memoirs).¹⁴⁸²

Several reports prepared by commanders in the Philippine campaign were published by the government. A special investigation into the Filipino insurrection against the Spanish Crown was prepared and released by Maj. General Davis: *The Philippine Insurrection, 1896-1898: An Account, From Spanish Sources Principally, Prepared by Direction of Maj. Gen. George W.*

¹⁴⁷⁹ Department of War, *Five Years of the War Department Following the War With Spain, 1899-1903, as Shown in the Annual Reports of the Secretary of War* (Washington: GPO, 1904). The individual reports for each year are also available individually from the Government Printing Office.

¹⁴⁸⁰ Department of the Navy, *Annual Report of the Secretary of the Navy for the Year 1898* (Washington: GPO, 1898).

¹⁴⁸¹ Department of the Navy, *Appendix to the Report of the Chief of the Bureau of Navigation, 1898* (Washington: GPO, 1898).

¹⁴⁸² French Ensor Chadwick, *The Relations of the United States and Spain: The Spanish-American War*, 2 vols. (New York: Charles Scribner's Sons, 1911).

Davis. This proved to be the best primary source for the pre-war rebellion.¹⁴⁸³ Published separately is the *Report of Major General Otis, US Army* which documents the early history of the Philippine campaign. This report was particularly helpful in understanding the US Government's position on how the Philippine Insurrection began. The Filipino side is represented by a private publication printed by Emilio Aguinaldo entitled *True Version of the Philippine Revolution*.¹⁴⁸⁴

The documentary history of the diplomacy between the United States and Spain is contained in the *Foreign Relations of the United States* for 1898 under the section dealing with Spain.¹⁴⁸⁵ It is particularly helpful in understanding the attempts of the McKinley Administration to avoid a war with Spain after the destruction of the *USS Maine*. The Department of State also published the Proclamations and Decrees issued or received by the department during the Spanish-American War, primarily the various proclamations of neutrality by various nations across the world relating to hostilities between Spain and the United States.¹⁴⁸⁶

The 52nd Congress directed a compilation of the official messages of the President; Volume XIV has the papers of the second Cleveland Administration and the McKinley Administration through April, 1900 encompassing the prewar period and the Spanish-American War.¹⁴⁸⁷ It is

¹⁴⁸³ Department of War, "The Philippine Insurrection, 1896-1898: An Account, From Spanish Sources Principally, Prepared by Direction of Maj. Gen. George W. Davis," Appendix VIII in *Annual Reports of the War Department, 1903, Vol. III, Reports of Department and Division Commanders* (Washington: GPO, 1903). Also printed in the Philippines as War Department, *The Philippine Insurrection, 1896-1898: An Account, From Spanish Sources Principally, Prepared by Direction of Maj. Gen. George W. Davis, U.S. Army, Commanding the Division of the Philippines*, by Maj. John S. Mallory, *First U.S. Infantry* (Manila, P.I., July 1, 1903).

¹⁴⁸⁴ Department of War, *Report of Major General Otis, US Army, Commanding Division of the Philippines Sept. 1, 1899 to May 5, 1900* (Washington: GPO, 1900); Emilio Aguinaldo, *True Version of the Philippine Revolution* (Farlah (Philippine Islands), 23rd September 1899).

¹⁴⁸⁵ US State Department, *Foreign Relations of the United States, 1898* (Washington: GPO, 1901), pages 558-1085 deal with Spain.

¹⁴⁸⁶ US State Department, *Proclamations and Decrees During the War With Spain* (Washington: GPO, 1899).

¹⁴⁸⁷ US Congress, *A Compilation of the Messages and Papers of the Presidents XIV* (New York: Bureau of National Literature). No publication date; the copyright is 1897 but it is clearly printed after McKinley's assassination (Sept. 1901). Also online: <https://archive.org/details/compilationofmes14unit>, accessed 19 Jan 2015.

particularly useful in providing the original text of all of the Presidential messages to Congress on the Cuban situation before the war as well as various proclamations such as the call-up of troops at the start of the war.

Most of the official messages sent back and forth between the War Department, Navy Department, and commanders at various levels are contained in the *Correspondence Relating to the War With Spain*, published in two volumes in 1902 and covering the period between April 15, 1898 and July 30, 1902. Volume 1 consists of the mobilization and organization of the Regular and Volunteer units, the Santiago and Puerto Rican campaigns, and also the messages from the China Relief Expedition (Boxer War). Volume 2 is devoted to the Philippines – the war period, the Philippine Insurrection up to June 1, 1902 and the period in between the two conflicts. These volumes are similar to the *Official Records of the Rebellion* dealing with the Civil War; they contain the message traffic but no analysis or background information.¹⁴⁸⁸

The US lacked any national intelligence service during the nineteenth century, but both the War Department and the Navy Department had small intelligence branches. The Office of Naval Intelligence (ONI) produced some invaluable translations of Spanish sources related to the war. The most useful single source is *Notes on the Spanish-American War*,¹⁴⁸⁹ which includes a documentary naval history of the war by Admiral Cervera, and a journal written about the siege and capitulation of Santiago by the second in command of the Santiago naval detachment, Lt. Jose Müller. There are also translations of reports made by German naval observers and a document about Cervera's squadron written by his flag captain. ONI also produced a translation

¹⁴⁸⁸ Department of War, *Correspondence Relating to the War With Spain and Conditions Growing Out of the Same, including the Insurrection in the Philippine Islands and the China Relief Expedition, Between the Adjutant-General of the Army and Military Commanders in the United States, Cuba, Porto Rico, China, and the Philippine Islands, From April 15, 1898 to July 30, 1902*, 2 vols. (Washington: GPO, 1902). These messages were also released in a CD format: *The United States Army – War With Spain* (CD-ROM: US Army Center of Military History, March 2004).

¹⁴⁸⁹ Office of Naval Intelligence, *Notes on the Spanish-American War* (Washington: GPO, 1900).

of Cervera's *Vindication of the Navy* published in Madrid in November 1898 and a pamphlet on blockades by Capt. Núñez, a Spanish artillery captain who wrote about the siege of Santiago.¹⁴⁹⁰

The War Department's Military Information Division (MID) published *Military Notes on Cuba* and *Military Notes on the Philippines*, which provided geographic and demographic information on the two war zones during the war.¹⁴⁹¹

The Surgeons-General of the Army and of the US Marine Hospital Service (USMHS) both prepared annual reports. These provide an accounting for actions taken by the respective departments during and after the war, and the Army's document includes detailed reports from the chief surgeons of the various commands.¹⁴⁹² The USMHS report includes the quarantine procedures for ships returning from the Caribbean.

The US government published several key medical reports during the 1880s and 1890s. The 1879 yellow fever epidemic led to the creation of the National Board of Health, a Federal public health service with the mission of reducing or eliminating future epidemics through "the investigation of the causes of disease by means of scientific experiments and by sanitary surveys of places more than usually unhealthy, or likely to become so, or to measures which have for their end the prevention of the introduction of contagious and infectious diseases into the United States from foreign countries, or from one State into another." The 1880 annual report is particularly useful as it contains the complete report of the 1879 Havana Yellow Fever

¹⁴⁹⁰ Office of Naval Intelligence, *Views of Admiral Cervera Regarding the Spanish Navy in the Late War* (Washington: GPO, 1898); Captain Severo Gomez Nuñez, *The Spanish-American War. Blockades and Coast Defense*, Office of Naval Intelligence, War Notes No. VI (Washington: GPO, 1899).

¹⁴⁹¹ Department of War, Military Information Division, *Military Notes on Cuba* (Washington: GPO, 1898); Military Information Division, *Military Notes on the Philippines* (Washington: GPO, 1898)

¹⁴⁹² US Army Surgeon General, *Report of the Surgeon General of the Army for Fiscal Year 1898* (Washington: GPO, 1899); US Treasury Department, *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898* (Washington: GPO, 1899).

Commission.¹⁴⁹³ Additional documents on yellow fever were published during this period. George Sternberg's *Report on the Etiology and Prevention of Yellow Fever* (1890)¹⁴⁹⁴ was the result of the most extensive study of yellow fever up to that time. Published by the Marine Hospital Service, it is primarily useful in the negative; that is, in ruling out hypotheses about the origin or transmission of the disease. The USMHS also released a later report in 1899 on yellow fever's "nature, diagnosis, treatment, and prophylaxis" along with the yellow fever quarantine regulations. This report identifies what was known about yellow fever at the time of the Spanish-American War as well as identifying the actions taken by the service to quarantine ships returning from Santiago after the outbreak of yellow fever among the troops.¹⁴⁹⁵ A Senate report on Yellow Fever in 1911 led to the publication of *Yellow Fever: A Compilation of Various Publications*, provides a complete report of the work of Walter Reed and his colleagues in the identification of the etiology and transmission of yellow fever. It also includes "Reports from sanitary officers in Habana, Cuba, demonstrating the practical value of the scientific findings of Maj. Reed and his associates on the Yellow Fever Commission" as well as "A few general directions with regard to destroying mosquitoes" written by William Gorgas.¹⁴⁹⁶

Typhoid was also the subject of an official investigation and government report. Typhoid was the major killer in the Spanish-American War, particularly in the mobilization and training camps across the southern states. A Typhoid Board led by Walter Reed was established to investigate "the cause and extensive prevalence of typhoid fever in the various military camps

¹⁴⁹³ National Board of Health, *Annual Report of the National Board of Health, 1880* (Washington: GPO, 1881). Quote p. 3.

¹⁴⁹⁴ George Sternberg, *Report on the Etiology and Prevention of Yellow Fever* US Marine Hospital Service document 1328 (Washington: GPO, 1890).

¹⁴⁹⁵ USMHS, *Yellow Fever: Its Nature, Diagnosis, Treatment, and Prophylaxis and Quarantine Regulations Relating Thereto* (Washington: GPO, 1899)

¹⁴⁹⁶ Senate Document 822, 61st Congress, *Yellow Fever: A Compilation of Various Publications* (Washington: GPO, 1911).

within the limits of the United States.” The raw data from the investigation (over 2,600 typewritten pages) was never published,¹⁴⁹⁷ but a complete summary of the findings was released as *Abstract of Report on The Origin and Spread of Typhoid Fever in U. S. Military Camps during the Spanish War of 1898*. The Board went well beyond just establishing how and why the typhoid epidemic occurred; it also made some basic findings and the etiology and transmission of typhoid fever and its prevalence not only within the Army but also in the United States. One of the critical findings was that the disease had primarily been transmitted by flies as well as person-to-person contact; previously typhoid had been thought to be strictly a water-borne disease.¹⁴⁹⁸

The Army Medical Department and the Marine Hospital Service also produced documents relating to their peacetime duties and organization, such as the *Manual for the Medical Department* (1898), *Report of the Surgeon-General of the Army* (1898) and *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States* (1898).¹⁴⁹⁹ The documents are also available for years prior to and after the war.

The many mistakes made during the war, especially the problems with mobilization, logistics, and disease sparked a major Presidential investigation. The single most useful primary source set of documents is the eight volume *Report of the Commission Appointed by the President to Investigate the Conduct of the War Department in the War With Spain*. The Commission was chaired by Grenville Dodge, so the documents are typically referred to as the

¹⁴⁹⁷ A 2-volume condensed report was published in 1904: Walter Reed, Victor Vaughan, Edward Shakespeare, *Reports on The Origin and Spread of Typhoid Fever in U. S. Military Camps during the Spanish War of 1898*, 2 vols. (Washington: GPO, 1904).

¹⁴⁹⁸ Walter Reed, Victor Vaughan, Edward Shakespeare, *Abstract of Report on The Origin and Spread of Typhoid Fever in U. S. Military Camps during the Spanish War of 1898* (Washington: GPO, 1899).

¹⁴⁹⁹ US Army Surgeon-General, *Manual for the Medical Department* (Washington: GPO, 1898); US Department of War, *Report of the Surgeon-General of the Army to the Secretary of War for the Fiscal Year 1898* (Washington: GPO, 1899); US Treasury Department, *Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1898* (Washington: GPO, 1899).

Dodge Commission Report. Their remit from the Secretary of War was to “investigate thoroughly every bureau of the War Department in connection with the mustering, clothing, supplying, and arming of troops, transportation, the letting of contracts and chartering of vessels, and all expenditures of every kind, as well as of orders issued by this Department”; the President added the following: “There has been in many quarters severe criticism of the conduct of the war with Spain. Charges of criminal neglect of the soldiers in camp and field and hospital and in transports have been so persistent that, whether true or false, they have made a deep impression upon the country, It is my earnest desire that you shall thoroughly Investigate these charges and make the fullest examination of the administration of the War Department in all of its branches with the view to establishing the truth or falsity of these accusations.”¹⁵⁰⁰

The Dodge Commission established a set of questions for each staff bureau and requested formal reports from these bureaus; the questions and responses are contained in Volumes 1 and 2 (Appendices).¹⁵⁰¹ Included in these responses are reports made by staff during the war; for example the Inspector-General’s Office provided the reports of the various inspector-generals assigned to the different divisions and corps. The responses contain the official Army accounts of their actions during the war while the reports provide a valuable look at specific actions taken and the conditions encountered by these officers during the war. Also included in Volume 1 is the official Report to the President containing the final conclusions and recommendations.

Volumes 3 through 7 contain the verbatim testimony gathered from over 450 witnesses, from Commanding General Miles down to various privates that volunteered to provide testimony. In addition to the unit commanders requested to testify the hearings were open to anyone who wished to give testimony, to include civilians who visited the hospitals and camps. Almost

¹⁵⁰⁰ *Dodge Commission Report*, vol. 1 (Appendices), 5-6.

¹⁵⁰¹ *Dodge Commission Report*, vols. 1 & 2 (Appendices) (Washington: GPO, 1900).

everyone volunteered to provide sworn testimony; the most notable person who refused to do so was Major General Miles¹⁵⁰². These witnesses answered questions and provided information on a variety of topics; for example the commissary officers and men testified about the rations, quartermasters about transportation and supplies, surgeons about medical care and conditions in the hospitals, etc. The enlisted men were also asked about their opinions on the quality and quantity of their food and the equipment and uniforms they were provided by the government. Testimony by the commanders provided insight into their states of mind during the war and why they took certain actions or made specific judgments. There were exactly 3,800 pages of testimony gathered and published.¹⁵⁰³

Volume 8 concludes the Dodge Commission Report, containing the correspondence the Commission obtained in lieu of spoken testimony. The following letter is typical: “I am the father of Lieut. Hugh Haddow, Jr., Signal Corps, United States Volunteers, who has been in the First Division Hospital at Camp R. A. Alger, Va., since August 10, 1898. I have been here with my son for the last eleven days. During that time I know that my son has had the best of care and attention. I know of no case of neglect of patients on the part of surgeons or nurses since I came here, and do not believe any such has existed.” Of course some of the correspondence was negative as well, but they generally addressed some specific issue, often in response to newspaper reports (which were generally refuted).¹⁵⁰⁴

The government sources are the best resources for official reports of the commanders, official correspondence, and foreign relations – typical for government reports. However, the government also published a wide variety of medical reports as well, providing much of the

¹⁵⁰² He provided unsworn testimony.

¹⁵⁰³ *Dodge Commission Report*, vols. 3, 4, 5, 6 & 7 (Testimony)(Washington: GPO, 1900).

¹⁵⁰⁴ *Dodge Commission Report*, vol. 8 (Correspondence). Washington: GPO, 1900. The letter cited is on pages 65-66.

medical history of the period. The real gems are the two investigations of the major deficiencies in the preparation and execution of the war – the Typhoid Board investigation into the typhoid epidemic that resulted in most of the deaths resulting from the Spanish-American War, and the Dodge Commission Report, which obtained official explanations and gathered testimony on all issues related to the war, such as the problems related to the disease epidemics that hit the Fifth Army Corps in Cuba, to include the problems related to quarantine, evacuation, and treatment. The historian's work is lightened by the fact that these reports exist in digital form in the public domain, as are many of the other sources contemporary to the war.

