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*Regulating Death and Building Empire:
American Doctors and the Construction of the Panama Canal, 1904-1914*

By

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in

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THE FIRST MOUNTAIN TO BE REMOVED

¹ William A. Rogers, "The First Mountain to be Removed." Illustration. New York: *Harper's Weekly*, July 22, 1905. From New York Times 'On This Day' <http://tv.nytimes.com/learning/general/onthisday/harp/0722.html> (accessed Nov. 15, 2011)

INTRODUCTION

In May 1904, American engineers, doctors, nurses, and laborers arrived in Panama to begin work on one of the most expensive, challenging, and rewarding technological achievements of the twentieth century- the Panama Canal. At the time, the majority of Americans saw Panama as a wild tropical jungle, with dangerous diseases and a hostile climate. One of the most prevalent diseases in tropical regions, yellow fever, also known as yellow jack, was known to pose an enormous challenge to the success of the canal construction- the first mountain blocking Panama from successful U.S. intervention (see image above). In the popular U.S. imagination, Panama provided opportunities for employment but at a potentially very high cost. The cartoon above also illustrates more public perceptions of Central American culture, that were to play a large role in the development of notions of U.S. superiority and right to imperialism. The skull itself gives the impression of a typical Mexican sombrero figure, lazily waiting for whoever might approach. This depiction fed into American stereotypes of lassitude as a common cultural feature among Latin Americans. Panama, blocked by death and a lack of inventiveness or energy, was apparently viewed by many contemporary Americans as an ideal location for U.S. intervention and construction.

As construction of the Panama Canal proceeded and conditions in the Canal Zone advanced, the conceptions of Panama in the United States began to improve, and more people began to see the canal as a remarkable achievement

and testament to U.S. power. By 1915, it was said by politicians, engineers, and historians such as the contemporary writer Logan Marshall that, “no material work of man since the creation of the world has had so deep and widespread an influence upon the affairs of mankind in general as that which may calculably be expected to ensue from the achievement of the Panama Canal”.²

The emphasis placed on sanitation and the successful management of death during the construction of the canal became one of the foundations of the developing U.S. hegemonic presence, particularly in Central America and the Caribbean. The canal was a physical reminder of the technological capabilities of the United States, as well as its ability to successfully organize a massive construction effort in a foreign country and influence nearly every aspect of life within the confines of the Canal Zone, including the maintenance of life itself.

Neocolonialism and the Path to the Canal

While the government, helmed by Theodore Roosevelt, maintained that the United States worked in tandem with the Panamanian government, the treaty allowing for U.S. ownership of the Canal Zone was hastily constructed and signed (without any native Panamanians present) within days of the United States’ recognition of Panama as a country.³ The influence of Europe, and later

² Logan Marshall, C. Harcourt, A.L. Forbes-Lindsey, *The Story of the Panama Canal: The Wonderful Account of the Gigantic Undertaking Commenced by the French, and Brought to Triumphant Completion by the United States* (Philadelphia: Winston, 1913), Google E-book. 5.

³ John Chasteen, *Born in Blood and Fire: A Concise History of Latin America* (New York: Norton, 2001). 206.

the United States, on Latin American society was so widespread and pervasive that 1880-1930, despite being a time of newfound independence, is often referred to as the *neocolonial* period.⁴ Much of the influence of Europe and the United States was through economic pressure and demands for Latin American products. Foreign businessmen invested millions into various Latin American products, from rubber to bananas, and these powerful financial factors led to a vested interest, particularly on the part of the United States, in maintaining 'order' in Latin American countries to ensure the continued supply of desired products.

Taking inspiration from the colonization efforts of European counterparts, particularly Great Britain, many Americans embraced the idea of influencing Latin American countries in 'our backyard'. Rudyard Kipling's "White Man's Burden" became an inspiration for U.S. diplomats regarding Latin America, with some politicians going so far as to suggest that the American people were destined by God to "lead the regeneration of the world."⁵ The Monroe Doctrine of 1823, proclaiming that the Western Hemisphere was 'off-limits' to