Medical Sources (1898 and earlier)

There are a variety of medical texts from the 18th and 19th centuries available that give a powerful insight into the knowledge of disease up to the time of the Spanish-American War. Many of these specifically address the medical issues inherent in warfare. The earliest text was John Pringle's *Observations on the Diseases of the Army*, which was published in at least seven editions (edition 2, 1753 and edition 7, 1765 were used as sources).¹⁵⁰⁵ Pringle, physician-general to the army deployed in the Low Countries, was one of the first to gather data on the different epidemic diseases encountered by the British Army both in garrison and in the field. Pringle criticized the ancients (still regarded as important medical sources) for their silence on “the diseases incident to the armies of the ancients” and found that this silence continued to the “moderns” of his time. He maintained that he was one of the first to study military medicine, as the field “is still in a manner new: so little is a military life consistent with that state of

¹⁵⁰⁵ John Pringle, *Observations on the Diseases of the Army*. 2nd ed. (London: A. Miller et. al., 1753); 7th ed. (London: W. Strahan, et. al., 1765). He explains the differences between editions “by expressing with more confidence some of my former remarks, and by omitting others which I had advanced without foundation.” (7th ed., xv)

tranquility, requisite for study and observation.”¹⁵⁰⁶ Pringle was very aware of the fact that field conditions can be conducive to illness, especially the marshy areas of the “Low Countries,” and thus devoted part of his book to the “embarkations, marches, encampments, cantonments, winter-quarters, the seasons, the changes of the weather, and, in a word, all the circumstances that seemed to me most likely to affect the health of the army.” He did so to “suggest measures, either for preventing, or for lessening such causes in any future war.” Although Pringle was still ensconced in the humoral view of medicine, his attempts to link cause and effect were very modern. He makes some specific recommendations based on his observations, such as starting a campaign earlier in order to retire to winter quarters earlier, as “it imports much as to the health, whether they begin early, or late.”¹⁵⁰⁷ Stanhope Bayne-Jones, Deputy Chief of Preventive Medicine during World War II, stated in 1968 that Pringle’s work contains “most of the principles and recommended preventive medicine practices of the present, except, of course, those that are based upon a knowledge of microbial causes of disease, of arthropod vectors and carriers...”¹⁵⁰⁸

Benjamin Moseley’s *A Treatise on Tropical Diseases on Military Operations* (1792) focuses on the issue of timing the season of campaigning to avoid remittent fevers (malaria).¹⁵⁰⁹ Unfortunately for British troops, the advice to avoid the wet seasons in tropical campaigns was ignored until the third Anglo-Ashanti War (1873-4), discussed in a campaign case study in Chapter 5. Robert Jackson was the next major author to make recommendations for troops campaigning in the tropics; he wrote *A Treatise on the Fevers of Jamaica* in 1791 and *A Sketch*

¹⁵⁰⁶ Pringle, *Observations on the Diseases of the Army*, 2nd ed., iii.

¹⁵⁰⁷ Pringle, *Observations on the Diseases of the Army*, 7th ed., vi, 118.

¹⁵⁰⁸ Bayne-Jones, *Evolution of Preventive Medicine*, 11.

¹⁵⁰⁹ Benjamin Moseley, *A Treatise on Tropical Diseases on Military Operations* (London: T. Cadell, 1792).

of the *History and Cure of Febrile Diseases* in 1817.¹⁵¹⁰ Jackson was less concerned about when and where campaigns would be conducted and more concerned with the high mortality rate of British troops sent to the West Indies. He was one of the first to recommend using African troops to reduce losses due to epidemic disease, especially yellow fever. George Pinckard's three volume *Notes on the West Indies* (1806) was particularly interested in "Seasoning, or Yellow Fever, of Hot Climates."¹⁵¹¹ Partly journal, partly travelogue, Pinckard's book covers his experiences in the West Indies from 1795 to 1797 in the form of letters to a friend and colleague. He failed to distinguish between malaria and yellow fever; at one point he noted that "With each change of season our desperate foe seems to fight under a new face, and camelion-like [sic], to assume a new skin. Very seldom do we now see the fever attended with that remarkable yellowness which it so commonly exhibited in the months of August and September. During the late dry season it lost its continued, and took on a remitting or intermitting form, and the intermitting type still continues to be very frequent..."¹⁵¹² Pinckard also commented upon "the fatal influence of climate upon newly arrived Europeans." A regiment of infantry "is already returned, a mere skeleton, consisting of only a small body of invalids..."¹⁵¹³

Reece compared the East and West Indies in his 1814 *Medical Guide for Tropical Climates Particularly the British Settlements in the East and West Indies and the Coast of Africa*, noting that in both places the rainy season was "the chief period of disease."¹⁵¹⁴ One of the early American texts on tropical disease is Davidge's *An Essay on the Disease Called Yellow Fever*

¹⁵¹⁰ Robert Jackson, *A Treatise on the Fevers of Jamaica* (London: J. Murray, 1791); _____, *A Sketch of the History and Cure of Febrile Diseases* (London: T. and H. Eeles, 1817).

¹⁵¹¹ George Pinckard, *Notes on the West Indies* 3 vols. (London: Longman, Hurst, Rees, and Orme, 1806). Pinckard was Deputy Inspector-General of Hospitals for the West Indies; the quote is taken from a lengthy page-long subtitle.

¹⁵¹² Pinckard, *Notes on the West Indies*, 198.

¹⁵¹³ *Ibid.*, 271.

¹⁵¹⁴ Dr. Richard Reece, *Medical Guide for Tropical Climates Particularly the British Settlements in the East and West Indies and the Coast of Africa* (London: Longman, Hurst, Rees, Orme and Brown, 1814), 149.

(1821), which is also a call for medicine as a science (nosology). He admits to the difficulty in relying only on symptoms to classify the disease, maintaining that “neither the yellowness of the skin, nor the discharge of a dark-coloured matter by vomiting, nor even the existence of both these symptoms in the same patient, is peculiar to that disease.”¹⁵¹⁵ Over 15 years later, Dr. W.J. Evans admits to the same difficulty in classification in *A Clinical Treatise on the Endemic Fevers of the West Indies*, relying instead on detailed case studies.¹⁵¹⁶

The American Civil War produced a great deal of lessons learned with regard to military medicine, both with respect to the treatment of wounds and the reduction of disease. The latter was split between concerns about post-surgical infections (primarily gangrene) and the prevention and treatment of infectious disease affecting otherwise healthy men. Two major primary sources were produced after the war detailing these lessons learned. The first major source was produced by the Army Surgeon General, *The Medical and Surgical History of the War of the Rebellion* (1861-65) (abbreviated as *MSHWR*). Of particular interest are the three medical volumes, published as Medical and Surgical History Volume I, Parts 1, 2, and 3.¹⁵¹⁷ The first part is a statistical summary of sickness and deaths from both enemy action and disease broken out in many different ways (to include race, location, time period, etc.) along with copies of division and corps medical directors. The second part deals with the “alvine fluxes” (primarily diarrhea and dysentery), the leading cause of death from disease, while Part 3 deals with fevers

¹⁵¹⁵ “The ingenious nosologist assures us, that his object is to convey a distinct enumeration of the characteristic or pathognomonic symptoms of diseases. ... Human nosology, then, is that discourse which treats of the diseases, in their sensible characters, to which the human body is liable.” (spelling as per original) John Davidge, *An Essay on the Disease Called Yellow Fever* (Baltimore: Cushing and Jewett, 1821), v-vi, x, 26.

¹⁵¹⁶ “...of all the diseases which fall under the observation of the physician, none have led to greater discussions respecting their nature, nor to more opposite modes of practice, than those which constitute what is called the ‘Endemic’ of the West Indies. Doubts and difficulties beset the path of the young practitioner in these countries...” W. Evans, *A Clinical Treatise on the Endemic Fevers of the West Indies* (London: John Churchill, 1837), v.

¹⁵¹⁷ Volume 2 of the *Medical and Surgical History* consists of the surgical history, in various parts.

including malaria and yellow fever, as well as other “miasmatic and non-miasmatic diseases”.¹⁵¹⁸

These volumes provide an excellent summary of the lessons learned during the war. As the author states in the introduction “The use of medical statistics permitted the identifications of correlations between the occurrence of disease and the circumstances of its appearance. Statistics were also gathered from peacetime years before and after the Civil War, as well as from other conflicts such as the Crimean War and the Franco-Prussian War, permitting direct comparisons of our wartime experiences against peacetime experience and the experience of European armies in battle.”¹⁵¹⁹ Some of these associations were useful, others represented correlation without causation.

The US Civil War sparked a study of so-called “camp diseases,” such as *Contributions Relating to the Causation and Prevention of Disease and to Camp Diseases* (1867), to include “Military Hygiene.” Interestingly, it begins by enumerating the “various influences affecting the physical endurance, the power of resisting disease...” The list is familiar to the reader of Chapter 3, to include poor food; overcrowding; cold, dampness, and inability to wash; “horribly impure air”; and close contact with individuals “suffering under various contagious maladies.” This led to typhoid “by reasons of overcrowding and other causes,” malaria “if the depot be placed in a malarious district,” or more commonly “bronchitis, pneumonia, measles, mumps, diarrhea, and dysentery.” Although these exist in civilian life, “recruits are more subject to them than the same number of civilians of corresponding ages, because they were placed in circumstances more fully exposing them to the action of diseases.” For example, measles was once attributed to specific

¹⁵¹⁸ US Army Surgeon General, *The Medical and Surgical History of the War of the Rebellion* (1861-65), Volume I, Part I (Washington: Government Printing Office, 1870); _____, *MSHWR*, Volume I, Part II (Washington: GPO, 1879); _____, *MSHWR*, Volume I, Part III (Washington: GPO, 1888). Miasmatic disease included malaria and “continued fevers” such as typhoid and (at the time) typho-malaria. Non-miasmatic diseases included respiratory diseases including pneumonia, consumption (TB), and others such as rheumatism, ophthalmia, and cardiac disease. “Other diseases” included “nostalgia” (depression), alcoholism, VD, and miscellaneous deaths such as poisonings.

¹⁵¹⁹ *MSHWR*, vol. I, part I, xix.

causes such as damp straw, but a statistical analysis of the large number of recruits revealed that “this disease was propagated by contagion, and that it occurred amongst young recruits because they had not hitherto been exposed...” The large number of soldiers in the Union army permitted the use of statistics to engage in epidemiology (although the term was not used at the time). The book is also a compendium of lessons learned from a variety of diseases that affected both the men in camps and epidemics in the field.¹⁵²⁰ The new focus on sanitation and military hygiene led to books such as Parkes’ *A Manual for Practical Hygiene*, Fox’s *Sanitary Examinations of Water, Air, and Food*, and Woodhull’s *Notes on Military Hygiene for Officers of the Line*.¹⁵²¹

The imperial conquests in Africa, especially the British campaigns, led to a wide variety of works pertaining to tropical diseases. The *British Medical Journal* published a wide variety of articles before and during the Third Anglo-Ashanti War, which provided much of the material for the case study on the campaign, as well as a work published by the Chief Sanitary Officer for the campaign, *A Contribution to the Medical History of Our West African Campaigns* (1876), which also discusses the earlier medical history and climate of West Africa.¹⁵²² Other books on African medical history include *Medical History of the Expedition to the Niger* (1843), *Report on the Climate and Principal Diseases of the African Station* (1847), *Physical and Medical Climate and Meteorology of the West Coast of Africa, with Valuable Hints to Europeans for the Preservation of Health in the Tropics* (1877), *West African Hygiene* (1884), *My Personal Experiences in Equatorial Africa as Medical Officer of the Emin Pasha Relief Expedition* (1891),

¹⁵²⁰ Austin Flint, ed. *Contributions Relating to the Causation and Prevention of Disease and to Camp Diseases* (New York: US Sanitary Commission, 1867), 3, 8, 12, 13.

¹⁵²¹ Edmund Parkes, *A Manual for Practical Hygiene* (London: J&A Churchill, 1878); Cornelius Fox, *Sanitary Examinations of Water, Air, and Food: A Handbook for the Medical Officer of Health* (London: J&A Churchill, 1878); Alfred A. Woodhull, *Notes on Military Hygiene for Officers of the Line* (New York: John Wiley & Sons, 1898).

¹⁵²² Surgeon-Major Albert Gore, *A Contribution to the Medical History of Our West African Campaigns* (London: Bailliere, Tindall, and Cox, 1876). Gore dedicates his book to Edmund Parkes as “a pupil.” *The British Medical Journal* articles are cited in the case study of the Ashanti War.

and *On the Geographical Distribution of Tropical Diseases in Africa* (1895).¹⁵²³ Each of these documents the contemporary understanding of the risks of Africa to Europeans and the contemporary knowledge of tropical diseases.

1886 saw the publication of MacLean's *Diseases of Tropical Climates*, a compilation of lectures given at the [British] Army Medical School on tropical medicine. Although his focus was on India, the lectures covered diseases common to all tropical regions of the world. The author emphasizes measures taken to avoid exposure, but otherwise presents the same views on disease as earlier authors. For example, he attributes an "earthborn poison" as "the cause of all of the types of intermittent and remittent fevers." Interestingly, he does attribute the cause of yellow fever to the slave trade from Africa: "a peculiar form of typhus, originating at all its endemic centres in the filth of slave ships..."¹⁵²⁴ An encyclopedic study of *Fevers* (1895) has yearly entries from 1888 to 1895, but it limits the discussion to specific cases rather than drawing any general conclusions.¹⁵²⁵

Some of the classic texts provide an excellent overview of nineteenth century medicine: *Bacteria* by Antoine Magnin (1884); Sternberg's *Malaria and Malarial Diseases* (1884); William Budd's *Typhoid Fever: Its Nature, Mode of Spreading, and Prevention* (1873) followed by the more modern (and exhaustive) *Abstract of Report on the Origin and Spread of Typhoid*

¹⁵²³ James McWilliam, *Medical History of the Expedition to the Niger During the Years 1841-2* (London: John Churchill, 1843); William Burnett, *Report on the Climate and Principal Diseases of the African Station* (London: William Clowes & Son, 1847); James Africanus Horton, *Physical and Medical Climate and meteorology of the West Coast of Africa, with Valuable Hints to Europeans for the Preservation of Health in the Tropics* (London: John Churchill & Sons, 1877); Charles Grant, *West African Hygiene or, Hints on the Preservation of Health and the Treatment of Tropical Diseases* (London: Edward Stanford, 1884) [published for the Government of the Gold Coast Colony]; Thomas Parke, *My Personal Experiences in Equatorial Africa as Medical Officer of the Emin Pasha Relief Expedition* (New York: Charles Scribner's Sons, 1891); R.W. Felkin, *On the Geographical Distribution of Tropical Diseases in Africa* (Edinburgh: William Clay, 1895)

¹⁵²⁴ William MacLean, *Diseases of Tropical Climates* (London: MacMillan & Co., 1886), 6-11, 25, 125.

¹⁵²⁵ Augustus Eshner, *Fevers* (Philadelphia: F.A. Davis Co., 1895).

Fever in U. S. Military Camps During the Spanish War of 1898 (1900); and Sternberg's *Report on the Etiology and Prevention of Yellow Fever* (1890).¹⁵²⁶

The final set of 19th-century medical sources was published at the end of the century – titled (to show their up-to-date contents) *Twentieth Century Practice*. A twenty-volume set, the most useful volumes are Vol. XIII, which defined the current understanding of infection and immunity, and discussed water-borne diseases which included malaria and yellow fever,¹⁵²⁷ and smallpox. Vol. XV covered typhus and plague, Vol. XIX discussed malaria and microorganisms, while Vol. XX covered yellow fever (all subtitled *Infectious Diseases*).¹⁵²⁸ The set was very open about what was still not known at the dawn of the twentieth century; on fever, for example, it states that “Of all the symptoms of the acute infectious diseases fever is the most constant, yet of the manner of its production, and of its influence upon the course of these diseases, we are almost wholly ignorant.” Part of the problem was the assumption that contagious disease microorganisms were bacteria, which led to conclusions such as the following: “As the bacteria retain their vitality for a long time in the dried condition, so also they find favorable conditions for their growth only in a proper supply of moisture. First, then, when these fluids as such are pulverized, or when they have been dried and then powdered, the microorganisms cannot grow until they have been carried by the dust to some place where they receive sufficient moisture for

¹⁵²⁶ Antoine Magnin *Bacteria*, trans. George Steinberg (New York: William Wood & Co., 1884); George Steinberg, *Malaria and Malarial Diseases* (New York: William Wood & Co., 1884); William Budd, “Typhoid Fever: Its Nature, Mode of Spreading, and Prevention,” *The American Journal of Public Health* (1873): 610-612; Walter Reed, Victor Vaughan, Edward Shakespeare, *Abstract of Report on the Origin and Spread of Typhoid Fever in U. S. Military Camps During the Spanish War of 1898* (Washington: GPO, 1900); George Sternberg, *Report on the Etiology and Prevention of Yellow Fever* (Washington: GPO, 1890).

¹⁵²⁷ Both considered to be possibly waterborne.

¹⁵²⁸ Thomas L. Stedman (ed.) *Twentieth Century Practice: An International Encyclopedia of Modern Medical Science by Leading Authorities of Europe and America*, 20 vols. (New York: William Wood & Co., 1898-1900).

their development. The air, however, is much less to be considered as a carrier of infectious diseases than fluids, and especially water.”¹⁵²⁹

The trends in nineteenth century medicine are revealed in the examination of these texts. Early texts (before the 1840s) had significant differences in diagnoses and classifications of disease. Diseases were assumed to be due to toxins in the air, soil, or water or due to other influences such as dampness, temperature, climate, or even electricity; they were spread either by contact with the poisoned environment, or direct contact, or both. There was more agreement on classification and diagnosis in the middle part of the century, but advances in the cause and transmission of disease would have to wait for microscopy, the identification and classification of specific microbial agents, and a slow acceptance of germ theory which began in the 1870s and continued through the remainder of the nineteenth century. Although bacterial disease could sometimes be seen, isolated, and cultured in the laboratory, the knowledge of viruses was limited to the tobacco mosaic virus and other material caught in the newly invented Chamberland filter.¹⁵³⁰ The discovery or confirmation of the means of transmission of diseases such as typhoid, malaria, and yellow fever would wait until the late 1890s or early 1900s. Sanitation and public health was also a major trend in the latter half of the century, although the conviction that many diseases came from poisonous air and soil or from general filth would lead the sanitationists to be overly confident about their ability to prevent disease through good sanitation and general hygiene. This was a fatal mistake when made about yellow fever while planning the Cuban campaign of the Spanish-American War.

¹⁵²⁹ Stedman, ed., *Twentieth Century Practice*, vol. XIII, 185; 204. It should be noted that there was no consistent classification of bacteria; volume XIX has approximately 15 pages of competing classifications listed.

¹⁵³⁰ Confusingly, the term “virus” was sometimes used as a synonym for germ. For example, in a discussion about infection, the following terminology was used: “If, as in the case of cholera and of typhoid fever, the virus is discharged only by way of the feces, then contagion is possible, but it is not likely to occur with ordinary care and cleanliness.” Stedman, ed., *Twentieth Century Practice*, vol. XII, 136.

Histories of the Cuban Insurrection

One of the reasons that America went to war with Spain in 1898 was the immense public interest in the insurrection in Cuba. This had been fed by newspaper accounts, but also by a large number of histories or memoirs about the conflict. Some were written by the Cuban rebel officials in the United States, such as Gonzalo de Quesada, the “Cuban Chargé de Affaires at Washington,” who wrote *Free Cuba: Her Oppression, Struggle for Liberty, and Present Condition* in 1897 and *Cuba’s Great Struggle for Freedom* in 1898. These works were, quite simply, pro-Cuban propaganda intended to sway public opinion in the United States. He had also released an earlier account of the 1868 rebellion as well as a description of the early 1895-96 period of the later rebellion in *The War in Cuba* (1896).¹⁵³¹ Others were written by Americans with Cuban sympathies, such as Nathan Green’s *Story of Spain and Cuba*, released in 1898 before the war (or at least too early for the war to be mentioned in the book). Green’s opinions can be seen by the titles he chose for Chapters 13 and 14: “Spanish Atrocities” and “The Right of Cubans to Recognition as Belligerents and to Independence.”¹⁵³² Murat Halstead, a popular author with books about the war (see popular histories below) kept releasing new volumes of *The Story of Cuba: Her Struggles for Liberty*; the sixth edition published in 1897 is the most current volume before the war; Halstead’s sympathies are also clearly with the rebels.¹⁵³³ Pamphlets were also a popular way of transmitting pro-Cuban opinion and propaganda; in 1898 the Library of Congress produced a list of books about Cuba that included some of these pamphlets.¹⁵³⁴

¹⁵³¹ Gonzalo de Quesada, *Free Cuba: Her Oppression, Struggle for Liberty, and Present Condition* (N.p.: Publisher’s Union, 1897); _____, *Cuba’s Great Struggle for Freedom* (N.p., 1898); _____, *The War in Cuba: Being a Full Account of Her Great Struggle for Freedom* (N.p.: Liberty Publishing Co., 1896). The 1898 book includes a section on the sinking of the *Maine* and “Hurried Preparations for War With Spain, etc., etc.”

¹⁵³² Nathan Green, *Story of Spain and Cuba* (Baltimore: International News and Book Co., 1898)

¹⁵³³ Murat Halstead, *The Story of Cuba: Her Struggles for Liberty* (Akron, OH: The Werner Co., 1897). The digitized volume available to the author was acquired by the Harvard College library on March 24, 1898.

¹⁵³⁴ Library of Congress, *List of Books Relating to Cuba* (Washington: GPO, 1908).

Correspondents also produced books about Cuba; the celebrated British journalist Richard Harding Davis published *Cuba in War Time* in 1897. Davis was more balanced than the American writers; for example when discussing the destruction of the countryside he noted that “The Spaniards are no more to blame for this than are the insurgents; each destroy property and burn the cane. When an insurgent column finds a field planted with potatoes, it takes as much of the crop as it can carry away and chops up the remainder with machetes, to prevent it from falling into the hands of the Spaniards. If the Spaniards pass first, they act in exactly the same way.” The “Spanish atrocities” were ascribed by Davis to be the work of pro-Spanish guerillas rather than the work of the Spanish authorities.¹⁵³⁵ Even Winston Churchill came to Cuba to report on the war; at the time he sympathized with the Spanish saying “The Cuban rebels give themselves the name of heroes and only are boastful and braggarts. If the Revolution triumphs, Cuba will be a black Republic.” Later, he regretted his remarks, telling his mother “I reproach myself somewhat for having written a little uncandidly and for having perhaps done injustice to the insurgents.”¹⁵³⁶

Geographies are the last resource on the island; they frequently include brief histories and information about the people and customs. *The Island of Cuba: A Descriptive and Historical Account of the ‘Great Antilla’* was published in 1896 as part of a response to public interest on the island. It has a very brief yet very cogent summary of the Cuban Question in its preface: “1. The Cubans find themselves heavily taxed under an ever-changing government of Europeans, upon which they have no effective influence. 2. Spain, on the verge of utter bankruptcy, cannot afford to lose money or spend money on Cuba, and yet is compelled to do both in order to maintain her dominion over the island. 3. The holders of Spanish securities may be often

¹⁵³⁵ Richard Harding Davis, *Cuba in War Time* (New York: R.H. Russell, 1897), 25-26, 103-117.

¹⁵³⁶ Quoted in Thomas, *Cuba*, 326.

religious, educational, or charitable institutions, or widows and orphans, whose scanty means have been invested in that precarious lottery. 4. England and France are appealed to by the bondholders for protection, and are unwilling to see Cuba pass into the possession of anyone strong enough to make any real use of it. 5. The government of the United States has all this and a great deal more as a problem to figure out.”¹⁵³⁷

Popular Histories of the War

The Spanish-American War was a very popular war, so it is hardly surprising that dozens of books appeared during and just after the war that appealed to the general public. They were written by popular authors or almost anyone who considered himself (in a few cases herself) an expert on the topic. Many of them were hastily assembled and contain verbatim copies of proclamations, speeches, and other material that did not require original authorship. For example, a Miss Francis Cugle of Harrisburg, PA produced a brief volume that had as Part I McKinley’s message to Congress on the Cuban question (April 11, 1898). Part II (“History of The Spanish-American War in Brief”) is brief indeed; the entire Puerto Rican campaign is encapsulated in two sentences, while the entire section is but 13 pages. Part III consists of the peace protocol, and Part IV is a list of “important dates and events,” which actually provides more detail than does the main history in Part II.¹⁵³⁸ This is an extreme example, but many others show the haste and minimal effort with which they were written, so they could be published as quickly as possible.

¹⁵³⁷ Andrew Rowan and Marathon Ramsey, *The Island of Cuba: A Descriptive and Historical Account of the ‘Great Antilla’* (New York: Henry Holt & Co., 1896). Quote p. vii.

¹⁵³⁸ Miss Frances Cugle, *A Brief History of the Spanish-American War February 1895 – August 1898* (Harrisburg, PA: Kurzemknabe Press, 1898). The entire section on Puerto Rico: “After the surrender of Santiago an expedition under General Miles was sent to take San Juan, Porto [sic] Rico. A landing was effected July 26th at Guanica, on the southern coast, and soon after Ponce, a town of some size, fifteen miles distant, was occupied.” (44)

Some authors of books on Cuba simply updated their works to include the war. H. Allen Tupper released such a book (*Columbia's War for Cuba*) after the Dewey's defeat of the Spanish fleet at Manila but before the invasion of Cuba, intended to provide readers "A story of the early struggles of the Cuban patriots, and of all the important events leading up to the present war between the United States and Spain for Cuba Libre."¹⁵³⁹ Nathan Green updated his prewar *Story of Spain and Cuba* to produce *The War With Spain and Story of Spain and Cuba*; the latter simply adds "Articles by Military and Naval Experts and Newspaper Correspondents" in an appendix.¹⁵⁴⁰ Trumbull White added about 200 pages of war coverage to an approximately 300 page history of Cuba and the Cuban Revolution to produce *Pictorial History of Our War With Spain for Cuba's Freedom* (1898).¹⁵⁴¹ Soon after its publication, White also produced a slightly different history of the war as discussed below.

Many of the popular histories relied on letters and reports written by officers and men during and immediately after the war. A good example of this type of history is James Young's *Reminiscences and Thrilling Stories of the War by Returned Heroes Containing Vivid Accounts of Personal Experiences by Officers and Men*. In the introduction, Young explains the importance of his work: "The glory of the war is fresh in our minds. The names of Dewey, Schley, Sampson, Miles, Roosevelt, Wheeler and Hobson, with many others, have become household words throughout the land. Their thrilling experiences and the daring of the brave men, both regulars and volunteers, who joined with them in the perilous exploits of the war, have made an imperishable impress upon the whole country, teaching a lesson in patriotism, which speaks volumes for the stability of our great country." The men were all "returned heroes" who

¹⁵³⁹ H. Allen Tupper, *Columbia's War for Cuba* (New York: P.B. Bromfield & Co., 1898).

¹⁵⁴⁰ Nathan Green, *The War With Spain and Story of Spain and Cuba* (Baltimore: International News and Book Co., 1898)

¹⁵⁴¹ Trumbull White, *Pictorial History of Our War With Spain for Cuba's Freedom* (N.p.: Freedom Publishing Co., 1898).

had “demonstrated that death upon the field would be preferable to a return in dishonor. It was the full force of American pluck and pride, as well as the strong physical force and unfailing skill of American brain and brawn, which wrested victory from the Spanish forces.” Not surprisingly, these stories emphasize courage under fire. In this rendition, however, only those wounded or killed by enemy action were really heroic; the sick and disabled were victims. The book is full of the exploits of the former, while the latter are mentioned only in passing. It is a good source for a conventional military history of the war, but much less so for a study that focuses on the impact of disease.¹⁵⁴² Other books in this vein include *Hero Tales of the American Soldier and Sailor*, *Exciting Experiences in Our Wars With Spain and the Filipinos* (“including the Official History of Our War With Spain by President William McKinley, as contained in his Official Message”), and *Behind the Guns with American Heroes: An Official Volume of Thrilling Stories, Daring Deeds, Personal Adventures, Humorous Anecdotes, and Pathetic Incidents*. Not to be outdone, the latter even includes “stirring stories” of the American Civil War.¹⁵⁴³

Popular writers such as Henry Russell, the author of “Life of William McKinley, International Monetary Conferences, etc.” released popular histories that were original histories rather than collections of anecdotes and newspaper reprints. His *An Illustrated History of Our War With Spain, its Causes, Incidents, and Results* (1898) includes a detailed (if brief) history of Cuba as well as of the war. The author assures the reader, however, that “no space required for a full narration of the incidents of the war has been sacrificed. Though brief, the conflict has

¹⁵⁴² James Young, *Reminiscences and Thrilling Stories of the War by Returned Heroes Containing Vivid Accounts of Personal Experiences by Officers and Men* (Philadelphia: Premier Publishing Co., 1898). Quote, p. v. Young, a Congressman, took credit as the lead author but it is likely that J. Hampton Moore, “the well-known Author and Newspaper Correspondent” who was a “collaborator” had the greatest influence on obtaining and editing the stories.

¹⁵⁴³ A. Holloway, *Hero Tales of the American Soldier and Sailor* (Philadelphia: Century Manufacturing Co., 1899); Marshall Everett, ed., *Exciting Experiences in Our Wars With Spain and the Filipinos* (Chicago: The Educational Co., 1899); J.W. Buel, *Behind the Guns with American Heroes: An Official Volume of Thrilling Stories, Daring Deeds, Personal Adventures, Humorous Anecdotes, and Pathetic Incidents* (Chicago: International Publishing Co., 1899)

abounded in deeds of heroism, some without a parallel in military or naval history...” Despite this claim, the first 385 pages cover Cuba before the war, and it is not until page 521 that war is declared (there are 796 pages total). It has a considerable number of photographs, maps, and “original designs by eminent artists, made expressly for this book.” Although yellow fever is occasionally mentioned, there is no discussion of the epidemics after the surrender, and no discussion of the training camps at all, much less any discussion of the thousands of deaths from disease.¹⁵⁴⁴ Another popular history is Trumbull White’s *United States in War With Spain and the History of Cuba*, which has some useful background on Spain and Cuba but has no depth on the war and nothing on disease.¹⁵⁴⁵ Other popular histories include Musick’s *History of Our War With Spain*, Murat Halstead’s *Full Official History of the War With Spain* (“sold by subscription only”), Wilcox’s *A Short History of the War With Spain*, Richard Titherington’s *A History of the Spanish -American War of 1898*, and Copeland’s *Complete History of the Spanish-American War of 1898*.¹⁵⁴⁶

One of the most detailed popular histories was *Harper’s Pictorial History of the War With Spain*. It has incredible detail; for example in the chapter on mobilization is contained the complete instructions for mustering the volunteer and militia units. Most of the military actions are written by officers who led the forces or were prominent in the engagement. The story of the surrender and its aftermath are written by Gen. Shafter, a correspondent attached to Adna Chafee’s brigade, the Spanish naval Lieutenant Jose Müller, and Inspector-General

¹⁵⁴⁴ Henry Russell, *An Illustrated History of Our War With Spain, its Causes, Incidents, and Results* (Hartford: A.D. Worthington & Co., 1898), quote p. iv.

¹⁵⁴⁵ Trumbull White, *United States in War With Spain and the History of Cuba* (Chicago: International Publishing Co., 1898).

¹⁵⁴⁶ John R. Musick, *History of the War With Spain* (New York: J. S. Ogilvie Publishing Co., 1898); Murat Halstead, *Full Official History of the War With Spain* (New Haven: Butler & Alger, 1899); Marrion Wilcox, *A Short History of the War With Spain* (New York: Frederick Stokes Co., 1898); Richard H. Titherington, *A History of the Spanish -American War of 1898* (New York: D. Appleton and Company, 1900); Prof. W.R. Copeland, *Complete History of the Spanish-American War of 1898* (New York: The Mershon Co., 1899). Copeland mentions the epidemic in Santiago but devotes only a couple of short paragraphs to it.

Breckenridge. Disease is mentioned in passing but there is no analysis of its impact.¹⁵⁴⁷ Some histories were written for “readers, young and old” such as Elbridge Brooks’ *The Story of Our War With Spain*, James Otis’ *The Boys of ’98*, and Andrew Draper’s *The Rescue of Cuba*¹⁵⁴⁸; these have stirring accounts of combat but none about the fight to survive epidemic disease.

Newspapers and newspaper correspondents made the most out of covering a popular war. The San Francisco Bulletin released a quarterly Chronicle of the War, which consists of daily clippings from the newspaper on the war; as such it is an interesting compendium of coverage from a West Coast perspective.¹⁵⁴⁹ The Chicago Record collected its articles on the war and released them as *The Chicago Record’s War Stories, by Staff Correspondents in the Field*.¹⁵⁵⁰ Bound copies of *Scribner’s Magazine*, *Frank Leslie’s Monthly*, and *Munsey’s Magazine* have wartime articles from February through September, 1898 and articles on the war written in late 1898 and 1899 often appear in these periodicals.¹⁵⁵¹ Potentially more useful were the books written by war correspondents about their experiences during the war. The most useful and most cited book in this category is George Kennan’s *Campaigning in Cuba*. His descriptions of the treatment of the sick and wounded are filled with sympathy and pathos; his descriptions of the conflicts and commanders are provocative and lack any personal connections with the leaders involved (i.e., no axes are ground).¹⁵⁵² Prominent British war correspondent Richard Harding Davis published *The Cuban and Porto Rican Campaigns* in 1898. Much of the book consists of a narrative of the troops engaged in combat, but where Davis offers an opinion it is vehemently

¹⁵⁴⁷ *Harper’s Pictorial History of the War With Spain* (New York: Harper & Bros. Publishing, 1899). Mobilization 179-183; capitulation of Santiago pp. 377-392. There is a chapter on women and the war, and another on the “results of the war,” but the latter is an account of the value of the Philippines, Puerto Rico, etc.

¹⁵⁴⁸ Elbridge Brooks, *The Story of Our War With Spain* (Boston: Lothrop Publishing Co., 1899); quote in preface (not numbered); James Otis, *The Boys of ’98* (Boston: Dana Estes & Co., 1898); Andrew Draper, *The Rescue of Cuba: An Episode in the Growth of Free Government* (Boston: Silver, Burdett & Co., 1899).

¹⁵⁴⁹ Arthur Street, *Chronicle of the War* (San Francisco: San Francisco Bulletin, July 1898).

¹⁵⁵⁰ *The Chicago Record’s War Stories, by Staff Correspondents in the Field* (Chicago: The Chicago Record, 1898).

¹⁵⁵¹ Articles on the Cuban insurrection start in 1895.

¹⁵⁵² George Kennan, *Campaigning in Cuba* (New York: The Century Co., 1899).

anti-Shafter. Davis had a tiff with Shafter when the General refused to give him priority in landing, and Shafter's relations with Davis were fractious thereafter. Davis opines that "there is not the least doubt in the minds of any of the officers of the Fifth Army Corps, that had the attack on Santiago been planned by Generals Chaffee, Kent, or Lawton it would have been conducted as admirably as was the Porto Rican campaign." He criticized Shafter for not leading from the front, and stated that "his self-complacency was so great that in spite of blunder after blunder, folly upon folly, and mistake upon mistake, he still believed himself infallible..."¹⁵⁵³ Davis also included accounts of the war as a large part of his compendium *Notes of a War Correspondent*, released in 1911.¹⁵⁵⁴ Other war correspondents' work includes the English author John Black Atkins, who wrote *The War in Cuba* (1899) for a British audience and H. Irving Hancock's *What One Man Saw* for an American one.¹⁵⁵⁵ A discussion of war correspondents would not be complete without mentioning Stephen Crane's *Wounds in the Rain*, which contained fictional war stories based on his experiences in Cuba, and a book about the role of the press in reporting upon war, Bullard's *Famous War Correspondents*, which included a chapter on "Reporting the Spanish-American War" (1914).¹⁵⁵⁶ Despite these collected works, the most common sources for war correspondents are the popular magazines of the period such as *Scribner's* and *Munsey's*, as discussed previously.¹⁵⁵⁷ Illustrators were quick to cash in on the interest in the war; *Cannon and Camera* was "described and illustrated" by John Hemment, "War Artist at the Front." Even

¹⁵⁵³ Richard Harding Davis, *The Cuban and Porto Rican Campaigns* (New York: Charles Scribner's Sons, 1898), 182, 185. Note: The spelling "Porto Rico" for "Puerto Rico" was common in 1898.

¹⁵⁵⁴ Richard Harding Davis, *Notes of a War Correspondent* (New York: Charles Scribner's Sons, 1911). The material in this book had been previously released and copyrighted at the time of each conflict described in the text; nevertheless the Spanish-American War coverage is not a copy of the 1898 book on the Cuban and Puerto Rican campaigns.

¹⁵⁵⁵ John Black Atkins, *The War in Cuba* (London: Smith, Elder & Co., 1899); H. Irving Hancock, *What One Man Saw: Being the Personal Impressions of a War Correspondent in Cuba* (New York: Street & Smith, 1898).

¹⁵⁵⁶ Stephen Crane, *Wounds in the Rain: A Collection of Stories Relating to the Spanish-American War of 1898* (London: Methuen & Co., 1900); F. Lauriston Bullard, *Famous War Correspondents* (Boston: Little, Brown, & Co., 1914).

¹⁵⁵⁷ Some of the printed works were published earlier in these magazines; for example, Titherington's *A History of the Spanish -American War of 1898* had been published in *Munsey's Magazine* in serial form.

cartoons were reprinted; Nelan's cartoons for the *New York Herald* were released as *Cartoons of Our War With Spain*.¹⁵⁵⁸

Henry Keenan excoriates the press in his history *The Conflict With Spain: A History of the War*. For example, in his account of Shafter's landing, he states: "The arrival at a decisive point of action inflamed the devouring greed of the press for action! The wretched commander found the cable a curse – he was now within recriminative touch of the aulic council in Washington – but this he could have placated. The press could not be lulled; it was clamorous for action. So, foodless, without guns of the decisive character implied by aggressive warfare, the heads of the columns were hurried forward toward the enemy."¹⁵⁵⁹ Much of the war coverage is provided by reprinting the official reports of the military commanders, which are more easily located in the *Report of the Secretary of War*. There is much mention of yellow as an adjective, but it modifies press, not fever.

Some post-war popular histories included accounts of the disease epidemics. Charles Morris wrote *The War With Spain: A Complete History of the War of 1898*. This work has a complete chapter on "Events After the Surrender" which includes descriptions of the epidemic, with statements from surgeons attached to the Fifth Corps, The Round Robin letter and subsequent attempts to evacuate the sick, and the conditions at Camp Alger (one of the training camps struck by typhoid). An example of its coverage of disease is a good one-paragraph description of the Fifth Corps just before the surrender:

¹⁵⁵⁸ John Hemment, *Cannon and Camera* (New York: D. Appleton and Company, 1898), quotes from cover page; C. Nelan, *Cartoons of Our War With Spain* (New York: Frederick Stokes Co., 1898).

¹⁵⁵⁹ Henry Keenan, *The Conflict With Spain: A History of the War* (Philadelphia: P.W. Ziegler & Co., 1898), 258. Not to be confused with George Kennan the war correspondent. An "aulic council" is a council that acts like a royal court.

...the army of invasion had fallen into a deplorable state. By men accustomed to the temperate climate of the north and exposed to the scorching suns and drenching rains of a Cuban summer, with little shelter from the humid atmosphere and the water-soaked soil, sickness could not well be avoided, and was likely to prove more dangerous than the bullets of the enemy. The difficulty of making the men observe sanitary precautions added to the danger, and febrile disorders of a malarial character soon began to spread among the troops. The dreaded yellow fever, a disease indigenous to the soil, was not long in making its appearance, probably through infection from the Santiago refugees, and fear of its rapid spread among the troops hastened the negotiations for the surrender of the Spanish army.¹⁵⁶⁰

George Watterson's *History of the Spanish-American War* is closer to a serious academic study of the war, although it was quickly released in 1898 and the author credits to work of war correspondents as his source. Watterson devotes much attention to the role of foreign governments, diplomacy, and imperialism and considers the implications of America's success on its relative standing among world powers, to include the enhanced reputation of America's Army and Navy. It is an excellent source for foreign opinion and the American politics involved in foreign affairs. Although the author does discuss the outbreak of disease during the war, its coverage is brief and consists mainly of a reprint of the Round-Robin letter.¹⁵⁶¹

The general histories of the war cover all of the major campaigns on land and sea. However, some of the histories focus on just the Cuban or the Puerto Rican campaigns of the war, and a few provide the equivalent focus on only the Philippine campaign of the war. These were based

¹⁵⁶⁰ Charles Morris, *The War With Spain: A Complete History of the War of 1898* (Philadelphia: J.B. Lippincott, 1899), 315.

¹⁵⁶¹ Henry Watterson, *History of the Spanish-American War: Embracing a Complete Review of our Relations with Spain* (San Francisco: E.D. Bronson & Co., 1898). Examples of the coverage on foreign affairs are Chapter XVIII: Defeat of Foreign Intervention, Chapter XX: Imperialism, Expansion, Annexation; Chapter XXI: Anglo-American Alliance, Chapter XXII: Attitude of France and Russia, and Chapter XXIII: Dewey and the Germans. Disease coverage 346-349.

on memoirs, covering only the armed service and campaign that the author was engaged in, so they are discussed in the next section. Another division in coverage was between land and sea; several books were released as naval histories of the war. One such work is Goode's *With Sampson Through the War*, which provided Sampson's perspective on the quarrels between Shafter and Sampson over attacks on the defenses of Santiago harbor.¹⁵⁶² Other naval histories include *Our Navy in the War With Spain* by Spears, Wilson's *The Downfall of Spain: Naval History of the Spanish-American War*, and Otis' *Off Santiago With Sampson*.¹⁵⁶³ These books are useful for details on the naval battles and small engagements such as the seizure of Guam or the annexation of Hawaii.

Popular wars produce all sorts of miscellaneous books relating to it. Fans of almanacs will love *The Handy War Book*, promising "Important and Authentic Information and Statistics on the Many Subjects Related to the Present War..."¹⁵⁶⁴ The Government Printing Office reprinted speeches on the war given by Congressmen and Senators, such as *Speech by Hon. George W. Ray, of New York in the House of Representatives, in Favor of a Vigorous and Effective Prosecution of the War, Friday, April 29, 1898* or *Speech by Hon. Seth W. Brown, in the House of Representatives, Friday, April 29, 1898*.¹⁵⁶⁵ Fans of execrable poetry (if there are any) will

¹⁵⁶² W.A.M. Goode, *With Sampson Through the War* (New York: Doubleday & McClure Co., 1899). The book includes chapters written by Sampson, Captain Robley Evens, and Commander C.C. Todd.

¹⁵⁶³ John R. Spears, *Our Navy in the War With Spain* (New York: Charles Scribner's Sons, 1898); H.W. Wilson, *The Downfall of Spain: Naval History of the Spanish-American War* (London: Sampson Low, Marston & Co., 1900); James Otis, *Off Santiago With Sampson* (Boston: Dana Estes & Co., 1899)

¹⁵⁶⁴ Lieut. E. Hannaford, *The Handy War Book: A New Book of Important and Authentic Information and Statistics on the Many Subjects Related to the Present War, Such as Size, Population, Climate, Commerce and Resources of the Islands Concerned in the Spanish-American Conflict, with Many Other Facts Which Readers of War News Should Have* (Springfield, Ohio: Mast, Crowell & Kirkpatrick, Publishers, July, 1898).

¹⁵⁶⁵ U.S. Congress, *Speech by Hon. George W. Ray, of New York in the House of Representatives, in Favor of a Vigorous and Effective Prosecution of the War, Friday, April 29, 1898* (Washington: GPO, 1898); U.S. Congress, *Speech by Hon. Seth W. Brown, in the House of Representatives, Friday, April 29, 1898* (Washington: GPO, 1898). Oddly enough, there does not appear to be any speeches in favor of conducting the war as we usually do: ad-hoc, ineffectively and lacking in vigor (at least initially).

enjoy *War Time Echoes: Patriotic Poems, Heroic and Pathetic, Humorous and Dialectic*.¹⁵⁶⁶

These books can prove useful in providing some insight into public opinion, much as the popular magazines do.

Memoirs

Some of the more useful primary sources are the memoirs written by both leaders of the war and participants in the combat, from General to Private. Some of these could easily be classified as popular histories, and a few as serious academic studies. What makes them distinctive, however, is that for leaders they provide the perspective of the author on his actions and decisions made during the war, and for participants they relate their personal experiences with war and disease. Of the senior leadership, McKinley produced no memoirs or autobiography before his assassination in 1901, and Shafter wrote only a short magazine article defending his role in the war.¹⁵⁶⁷ However, the two civilian Secretaries, Secretary of War Alger and Secretary of the Navy Long wrote histories of the war, which are invaluable resources.

Secretary Russell Alger had a controversial term as Secretary of War; his reputation was destroyed in the post-war investigations of War Department inefficiencies. His history *The Spanish-American War* (1901) was, like many memoirs, a defense of his actions in office. Alger

¹⁵⁶⁶ James Henry Brownlee, *War Time Echoes: Patriotic Poems, Heroic and Pathetic, Humorous and Dialectic* (Akron, OH: The Werner Co., 1898). The quality is a matter of opinion; the author can only cite the first stanzas of the first poem in defense of his description: "Alphabet of the War: A is for Admiral, impassionate, cold; Who waits for instructions, and does as he's told; B stands for *Brooklyn*, commanded by Schley; The hottest of liners he takes on the fly; C is for Cuba, a tight little isle; To get which we may have to fight quite a while; D is – yes, Dewey, a teacher of Spanish; The first lesson caused all his pupils to vanish..." (p. 17). Poetry was popular in 1898, some of the popular histories such as Young's *Reminiscences and Thrilling Stories of the War by Returned Heroes* contain chapters on popular poems. The only poem relating to disease in the latter was the following ditty: "HARDSHIPS OF WAR. At Santiago he had lumbago, At Tampa the fever and chills; Before El Caney the weather was rainy, And there he had other ills. He reached Camp Alger and got neuralgia, And at Montauk the fever yellow, But at home was the blow that laid him low, His girl had another fellow." (Young, *Reminiscences*, 565).

¹⁵⁶⁷ Histories written later about these men, such as Leech's *In the Days of McKinley* or Shafter's biography *Pecos Bill* are covered in a later section on secondary source histories.

says as much in the preface: “It has not been my purpose in the preparation of the manuscript of this book to write a full history of the war with Spain; on the contrary, it has been to place on record some of the prominent facts connected with the organization, equipment, and movements of the army, together with the administration of the War Department, with the hope that such statement will serve a useful purpose as an example...”¹⁵⁶⁸ He includes much of the official correspondence in his book, which duplicates the official record (*Correspondence Relating to the War With Spain*), but sometimes the context is important. For example, Alger was clearly no fan of Commanding General Miles; he often cites Miles’ official communications in order to prove Miles impractical if not foolish. Although Alger clearly thought that disease was a major danger to American forces to be deployed in the Caribbean, Miles’ frequent proposals to place forces in “healthful parts of Cuba” specifically designed to avoid a yellow fever epidemic were ridiculed by Alger as “evidently impossible and impracticable.”¹⁵⁶⁹ Although some of Miles’ proposals were impractical, others were not; but the issue of disease was secondary to their military practicality from Alger’s perspective.

Alger does include some correspondence in his history that was private and not reproduced elsewhere; but the most useful sections of the book from the perspective of this dissertation deal with the decisions he and President McKinley made with respect to the surrender of the Spanish forces at Santiago and the reactions to the epidemics that hit the Fifth Corps during and after the surrender negotiations.

Secretary Long’s views on the war are contained within a much larger history of the navy, the two-volume *The New American Navy* (1908). This history provides a useful description on

¹⁵⁶⁸ Alger, *The Spanish-American War*, v.

¹⁵⁶⁹ Alger, *The Spanish-American War*, 49-58. Miles’ proposal is outlined in three successive communiqués to Alger, reproduced in Alger’s history on pages 49-55. Alger’s analysis is found on pages 55-58.

the development of the modern (in the 1890s sense of “modern”) navy prior to the Spanish-American War, and the plans made for its use, to include those in conjunction with the Army. He also discusses naval mobilization and details his correspondence with the naval commanders in the Caribbean (Sampson) and in Asia (Dewey). Disease was not a factor in naval engagements during the war, and Long’s history did not encompass the Marines, so his history is not useful with respect to the impacts of disease.

Commanding General Nelson Miles did produce his memoirs after the war, which includes his defense of his indefensible accusations of food adulteration in the “embalmed beef” controversy after the war (which helped destroy his reputation). Miles, ambitious and vainglorious, had many axes to grind in his post-war memoirs in *Serving the Republic: Memoirs of the Civil and Military Life of Nelson A. Miles* (1911). Only three chapters of his memoirs cover the war, however; the more useful source for Miles’ actions and decisions during the war appear in a three-serial set of articles he wrote for *The North American Review*: “The War With Spain – I, II, and III” (May – July, 1899). They are particularly useful in establishing Miles’ concern about yellow fever, which guided every major decision he made in planning and executing his campaign and overseeing the Cuban campaign as Commanding General of the Army.¹⁵⁷⁰

The closest William Shafter came to producing a memoir of his experiences in Cuba was an article he wrote for the *Century Illustrated Magazine* (February 1899) on “The Capture of Santiago de Cuba.” In this article, he describes his concern over a potential yellow fever epidemic among his men. He bought a pamphlet on the 1761-62 British campaign against

¹⁵⁷⁰ Nelson A. Miles, “The War With Spain – I,” *The North American Review* 168, No. 510 (May, 1899): 513-529; _____, “The War With Spain – II,” *The North American Review* 168, No. 511 (Jun., 1899): 749-760; _____, “The War With Spain – III,” *The North American Review* 168, No. 512 (Jul., 1899): 125-137.

Havana (during which thousands of men became sick with fever and almost 1800 died) to educate himself on the impact an epidemic could have on a military campaign. He also wrote about the French campaign in Santo Domingo (St. Domingue) that was discussed in the campaign case study in Chapter 5. This article (along with his testimony before the Dodge Commission) helps us understand how the fear of disease affected his planning for war and his planning for alleviating the effect of disease once it broke out (which was a matter of when – not if – from his perspective).¹⁵⁷¹

Fortunately for our knowledge of Shafter's actions during the campaign, his aide John Miley (Lieutenant of regulars and Lt. Colonel of Volunteers) did publish his memoirs of the Santiago Campaign entitled *In Cuba With Shafter* (1899). His objective is clearly laid out in the Preface: "it is my object to put before my readers a clear and intelligent narrative of the Santiago campaign, showing the orders received and how they were executed; the plans formed and how they were carried out; the obstacles met and how they were overcome." Miley's descriptions of the actions taken to handle the sick once disease broke out among the men of the Fifth Army Corps are the most detailed of the accounts written on the matter. However, just as Miley had promised in his preface, the book simply narrates the progress of the disease and actions taken, rather than providing any analysis of its impact.¹⁵⁷²

The commander of the dismounted Cavalry Division, former Civil War general Joseph Wheeler, also wrote his memoirs of the Cuban campaign – *The Santiago Campaign, 1898*. In some ways the memoir is disappointing, as much of the material consists of reprints of orders and reports, most of which can be found elsewhere. However, some of these reports are not

¹⁵⁷¹ William R. Shafter, "The Capture of Santiago de Cuba," *Century Illustrated Magazine* LVII, No. 4 (Feb 1899): 612-630..

¹⁵⁷² John D. Miley, *In Cuba With Shafter* (New York: Charles Scribner's Sons, 1899). Quote from Preface (page not numbered); treating the sick 215-224.

readily available from other sources,¹⁵⁷³ and the most illuminating part of his book are the various messages to General Miles informing the Commanding General that the Cavalry division was free from yellow fever and in all manner fit for campaigning in Puerto Rico, while at the same time Wheeler was haranguing Washington for medical support to treat the epidemics striking across the regiments of the Cavalry Division.¹⁵⁷⁴

Contemporary biographies of the major commanders, such as *Pecos Bill* on William Shafter, and *Nelson A. Miles and the Twilight of the Frontier Army* provide little mention of disease; biographies of Roosevelt such as Edmund Morris' *The Rise of Theodore Roosevelt* cannot omit his association with the Round-Robin but also add little to the contemporary autobiographies and memoirs.¹⁵⁷⁵

Three of the participants in the Caribbean campaigns of the war wrote detailed histories of the war that rank with serious academic studies. They are discussed in this section because they appeared in the decades just after the war, based on the experiences of participating officers. The first history was written by French Ensor Chadwick, chief of staff to the Commander of the North Atlantic Fleet (Admiral Sampson): *The Relations of the United States and Spain: The Spanish-American War*. Despite appearances, the two-volume history is neither a diplomatic history as suggested by the title nor a naval history as suggested by the author; rather, it is a complete history of the war that includes campaigns on land and sea, giving appropriate

¹⁵⁷³ The detailed memoranda from the surrender negotiations are an example of the useful documentation.

¹⁵⁷⁴ Joseph Wheeler, *The Santiago Campaign of 1898* (New York: Lamson, Wolfe and Co., 1898). A discussion of the politicking with Miles is found in the section *Treating the Survivors – Cuba and Camp Wikoff*. Wheeler also included a condensed version of his Spanish-American War experiences in W.C. Dodson, ed., *Campaigns of Wheeler and his cavalry 1862-1865 from Material Furnished by Gen. Joseph Wheeler, to Which is Added his Concise and Graphic Account of the Santiago Campaign of 1898* (Atlanta: Hudgins Publishing Company, 1899).

¹⁵⁷⁵ Paul Carlson, *"Pecos Bill": A Military Biography of William Shafter* (College Station, TX: Texas A&M University Press, 1989); Robert Wooster, *Nelson A. Miles and the Twilight of the Frontier Army* (Lincoln, NB: Univ. of Nebraska Press, 1995); Edmund Morris, *The Rise of Theodore Roosevelt* (New York: Random House, 2010).

coverage to the Philippines campaign as well as the campaigns in the Caribbean. As discussed in the introduction, in addition to being an excellent contemporary history of the war, it serves as the best single naval history of the conflict and the closest to a truly joint land-sea history of the war.¹⁵⁷⁶ With respect to disease, Chadwick's history is similar to Secretary Alger's; a significant emphasis is placed on planning the war to avoid or minimize exposure of the troops to yellow fever and other tropical diseases. Chadwick also emphasizes the role disease had in weakening the Peninsular army sent from Spain to subdue the rebellion.

Another academic-level history written soon after the war is Herbert Sargent's three-volume *The Campaign of Santiago de Cuba*. Sargent is even more willing to analyze the wisdom of the decisions made and actions taken by the leadership of the various commands in the war; every chapter consists of a narrative section followed by a "comments" section. He brings a wide base of experience to his work, having served as a career Army officer in both the Cuban campaign and in the Philippine Insurrection; he also wrote an academic history of Napoleon's early Italian campaigns of the 1790s. His history is more limited in scope than Chadwick's, being focused on only the Santiago campaign, but it trades scope for considerable detail and depth in analyzing the campaign. Sargent does place disease as a major factor in his history of the war; his description of "the theaters of operations" includes a narrative of both the English 1741 campaign against Santiago and the 1761-62 campaign against Havana, which were debilitated from epidemics of yellow fever.

The last academic-level history was written by Senator Henry Cabot Lodge, *The War With Spain* (1899). A PhD historian as well as United States Senator, he brought a unique viewpoint to

¹⁵⁷⁶ Secretary Long's *New American Navy* rivals Chadwick's history from a naval perspective and some readers might find it superior. However, Chadwick narrates the naval actions in context to what was happening on land, providing a better perspective on the war at sea.

his history as he grappled with the drawn-out negotiations between Spain and the United States between the *Maine* sinking and the declaration of war as well as the continual maneuvers in Congress to force McKinley into a military response to Spain's actions in Cuba. Lodge brings the issue of disease to the fore in his analysis of the two opposing sides during the siege of Santiago.

The men were exposed to scorching tropic heats and torrential rains, all in a climate famous for malarial fevers. It was only a question of a very short time when these fevers would become general, striking first the sick and wounded, who were insufficiently cared for and who could not be restored to health on a diet of pork and beans, and then the well and unwounded men in the trenches. Worst of all, behind the climatic diseases lurked the dread epidemic of yellow fever... On the other side, the Spaniards were in reality much worse off, although it may have appeared at Havana and in Madrid as if they had only to hold firm and trust to the climate and the ravages of fever to inflict severe losses upon the Americans, delay them, and possibly force them to withdraw.¹⁵⁷⁷

He noted that the Spanish were short of food, water, supplies, and ammunition, and were surrounded by a hostile population. "Under these conditions the surrender of the city was only a question of time, but how long that time would be was of infinite importance to the American army when delay meant disease and death." Lodge was only concerned with the war, however, so the issues of the treatment and evacuation of the Fifth Corps troops after the surrender and the epidemics within the training camps were omitted in favor of an examination of the peace negotiations between the US and Spain.¹⁵⁷⁸

¹⁵⁷⁷ Henry Cabot Lodge, *The War With Spain* (New York: Harper & Bros. Publishers, 1899), 156.

¹⁵⁷⁸ Lodge, *The War With Spain*, 157.

No historiography of the war would be complete without mentioning Theodore Roosevelt's memoir of the war, *The Rough Riders*. Although a very personal account of the war from his perspective as regimental Executive Officer (and later Commander), Roosevelt freely casts judgment on the actions and decisions made by his superiors. He was an instigator (and likely leaker) of the infamous "Round Robin" letter that embarrassed the McKinley Administration and led the public to believe that the Administration had failed in its treatment of seriously ill soldiers from a combination of indifference and incompetence.¹⁵⁷⁹ Several other Rough Riders wrote their memoirs of their experience in the war's most famous regiment, to include Tom Hall's *The Fun and Fighting of the Rough Riders*, *Two Rough Riders: Letters from F. Allen McCurdy and J. Kirk McCurdy* and *The Story of the Rough Riders*, written by Edward Marshall, a correspondent attached to the regiment.¹⁵⁸⁰

Dozens of books were written about specific units by authors who served in the company, regiment, or brigade being commemorated, or state histories that include all of the units called up for the war. These can be helpful in illuminating the small, more personal experiences that underlie the "bottoms up" view of history; they can also provide detail on operations otherwise too minor to merit much attention. Karl Herrman wrote *A Recent Campaign in Puerto Rico* about the operations of Schwan's brigade of Regulars in the invasion of Puerto Rico.¹⁵⁸¹ Other unit histories include *A History of the National Guard of Indiana*, covering the state militia from 1787 through the Spanish-American War, *Rhode Island in the War With Spain*, *Greater Salem in the Spanish-American War*, *History of Companies I and E, Sixth Regiment, Illinois Volunteer*

¹⁵⁷⁹ Theodore Roosevelt, *The Rough Riders* (New York: Charles Scribner's Sons, 1899).

¹⁵⁸⁰ Tom Hall, *The Fun and Fighting of the Rough Riders* (New York: Frederick Stokes Co., 1899); F. Allen McCurdy and J. Kirk McCurdy, *Two Rough Riders: Letters from F. Allen McCurdy and J. Kirk McCurdy* (New York: F. Tennyson Neely "printed for private distribution only," 1902); Edward Marshall, *The Story of the Rough Riders: 1st U.S. Volunteer Cavalry* (New York: G.W. Dillingham Co., 1909).

¹⁵⁸¹ Karl Herrman, *A Recent Campaign in Puerto Rico by the Independent Regular Brigade under the command of Brig. General Schwan* (Boston: E.H. Bacon & Co., 1907).

*Infantry from Whiteside County, History of the Fourth Illinois Volunteers, "K" Company, 71st Regiment, New York Volunteers, New York and the War With Spain, Record of Indiana Volunteers of the Spanish-American War, Story of the Fifteenth Minnesota Volunteer Infantry, The '98 Campaign of the 6th Massachusetts, U.S. V., The Fourteenth Ohio, The History of the Utah Volunteers in the Spanish-American War, and many others.*¹⁵⁸² Some of the vignettes in these books provide some idea about how the men dealt with the fear of disease and the outbreak of disease. For example, the men of the Fourth Illinois were afraid to trench their tents because "the camp was located in a cemetery where two thousand five hundred yellow fever victims had been buried, and that it was positively against the law to dig into the earth at all, for fear of stirring up fever germs." The story about the graves was completely made up, but it illustrates the power of the fear of disease (and perhaps gullibility as well).¹⁵⁸³ Other unit histories illuminate the Philippine campaign in far greater detail than the war histories, for example *The Official Records of the Oregon Volunteers*, which also covers the unit's role in the Philippine Insurrection and includes dozens of official reports of campaigns and battles across the Philippines.¹⁵⁸⁴ Parker's *History of the Gatling Gun Detachment, Fifth Army Corps*, provides

¹⁵⁸² *A History of the National Guard of Indiana From the beginning: of the Militia System in 1787 to the present time, including the services of Indiana Troops in the War With Spain* (Indianapolis: W.D. Pratt, 1901); *Rhode Island in the War With Spain* (Providence: E.L. Freeman & Sons, 1900); Harry Webber, *Greater Salem in the Spanish-American War* (Lynn, MA: Perry & Sons, 1901); R. S. Bunzey, *History of Companies I and E, Sixth Regiment, Illinois Volunteer Infantry from Whiteside County* (Morrison, Illinois, 1901); Chaplain John Skinner *History of the Fourth Illinois Volunteers* (Logansport, IN: Wilson, Humphreys & Co., 1898); Chas. Scott, *"K" Company, 71st Regiment, New York Volunteers* (New York: Published for private circulation, 1900); New York State Historian, *New York and the War With Spain* (Albany: The Argus Co., 1903); *Record of Indiana Volunteers of the Spanish-American War* (Indianapolis: Wm. Burford, 1900); T.A. Turner, *Story of the Fifteenth Minnesota Volunteer Infantry* (Minneapolis: Lessard Printing Co., 1899); Frank Edwards, *The '98 Campaign of the 6th Massachusetts, U.S. V.* (Boston: Little, Brown & Co., 1899); Chas. Creiger, *The Fourteenth Ohio National Guard: The Fourth Ohio Volunteer Infantry* (Columbus, OH: Landon Printing & Publishing, 1899); A. Presntiss, ed. *The History of the Utah Volunteers in the Spanish-American War* (Salt Lake, UT: Wm. Ford, 1900).

¹⁵⁸³ Skinner, *History of the Fourth Illinois Volunteers*, 59.

¹⁵⁸⁴ Brig. Gen. C.U. Gantenbein, *The Official Records of the Oregon Volunteers* (Salem, OR: W.H. Leeds, 1902).

some of the best accounts of the epidemics afflicting the Fifth Corps after the surrender of Santiago.¹⁵⁸⁵

Some histories focused on race. Alabama produced a history of its white regiments entitled *Southern Martyrs*. As the name implies, it was a polemic against the unpreparedness and mismanagement exhibited by the American government and the War Department. The author declaims:

It is one thing to hear the singing of shot and shell, to see the spattering blood, to catch mind-pictures of ghastly, upturned faces, to quiver and shake in the hellish throb of battle. It is one thing, too, to swelter on long, strength-stealing tramps, to bolt uncooked food, to go, perhaps, half-clothed and worse housed. And it is one thing, too, to know you are doing all this for Old Glory, with true comrades beside you, under courageous and capable leaders, for a grateful nation. ... But, oh ! what a different thing it is to grovel in misery at Miami—to toil beyond the limits of human endurance because a blind or criminal officer has been led into a trap and a querulous taskmaster forgets that soldiers are men; to know that doctors are fighting to rescue you from a hell hole of horrors while incompetent officers, superior in authority, deny the presence of danger; to drink disease germs from day to day because those same incompetent officers withhold you from pure water; to stumble about bare-foot, in rags, because a prosperous people has failed to appoint men who have energy enough to clothe you out of plethoric coffers; to stifle and swelter, thirsty and weak, through unreasonable and unprofitable drills; to spend the nights battling with mosquitoes and the days contending with insidious death agents; to subsist on illy-cooked [sic] food that would of itself have already sent less hardy men to their graves; to slave and have added to your

¹⁵⁸⁵ John H. Parker, *History of the Gatling Gun Detachment, Fifth Army Corps, at Santiago* (Kansas City: Press of the Hudson-Kimberly Co., 1898).

slavery the humiliation of knowing that the men who thrust this martyrdom upon you are protected and favored by the nation you volunteered to fight for. It is far harder to die a forgotten wretch sweating your life away than it is to die a glorious hero, felled by an enemy bullet.¹⁵⁸⁶

Relatively more common are the histories extolling the virtues of the black Americans that fought in the war – as a member of the Colored regiments of the regulars, of the all-black militia units raised by the states, or part of the black Immune regiments raised to battle disease along with the Spanish. Edward Johnson wrote *History of Negro Soldiers in the Spanish-American War* immediately after the war.¹⁵⁸⁷ Miles Lynk wrote *The Black Troopers* in 1899.¹⁵⁸⁸ Both were published African-American authors well known in the Negro community. Corporal W.T. Goode wrote a unit history of the *Eighth Illinois Volunteer Regiment*, an all-black unit raised primarily from Chicago.¹⁵⁸⁹ A unit history of particular interest is that of the Ninth Volunteer Infantry (Immune), the only black immune unit to actually deploy to Cuba. The history also tells the story of the Regular Army Colored Regiments serving in Cuba.¹⁵⁹⁰ These books provide some rare contemporary source material for the poorly recognized achievements of the black soldiers in the war. Starting in the 1970s, books and journal articles began to appear regarding blacks in the Spanish-American War; these provided a wealth of secondary sources, but there are not many primary sources available.

¹⁵⁸⁶ Sergeant M. Koenigsberg, *Southern Martyrs: A History Alabama's White Regiments During the Spanish-American War* (Montgomery, AL: Brown Printing, 1898), 9-10.

¹⁵⁸⁷ Edward A. Johnson, *History of Negro Soldiers in the Spanish-American War, and other items of interest* (Raleigh, NC: Capital Printing Co., 1899)

¹⁵⁸⁸ Miles V. Lynk, *The Black Troopers, or the Daring Heroism of the Negro Soldiers in the Spanish-American War* (Jackson, TN: The M.V. Lynk Publishing Co., 1899)

¹⁵⁸⁹ Corporal W.T. Goode, *Eighth Illinois Volunteer Regiment* (Chicago: Blakely Printing Co., 1899).

¹⁵⁹⁰ W. Hilary Coston, *The Spanish-American War Volunteer: Ninth United States Volunteer Infantry Roster and Muster* (Middletown, PA: Published by the Author, 1899). The black regiments were the 9th and 10th US Cavalry and the 24th and 25th US Infantry, who were also known as the “Buffalo Soldiers.”

There were many personal memoirs written by soldiers about their experiences. The most famous first-person memoir (outside of Roosevelt's *The Rough Riders*) is likely *The Little War of Private Post*, an entertaining and very readable account of Charles Post's experiences in the Cuban campaign. Post has some interesting comments on disease; for example, he outlined Shafter's options after the landing at Daiquiri and Siboney: "Shafter could lay siege to Santiago and lose men by disease and caution. Or he could assault, and lose his army in battle. He decided to attack. He had been quoted as saying that he preferred, as a choice, to lose men in battle rather than by disease."¹⁵⁹¹ Other personal memoirs written include Charles Gavreau's *Reminiscences of the Spanish-American War*, covering both Cuba and the Philippines, *Memories of the Campaign of Santiago* by Moss, *My Army Experiences* by Pohlman, *Roughing it With the Regulars* by Oliver, and Stewart's *The N'th Foot in War*.¹⁵⁹² A few miscellaneous books also catch the eye – Bryan's *An Average American Army Officer* is notable for the modesty of its title and the typicality of the author's experiences and (Mrs.) Sargent's *Following the Flag: Diary of a Soldier's Wife* recounts the difficult life of an Army dependant.¹⁵⁹³

A rare view from the sick bed and operating tent is provided by Dr. Nicholas Senn's *War Correspondence*, a collection of letters written during the war intended for later publication. Senn is highly critical of the unpreparedness of the Medical Department but strongly defends the efforts of Army doctors like himself in treating the sick and wounded. It is as much a medical

¹⁵⁹¹ Charles Johnson Post, *The Little War of Private Post* (Lincoln, NE: Univ. of Nebraska Press, 1999; reprint Little, Brown, 1960), 213.

¹⁵⁹² Charles Gavreau, *Reminiscences of the Spanish-American War in Cuba and the Philippines* (Rouses Point, NY: The Authors Publishing Co., 1915); James Moss, *Memories of the Campaign of Santiago* (San Francisco: Mysell-Rollins Co., 1899); Andrew Pohlman, *My Army Experiences* (New York: Broadway Publishing Co., 1906); Wm. Oliver, *Roughing it With the Regulars* (New York: William Parr, 1901); M.B. Stewart, *The N'th Foot in War* (Kansas City: Hudson Press, 1906) – the "N'th Foot" is simply a generic reference to an infantry regiment;

¹⁵⁹³ Roger Bryan, *An Average American Army Officer: An Autobiography* (San Diego: Buck-Molina Co., 1914); Alice Applegate Sargent, *Following the Flag: Diary of a Soldier's Wife* (Kansas City: E.B. Barnett, undated) – Alice was the wife of Herbert Sargent, the author of *The Campaign of Santiago de Cuba*.

treatise with details about cases and operating procedures as it is a memoir of the war.¹⁵⁹⁴

Although Surgeon-General Sternberg did not write his memoirs, two biographies of the man provide useful detail on the Medical Department during the war as well as the Medical Corps and medicine in general from the 1870s through 1900: *George Miller Sternberg*, a biography written by his wife and *Soldier in White: the Life of General George Miller Sternberg* written in 1958.¹⁵⁹⁵ A recent biography was also produced by the Uniformed Services University of the Health Sciences: *In the Interest of Truth: The Life and Science of Surgeon General George Miller Sternberg*, which provides an interesting focus on medical science in the late nineteenth century.¹⁵⁹⁶

The personal memoirs have the pros and cons of all first-person primary sources. In many cases (especially for senior officers and politicians) they serve as a defense of the author's actions and decisions during the war, providing insight into his thinking but subject to hindsight, one-sidedness, and even outright fabrication. The memoirs of more junior officers and enlisted men are less defensive, but they are also myopic in their view of events of the war. On the other hand, they are invaluable in evaluating the experiences, hopes, and fears of the average soldier with respect to disease as well as combat. Unit histories provide depth at a cost of a limited scope, as do texts written about subsets of soldiers such as the black troopers in the war. The most useful for this study are the memoirs of the senior leaders and the serious academic-level studies by authors such as Chadwick and Sargent.

¹⁵⁹⁴ Nicholas Senn, *War Correspondence (Hispano-American War): Letters from Dr. Nicholas Senn* (Chicago: American Medical Association Press, 1899).

¹⁵⁹⁵ Martha L. Sternberg, *George Miller Sternberg: A Biography* (Chicago: American Medical Assn., 1920); John Gibson, *Soldier in White: the Life of General George Miller Sternberg* (Durham, NC: Duke Univ. Press, 1958).

¹⁵⁹⁶ Stephen C. Craig, *In the Interest of Truth: The Life and Science of Surgeon General George Miller Sternberg* (Fort Sam Houston, TX: Office of The Surgeon General, undated).

Academic Histories

The introduction of this dissertation included a brief historiography of the Spanish-American War. This section (as well as a later section on medical sources) includes a slightly more detailed discussion of the same texts as well as some additional sources, so the reader is warned that there is some repetition of points made in the introductory chapter. This repetition permits this essay to stand independent of the main text as a brief overview of major sources on disease and the Spanish-American War.

The first academic history of the war (if we exclude the histories by Chadwick, Sergeant, and Lodge covered in the previous section) is Walter Millis' *The Martial Spirit*, first published in 1931, although the author produced an updated edition in 1965.¹⁵⁹⁷ In the 1965 Preface to the Compass Edition, the author defended his satiric view of the war as a product of the recent Great War, preeminent in the mind of the author and his readers. As he explains, "the Spanish-American War presented a special case in which the vast slaughters, horrors, and agonies associated with the Napoleonic, the Civil, or the First World War 'were,' as Admiral Chadwick observed, 'largely to be absent.' This circumstance threw into much stronger relief the frailties, the follies, the moral and political confusions, in which, I suspected, all wars, even the greatest and most ghastly, were generated." It was, as Millis explains, "the last major expression of romanticism in America. It was the era of Kipling and Conrad. The lure of far-away places, of tropic seas and palm-fringed beaches was strong upon the young men who poured out to volunteer in 1898."¹⁵⁹⁸ As discussed in the introduction, Millis was focused on the "martial spirit" that drove the United States into an unnecessary war for which it was unprepared – unprepared for the war, and unprepared for the spoils of war after the peace treaty was signed.

¹⁵⁹⁷ Walter Millis, *The Martial Spirit*, Compass Edition (New York: The Viking Press, 1965).

¹⁵⁹⁸ Ibid., xii; xiv. Millis is referring to French Chadwick, the author of *The Relations of the United States and Spain*.

As a journalist for the New York *Herald-Tribune*, he was particularly scathing in his criticism of the yellow journalism that fanned the flames of public opinion. The book lacks footnotes although it does have a brief “bibliographical acknowledgement” that lists sources.¹⁵⁹⁹

Historians began to take a fresh look at the Spanish-American War starting in the 1970s. Most histories written during this era shifted focus away from the military-political-diplomatic top-down perspectives to focus on issues such as imperialism, racism, and the role of minorities and revolutionaries that had received minimal attention from the “consensus” historians of the previous generation. Philip Foner’s *The Spanish-Cuban-American War and the Birth of American Imperialism* (1972) reinterprets the war beginning with the Cuban revolution of 1895. This begins with the title; Foner places equal emphasis on the Cuban participation in the eventual American choice to go to war as well as the role of the Cuban insurgents in the Cuban campaign. The title also supports his thesis that the Cuban intervention was the beginning of a market-driven capitalist imperialism that relied on economic dominance as well as military might. In doing so, Foner deemphasizes the war itself; he is more interested in how and why the US went to war and the effect that the acquisition of an overseas empire had on this country. He completely ignores the role of disease in the war; a deterministic objective force has little say in the flow of ideologies and dollars that (in Foner’s view) drove American participation on the war. Foner’s work is more useful for studying the Cuban revolution than it is in studying the war that ended the revolution of 1895.¹⁶⁰⁰

Other histories produced in the last few decades were useful in interpreting the Cuban revolution and its influence on the war. The most comprehensive history of the island is Hugh Thomas’ magisterial history *Cuba: The Pursuit of Freedom* (1971). This approximately 1600

¹⁵⁹⁹ These are incomplete by modern standards; only the title, author, and year of publication are provided.

¹⁶⁰⁰ Philip S. Foner, *The Spanish-Cuban-American War and the Birth of American Imperialism*, 2 vols. (New York: Monthly Review Press, 1972).

page work covers all of Cuban history from the landings of Columbus through the Castro Revolution. It also provides some details on the 1741 and 1762-63 British attacks on the island, both of which were decimated by epidemics of yellow fever. Ada Ferrer's more recent book *Insurgent Cuba: Race, Nation, and Revolution 1868-1898* illuminates the role of slavery and race on the Cuban insurrections.¹⁶⁰¹

A series of journal articles written by Willard Gatewood in the early 1970s explored the role of black Americans in the Spanish-American War, in National Guard units mobilized for war: "Indiana Negroes and the Spanish American War," "Alabama's "Negro Soldier Experiment," 1898-1899," "An Experiment in Color: The Eighth Illinois Volunteers, 1898—1899," and "Virginia's Negro Regiment in the Spanish-American War, The Sixth Virginia Volunteers." Black enlistment in the four Immune regiments allocated to African-Americans based on their supposed racial immunity to yellow fever is examined in Marvin Fletcher's "The Black Volunteers in the Spanish-American War," (1974) and more recently in Roger Cunningham's "The Black "Immune" Regiments in the Spanish-American War."¹⁶⁰²

Graham Cosmas emphasized the impact of disease on planning in his 1971 military history of the Army, *An Army for Empire*.¹⁶⁰³ In a journal article, he referred to an "almost superstitious fear of Cuba's epidemic yellow fever and malaria ...informed opinion insisted, [that] only the

¹⁶⁰¹ Hugh Thomas, *Cuba: The Pursuit of Freedom*; Ada Ferrer, *Insurgent Cuba: Race, Nation, and Revolution 1868-1898*, both cited previously.

¹⁶⁰² Willard B. Gatewood, Jr., "Indiana Negroes and the Spanish American War," *Indiana Magazine of History* 69, No. 2 (June, 1973): 115-139; _____, "Alabama's "Negro Soldier Experiment," 1898-1899," *The Journal of Negro History* 57, No. 4 (Oct., 1972): 333-351; _____, "An Experiment in Color: The Eighth Illinois Volunteers, 1898—1899," *Journal of the Illinois State Historical Society* 65, No. 3 (Autumn, 1972): 293-312; _____, "Virginia's Negro Regiment in the Spanish-American War, The Sixth Virginia Volunteers," *The Virginia Magazine of History and Biography* 80, No. 2 (Apr., 1972): 193-209; LTC Roger D. Cunningham, "The Black "Immune" Regiments in the Spanish-American War," The Army Historical Foundation. <https://armyhistory.org/the-black-immune-regiments-in-the-spanish-american-war>, accessed April 25, 2015. Cunningham also authored "'A Lot of Fine, Sturdy Black Warriors': Texas's African American 'Immunes' in the Spanish-American War," *The Southwestern Historical Quarterly* 108, No. 3 (Jan., 2005): 344-367.

¹⁶⁰³ Cosmas, *An Army for Empire*.

most careful preparation and the most elaborate medical precautions would prevent decimation of the force.”¹⁶⁰⁴ In his book he went even further:

Cuba's grim reputation as the breeding ground of malaria and yellow fever led many American strategists to question whether soldiers landed there would live long enough to fight. American generals were inexperienced in tropical campaigning, but most had read histories of earlier wars in the West Indies in which whole armies had succumbed to yellow fever, smallpox, and malaria. Medical science, in spite of decades of effort, had not yet isolated the microorganism that caused yellow fever or discovered how the dread killer spread. There was thus no reliable defense against the disease; laymen regarded "yellow jack," as it was popularly called, with almost superstitious terror. Action against the Spaniards would begin just at the onset of the Cuban rainy season, a time of cloudbursts and high humidity that began in late April and continued through September. During this period, Cuba's dirt roads became almost impassable and the fevers raged at their deadliest. Surgeon General Sternberg, one of the world's leading experts on yellow fever, was supported by Americans who had lived in Cuba in his repeated urging of President McKinley not to invade the country during the wet months. Invasion, he predicted, would mean death and disaster for the Army. These forebodings initially impressed the President to the extent that he sought to avoid an invasion if success could be achieved by other means.¹⁶⁰⁵

Cosmas is alone in almost completely ignoring the effect disease had on Shafter's negotiations over the surrender of the city. His discussion of the entire period completely omitted Shafter's messages back and forth to Alger over the state of health in his command, to include

¹⁶⁰⁴ Graham A. Cosmas, "Securing the Fruits of Victory: The U.S. Army Occupies Cuba, 1898-1899," *Military Affairs* 38, No. 3 (Oct., 1974): 86.

¹⁶⁰⁵ Cosmas, *An Army for Empire*, 105. However, he fails to comment on the report he provides later (p. 122) that Sternberg had reconsidered the dangers of a Cuban expedition.

Miles' support for a conditional surrender sent on July 13th. It is only in a later section dealing with the epidemic that he finally mentioned that "The specter of an epidemic had haunted General Shafter ever since the landing at Daiquiri. During the siege, the threat became actuality when, on July 6, surgeons discovered cases of yellow fever at Siboney. Their reports were among the factors that led Shafter and Miles to press for acceptance of Toral's evacuation offer."¹⁶⁰⁶ He clearly thought that it should be mentioned, but on the other hand he could not have regarded it as an essential element of the operations outside Santiago; if he had, he would have provided an interpretation of its effect in his analysis of the siege. Like Trask, Cosmas did provide an extensive analysis of the epidemic, but he also placed it in a separate section of his book.¹⁶⁰⁷

Cosmas also wrote several journal articles that supplement his history of the Army at war. "From Order to Chaos: The War Department, the National Guard, and Military Policy, 1898" covers the role of the National Guard and its Congressional sponsors in mobilizing the force, while "Military Reform After the Spanish-American War: The Army Reorganization Fight of 1898-1899" covers the politics of the fight over the size of the post-war Regular Army.¹⁶⁰⁸ Cosmas also wrote an essay on the first land battles of the Spanish-American War; "San Juan Hill and El Caney, 1-2 July 1898" appeared in *America's First Battles*, an account of the first battles fought by the American Army in every war from the Revolution to Vietnam.¹⁶⁰⁹

¹⁶⁰⁶ Ibid., 252.

¹⁶⁰⁷ Ibid., 252-264.

¹⁶⁰⁸ Graham Cosmas, "From Order to Chaos: The War Department, the National Guard, and Military Policy, 1898," *Military Affairs* 29, No. 3 (Nov. 1, 1965): 105-121; _____, "Military Reform After the Spanish-American War: The Army Reorganization Fight of 1898-1899," *Military Affairs* 35, No. 1 (Feb., 1971): 12-18.

¹⁶⁰⁹ Graham Cosmas, "San Juan Hill and El Caney, 1-2 July 1898", in Charles Heller and William Stofft, eds., *America's First Battles, 1776-1965* (Lawrence, KS: Univ. Press of Kansas, 1986), 109-148.

The next major history of the Spanish-American War was David Trask's *The War with Spain in 1898*, which is still one of the best overall histories of the war. Trask draws heavily on Cosmas for his treatment of the Army in the war, but goes far beyond Cosmas in his presentation of the campaigns in Cuba, Puerto Rico and the Philippines, as well as a detailed history of the war at sea. However, he minimizes or ignores the work of Foner and others in analyzing the role of imperialism in the war; indeed, the index lacks any entry for "imperialism" (although the "I" index has multiple references to "immunes").¹⁶¹⁰ Like Millis, Trask places considerable emphasis on disease as a factor in planning for the war, citing the testimony of the senior leadership that universally expected an outbreak of yellow fever in the Cuban campaign. He mentions the incipient yellow fever epidemic as a factor in the negotiations for the surrender of Santiago, a fact expressly noted by both the American and Spanish commanders, but minimizes its impact; instead, Trask criticizes Shafter for his "uncertain performance," choosing to "emphasize his own difficulties rather than those of the enemy." Like many other authors, he viewed the Fifth Corps epidemics as an event largely separate from the progress of the war, as they primarily affected the troops after the city's surrender.¹⁶¹¹

The most recent major history of the war is Ivan Musicant's *Empire by Default* (1998), produced for the war's centennial. Musicant argues that the Spanish-American War marked a turning point in the history of the United States, where the country turned from inward development of its continental frontier to an outward development of an empire. The empire was, however, acquired by default, as the title suggests. The book has had mixed reviews; it was chosen by the Chief of Staff of the US Air Force for his official 2008 reading list recommended for all Air Force personnel, but the H-Net review by Lewis Gould of the University of Texas

¹⁶¹⁰ Trask, *War with Spain*.

¹⁶¹¹ Trask, *War with Spain*, 290; 329.

panned the book as unoriginal and close to plagiarism – “his text represents an inappropriate use of the work of other historians.”¹⁶¹² Musicant places little emphasis on disease; although he mentions it in his narrative of the Cuban campaign, he chooses not to emphasize it as a major factor in either the planning or the execution of the war. As a result, although numerous quotes could be taken from the approximately 700 page book, it gets lost in the minutia as the narrative proceeds.

There are other histories of the war but they add little to the work of Cosmas and Trask. These include Albert Nofi’s *The Spanish-American War, 1898*. A popular history of the war, its strengths lie in the many sidebars analyzing the organization and strengths of the opposing forces as well as brief backgrounds on the many individuals of importance to the war. For example, a 2-page sidebar on Escario’s March (reinforcing Santiago on July 3rd) provides a daily summary of the skirmishes between the Spanish soldiers and the Cuban irregulars that cannot be found in any other history of the war.¹⁶¹³ Jack Cameron Dierks wrote *A Leap To Arms: The Cuban Campaign of 1898* in 1970. A former Navy journalist, his account focuses more on the naval campaigns in Cuban waters than the land campaign to take Santiago.¹⁶¹⁴ Harvey Rosenfeld takes a different approach in *Diary of a Dirty Little War: The Spanish-American War of 1898*. The title itself is a departure from tradition. Instead of John Hay’s “glorious little war,” Rosenfeld begins by stating “once the glow of victory had disappeared and after decades of analysis, the Spanish-American War might better be described as a dirty little war; altruism, selflessness – discard all that.

Partisan politics and economic interests dictated the need to end the presence and influence of

¹⁶¹² Ivan Musicant, *Empire by Default: The Spanish-American War and the Dawn of the American Century* (New York: Henry Holt & Co., 1998) H-Net review June 1998, <http://www.h-net.org/reviews/showpdf.cgi?path=13248898270249>, accessed 13 April 2008.

¹⁶¹³ Albert A. Nofi, *The Spanish-American War, 1898* (Pennsylvania: Combined Books, 1996). Escario’s March, 153-154.

¹⁶¹⁴ Jack Cameron Dierks, *A Leap To Arms: The Cuban Campaign of 1898* (Philadelphia: J.P. Lippincott Co., 1970).

Spain in Cuba.” He uses a diary-like approach to analyze the events of each day of the war, from Sunday, April 10 to Friday, August 12, 1898. Its strengths lie in the details provided in some of the daily accounts; its major weakness is the lack of any footnotes despite many interesting direct quotes, although most are drawn from period newspapers and could be traced using a search engine.¹⁶¹⁵ James McCaffrey collected a variety of first-person accounts in *Inside the Spanish-American War*. There are some references to disease, but not as many as one might expect given the high casualty rates. However, the Spanish-American soldier, like his predecessors over the centuries, expected illness as a part of military service, so they were less likely to report on it.¹⁶¹⁶

The major source for the Philippine Insurrection is Brian Lind’s *The Philippine War: 1899-1902*. Although it covers the years of conflict after the end of the Spanish-American War, it details the horrific cost entailed on soldiers taken from a temperate climate and sent to war in the tropics. Lind also wrote *Guardians of Empire*, an account of the post-war Army in the Pacific.¹⁶¹⁷ Stanley Karnow’s popular history *In Our Image: America’s Empire in the Philippines* is a very readable and quite detailed history of the war. Its utility as an academic source is limited, however, by its lack of footnotes, although a general Note on Sources is included.

America has had three wars that at one time or another have been called “forgotten wars”: the War of 1812, the Korean War, and the Spanish-American War. The War of 1812 was a largely useless war that ended largely as the *status quo ante bellum*; it might be overlooked almost entirely if not for Andrew Jackson’s famed defense of New Orleans. The Korean War was

¹⁶¹⁵ Harvey Rosenfeld, *Diary of a Dirty Little War: The Spanish-American War of 1898* (Westport, CN: Praeger, 2000). Rosenfeld does include a very brief list of secondary sources at the end of the book.

¹⁶¹⁶ James McCaffrey, *Inside the Spanish-American War: A History based on First-Person Accounts* (Jefferson, NC: McFarland & Co., Publishers, 2009).

¹⁶¹⁷ Brian Lind, *The Philippine War: 1899-1902* (Lawrence, KS: The Univ. Press of Kansas, 2000); _____, *Guardians of Empire: The US Army and the Pacific, 1902-1940* (Chapel Hill, NC: Univ. of North Carolina Press, 1997).

largely overshadowed by World War II and the Vietnam War. The Spanish-American War, on the other hand, was the only major American conflict between the Civil War and World War I. It has been less extensively examined by historians than other wars largely because of the shortness of the conflict; like the First Gulf War of 1991, it was concluded in just a few months.¹⁶¹⁸ Despite its brief duration, there are a wealth of primary sources and government reports; these were written either just after the war or during the interregnum between the Spanish-American War and World War I. After the world wars, the topic was largely ignored until a wave of historical revisionism sparked a reexamination of almost all topics in the 1970s and 1980s. A few works appeared around the time of the centennial (1998), but it remains underreported, possibly due to a decline in military history in academic circles. This is the reason why this historiography of academic histories of the war is relatively brief. There were, however, other fields of academic study that examined disease in the context of the war; these are discussed in the next section.

Epidemiological and Medical Studies

This dissertation has examined the interrelationships between epidemic disease and military operations during the Spanish American War of 1898. It has drawn upon sources from general history, military history, medical texts contemporary to the period of study, medical history, and epidemiology. This section will examine the last two sources – histories of medicine that cover epidemics that occurred during military campaigns as well as retrospective views of 18th and 19th century understanding and treatment of disease, and epidemiological studies of historic outbreaks of disease that affected war or the general process of imperial expansion.

¹⁶¹⁸ The First Gulf War, often referred to by its campaign name of Desert Storm, lasted from January 16 to February 28, 1991 (“A Timeline of Operation Desert Storm,” US Army Live, <http://armylive.dodlive.mil/index.php/2013/02/operation-desert-storm/>, accessed 26 Feb. 2016). The Spanish-American War lasted from April 21, 1898 to the ceasefire on August 13, 1898.

Two major encyclopedic works have attempted to identify the overlaps between epidemic disease and war – Friedrich Prinzing’s *Epidemics Resulting from Wars* (1916) and *War Epidemics* by Smallman-Raynor and Cliff.¹⁶¹⁹ They have the virtues and defects of an encyclopedia – vast coverage, but even major epidemics may rate only a paragraph or two of material. They are very helpful in identifying the locus of military operations and disease, but lack any analysis on how the outbreak of disease may have affected a campaign, other than to note battles won and lost. Prinzing’s *Epidemics Resulting from Wars* was more concerned about epidemics that were caused by or at least spread by soldiers moving through areas to or from military campaigns or returning home after injury or discharge than it was about epidemics among soldiers deployed in the field (as seen in the title). It could not do so, however, without documenting the spread of disease among the soldiers from the initial epidemic. He singles out siege warfare as the most likely to cause epidemics among the defenders (although it could strike the attackers as well), devoting the final chapters to a detailed examination of six historical sieges from Mantua (1796-97) to Port Arthur (1904). *War Epidemics* is as interested in the deaths of soldiers as in the death of civilians, and it updates Prinzing’s work through the end of the twentieth century. The author also has a broader set of sources to draw upon to estimate morbidity and mortality rates. However, even the most significant wartime epidemics, such as the typhus and dysentery outbreaks that destroyed Napoleon’s *Grande Armée* and changed the history of Europe, merits less than two full pages of discussions (and of that a half-page is given to the famous graphical display of the army’s losses during the campaign).¹⁶²⁰ Smallman-Raynor

¹⁶¹⁹ Friedrich Prinzing, *Epidemics Resulting From Wars* (Oxford: The Clarendon Press, 1916); M. Smallman-Raynor and A. Cliff, *War Epidemics* (Oxford: Oxford University Press, 2004).

¹⁶²⁰ Typhus not only killed most of the soldiers (along with battle, starvation and desertion), but the soldiers spread it across much of northern Europe. The loss of the army led to Napoleon’s downfall, and that unquestionably charged the destiny of Europe. The graphic is Charles Minard’s visual display of the size of Napoleon’s army in time and space, called by Edward Tufte “the best statistical graph ever.” Edward Tufte, *The Visual Display of Quantitative Information*, 2nd ed. (Cheshire, CN: Graphics Press, 2001).

and Cliff also wrote four journal articles that discuss the geographical spread of disease in Cuba, the Philippines, and in the training camps of the United States: “The spatial dynamics of epidemic diseases in war and peace: Cuba and the insurrection against Spain, 1895–98” covers Cuba before the start of the war, “The Philippines insurrection and the 1902–4 Cholera epidemic: Part I – Epidemiological diffusion processes in war” and “The Philippines insurrection and the 1902–4 Cholera epidemic: Part II – Diffusion patterns in war and peace” examines the outbreak of cholera in the Philippines after the war, while “Epidemic Diffusion Processes in a System of U.S. Military Camps: Transfer Diffusion and the Spread of Typhoid Fever in the Spanish-American War, 1898” discusses the typhoid epidemic that broke out in the training camps during the war. The papers focus on the spread of disease rather than on the impact of disease other than morbidity and mortality.¹⁶²¹

Some analysis of the impact of these wartime epidemics can be found in histories of epidemics, from the very wide sweeping (e.g., *Plagues and Peoples*) to the very narrow (e.g., *The American Plague*). William McNeill’s *Plagues and Peoples* attempts to analyze infectious disease as an essential element of human existence; rather than examining times and places where major outbreaks occurred, McNeill traces the coexistence of man and parasitic¹⁶²² microorganism and the impact of that uneasy coexistence has had on the course of human affairs. Although general histories of this nature are not useful for specific information relevant to this

¹⁶²¹ Matthew Smallman-Raynor and Andrew D. Cliff, “The spatial dynamics of epidemic diseases in war and peace: Cuba and the insurrection against Spain, 1895–98,” *Transactions of the Institute of British Geographers* 24 (1999): 331–352; _____, “The Philippines insurrection and the 1902–4 cholera epidemic: Part I—Epidemiological diffusion processes in war” *Journal of Historical Geography* 24, No. 1 (1998): 69–89; _____, “The Philippines insurrection and the 1902–4 cholera epidemic: Part II—Diffusion patterns in war and peace” *Journal of Historical Geography* 24, No. 2 (1998): 188–210; _____, “Epidemic Diffusion Processes in a System of U.S. Military Camps: Transfer Diffusion and the Spread of Typhoid Fever in the Spanish-American War, 1898,” *Annals of the Association of American Geographers* 91, No. 1 (Mar., 2001): 71–91.

¹⁶²² Parasite is used in a broad sense here, referring to organisms that can use human tissue to replicate and spread (including bacteria and viruses) rather than on specific protozoa, worms or ectoparasites such as ticks or fleas that prey on human hosts.

thesis, they are useful in forming a perceptual basis for the phenomena such as the existence of regional disease pools that would threaten outside populations encountering these environments where certain diseases are endemic. This was certainly the case for yellow fever in tropical West Africa, and similar pools existed for other diseases and other regions. Another concept elucidated by McNeill is the idea of a disease gradient. The number and likelihood of diseases can be plotted on a map like elevation contours; in general the numbers increase as one proceeds from the cool north (unfavorable to many parasites such as worms and flukes, and inhospitable to arthropod vectors carrying lethal arboviruses) to the warm tropical south. Thus, one way of looking at the risks to European troops sent to tropical regions such as the Caribbean and West Africa is that they were climbing an extreme disease gradient – resulting in these regions’ reputations as “the cradle of fevers” or “the white man’s grave” (see Chapter 5 for details on both the Caribbean and West Africa). Other books of a general nature include Jared Diamond’s *Guns, Germs, and Steel*; Oldstone’s *Viruses, Plagues, and History*; Bray’s *Armies of Pestilence: the Effects of Pandemics on History*; Hays’ *The Burdens of Disease: Epidemics and Human Response in Western History*, and Sheldon Watts’ *Epidemics and History: Disease, Power, and Imperialism*. Diamond emphasizes the correlations between technologically based military power and disease in the spread of epidemics and conquest, Hays distinguishes between objective disease and the cultural construct of illness, while Watts emphasizes the role disease has had in racially-based imperialism.¹⁶²³

¹⁶²³ Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W. W. Norton & Company, 2005); Michael B.A. Oldstone, *Viruses, Plagues, and History* (Oxford: Oxford Univ. Press, 1998); R.S. Bray, *Armies of Pestilence: the Effects of Pandemics on History* (Cambridge: The Lutterworth Press, 1996); J.N. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History*, (New Brunswick, NJ: Rutgers Univ. Press, 1998); Sheldon Watts, *Epidemics and History: Disease, Power, and Imperialism* (New Haven: Yale Univ. Press, 1997). Hays has also more recently released *Epidemics and Pandemics: Their Impacts on Human History* (Santa Barbara, CA: ABC-Clío, 2005).

At the other end of the spectrum are histories of specific epidemics of a specific disease, such as Molly Crosby's *The American Plague*, about the 1878 yellow fever epidemic in Memphis and along the Mississippi Valley after a ship escaped quarantine in New Orleans. Crosby's work has direct relevance to this paper in providing a detailed background for the American government's reactions to the epidemic, such as the establishment of the National Board of Health and the Havana Yellow Fever Commission of 1879. The fever was clearly traced back to Havana, underscoring the dangers inherent on the tropical isle. Jeanette Keith's *Fever Season* also covers the 1878 yellow fever epidemic. Other such texts include two on smallpox: Williams, *The Pox and the Covenant* covers the epidemic in Boston in 1721, while Fenn's *Pox Americana: The Great Smallpox Epidemic of 1775-82* covers the pox during the Revolutionary War

Some books focus on a specific disease and trace its effects through history. Zinnser's *Rats, Lice and History* covers typhus, *Yellow Jack* is a history of yellow fever in the United States, and both *Humanity's Burden: A Global History of Malaria* and *The Making of a Tropical Disease: A Short History of Malaria* cover (as stated) malaria.¹⁶²⁴ Others use a regional focus to cover epidemic disease. Three books cover epidemic disease in the Caribbean after the arrival of European explorers: Alfred Crosby's groundbreaking *The Columbian Exchange: Biological and Cultural Consequences of 1492*; Cook's *Born to Die: Disease and the New World Conquest, 1492 – 1650*; and most recently J.R. McNeill's *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620-1914*. All of these books emphasize the consequences of the collision between the disease experienced Europeans and the disease naïve native Indian population.

Philip Curtain's *Disease and Empire* does similar work in illuminating the role of disease in the

¹⁶²⁴ Hans Zinnser, *Rats, Lice and History* (Boston: Little, Brown, & Co., 1934) ; John Pierce and Jim Writer, *Yellow Jack: How Yellow Fever ravaged America and Walter Reed Discovered Its Deadly Secrets* (Hoboken, NJ: John Wiley & Sons, 2005); James L.A. Webb, *Humanity's Burden: A Global History of Malaria* (Cambridge: Cambridge Univ. Press, 2009); Randall Packard, *The Making of a Tropical Disease: A Short History of Malaria* (Baltimore: Johns Hopkins Univ. Press, 2007).

European conquest of Africa and its consequences. The theses of these books are discussed in the case studies on the Caribbean and Africa in Chapter 5.¹⁶²⁵

A series of books have been released that cover the role of disease in specific military campaigns or wars. For years, the only book on disease in the Civil War was Paul Steiner's 1968 *Disease in the Civil War*, which was limited to the Eastern theater of the Civil War, primarily the Peninsula Campaign (1862). Recently, Andrew Bell released *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War* which covers all of the theaters. *The Illustrious Dead* covers the typhus epidemic that all but destroyed Napoleon's army in his retreat from Moscow.¹⁶²⁶ One source wrote about how disease would affect armies in the near future, using the history of past epidemics and the (then) current treatment options available. *Silent Enemies* was released in 1942 during World War II, and predicted not just outbreaks of certain diseases among the US Armed Forces but also latent issues such as preventing veterans with a constant low-level malarial infection from creating an epidemic amongst his neighbors and the diseases likely to occur in refugee camps after the war.¹⁶²⁷

Several medical texts offer a variety of historical examples that are useful for this study. Scott's 2-volume *A History of Tropical Medicine* is dated (1942) but provides good coverage of the nineteenth century encounters between European soldiers and tropical diseases. Christopher Lloyd wrote four books on medicine in the British navy; Vol. IV (1815-1900) of *Medicine and*

¹⁶²⁵ Alfred Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, 30th Anniv. Ed. (New York: Praeger, 2003); Noble David Cook, *Born to Die: Disease and the New World Conquest, 1492 – 1650* (Cambridge: Cambridge Univ. Press, 1998); J.R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620-1914* (Cambridge: Cambridge Univ. Press, 2010); Philip D. Curtin, *Disease and Empire: The Health of European Troops in the Conquest of Africa* (Cambridge: Cambridge Univ. Press, 1998).

¹⁶²⁶ Paul Steiner, *Disease in the Civil War* (Springfield, IL: Charles C Thomas Pub Ltd, 1968); Andrew McIlwaine Bell, *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War* (Baton Rouge: Louisiana State Univ. Press, 2010); Stephen Tatly, *The Illustrious Dead: The Terrifying Story of How Typhus Killed Napoleon's Greatest Army* (New York: Crown Publishers, 2009).

¹⁶²⁷ Justina Hill, *Silent Enemies: The Story of the Diseases of War and Their Control* (Freeport, NY: Books for Libraries Press, 1970; reprint 1942).

the Navy 1200 – 1900 discusses naval ground operations and riverine campaigns in West Africa during the 1900s, which caused a significant number of deaths during the fever season.¹⁶²⁸

A medical history of particular interest is Vincent Cirillo's *Bullets and Bacilli*, a history of the Army Medical Department during the Spanish-American War. Cirillo's focus is on the Department's performance in planning, preparing, and supporting the war, to include the treatment of the sick after evacuation from Cuba. He does not attempt to identify and analyze the impact that all the virtues and faults of the Department that he analyzed had on the conduct of the war, so it does not duplicate the material in Part II of this study. Cirillo also wrote "Fever and Reform: The Typhoid Epidemic in the Spanish-American War" discussing the problems associated with the typhoid epidemic in the training camps during the war.¹⁶²⁹

Historiographical Trends

As the nineteenth century progressed, medical doctors in imperialist nations such as Great Britain increasingly wrote medical texts intended for troops deployed to regions far away from Britain, where the disease environment was far different. At the beginning of that century, the West Indies was the most critical – and received a great deal of attention from doctors such as Robert Jackson. Later, the interest shifted to India and then increasingly toward Africa – the next regions of imperial engagement. Doctors and the American armed forces remained insular during the 1800s, but tropical diseases were never far away from a nation that bordered on the

¹⁶²⁸ Scott, *A History of Tropical Medicine*, 2 vols. (The Williams & Wilkins Company Baltimore, 1942), Christopher Lloyd, *Medicine and the Navy 1200- 1900*, Vol. IV: 1815-1900 (Edinburgh: E. & S. Livingstone Ltd., 1963).

¹⁶²⁹ Vincent J. Cirillo, *Bullets and Bacilli: The Spanish-American War and Military Medicine* (New Brunswick: Rutgers Univ. Press, 2004); _____, "Fever and Reform: The Typhoid Epidemic in the Spanish-American War," *Journal of the History of Medicine* 55 (Oct., 2000): 363-397. Cirillo did provide a detailed description of the 1898 medical knowledge base for typhoid, but only applied it to the typhoid epidemics occurring within the United States.

Caribbean Sea; if people should forget, massive epidemics such as the Mississippi Valley yellow fever epidemic of 1878 were there to remind them.

When popular writers and historians wrote accounts of Cuba as that island nation was racked by violent revolutions, disease was generally present in the background as part of the environment; it received special attention only when the *reconcentrados* began to drop like flies from the diseases concurrent with overcrowding and neglect. However, when it became time for serious consideration of American intervention, there was a renewed interest in journals and diaries from British assaults on the island in 1741 and 1762. Every senior leader expressed a significant concern about epidemic disease – primarily yellow fever – when planning for a possible American incursion on the island.

Once the war occurred, many popular accounts focused on the glorious deeds of American heroes, as their titles proudly proclaimed. However, the memoirs and more serious accounts could not ignore the decimation of the Fifth Corps outside Santiago¹⁶³⁰ and the thousands of typhoid deaths in the United States. Although the degree of coverage was mixed depending upon the focus of the work, the men who were at Santiago after the surrender or who included that period in their narrative made it clear how badly debilitated the troops were from exposure to epidemic disease. Typical was the account made by General Stewart of the Regulars returning home: “As regiments, one by one, packed up and staggered painfully to the transports, they were mere shadows of the splendid units that had landed a short six weeks before.”¹⁶³¹

¹⁶³⁰ The term “decimation” is widely misused; it means “1 in 10” and referred to a Roman punishment for mutinous troops – one soldier in ten was drawn by lot, and the remaining nine were forced to beat him to death. Popularly, it refers to any great loss, usually much more than just 10%. It is used here because it is appropriate in both contexts – about 1,900 out of 19,000 men were killed or wounded, while almost all were disabled to some extent by disease, decimated in the popular sense.

¹⁶³¹ Stewart, “The Regulars,” *The Santiago Campaign*, 52.

The histories written after the war initially included disease as part of the overall narrative, but after that generation of veterans passed from the scene, historians began to relegate disease to separate sections that dealt with discrete events such as the epidemic of malaria (and possibly yellow fever) after the surrender – and thus separate from the surrender; the epidemic in the training camps might or might not merit a mention. For example, the knowledge of the fact that every regiment outside of the Eighth Corps bound for Asia brought typhoid with them when they were deployed seemed to evaporate over time, since the war was quickly over before this could become manifest in the balance of forces central to a typical military history.

Good histories of the war did not omit disease from their accounts, as the “Round-Robin” incident alone made it impossible to ignore. The presence of disease, lurking in the minds of all participants in the war and influencing their thoughts and actions – that intangible somehow became minimized as historians became focused on other topics: imperialism; the war as viewed through the prism of race; the previously ignored story of the Cubans, especially the nonwhite elements of Cuban society; the impact on society when America became an imperial power with “little brown men” within its polity; and more. All important topics worthy of examination, to be sure, as these topics were certainly ignored in earlier historical accounts of the war. However, as more historians begin to examine the “big picture” of disease as a fundamental element in the progression of human society (in books such as *Plagues and Peoples* or *Mosquito Empires*) – an element at least as important as war – it is ironic that disease has become less relevant to the chroniclers of the “little picture” history so popular today.

The other trend in modern society is toward specialization, of all types. Military history and medical history rarely overlap, especially when the doctors publish their historical accounts in journals such as *Perspectives in Biology and Medicine* or *Infectious Disease Clinics of North*

America,¹⁶³² rarely seen by historians. Military historians can also easily publish in journals rarely seen by the medical community. Increasingly the epidemiologists are also adding to our understanding of history as well, but neither of the two previous groups is likely to read *Annals of the Association of American Geographers* or *Epidemiology*.¹⁶³³ This is certainly not a new problem, but the topic of disease in military operations naturally bridges the divide between the different specialties. This provides an increased opportunity for works of synthesis that simply bring together the efforts of these diverse communities, as well as traditional research using primary sources (and their equivalent in medical literature).

The writing of history always says as much about the time when histories were written as about the topic of the history itself. Perhaps the “new normal” of possible pandemics of avian flu, SARS, Ebola, or biological terrorism will cause historians to incorporate more awareness of how much disease was part of the fabric of society in the days before antibiotics or even knowledge of when, where, and how the “silent enemy” could strike. Antibiotic resistance may also raise awareness of how helpless doctors were to treat disease in the days before penicillin, streptomycin, and their more modern counterparts, and find disease more prominent in the writing of history in the 21st century.

¹⁶³² See, for example, Cirillo, “WINGED SPONGES,” 52-63 or Cunha and Cunha, “Impact of Plague on Human History,” 253–272.

¹⁶³³ Examples here include Matthew Smallman-Raynor and Andrew D. Cliff, “Epidemic Diffusion Processes in a System of U.S. Military Camps: Transfer Diffusion and the Spread of Typhoid Fever in the Spanish-American War, 1898,” *Annals of the Association of American Geographers* 91, No. 1 (Mar., 2001): 71-91 and Jay S. Kaufman, “How Inconsistencies in Racial Classification Demystify the Race Construct in Public Health Statistics,” *Epidemiology* 10, No. 2 (Mar., 1999): 101-103, which should be of particular interest to historians grappling with the difficult issue of racial construction.

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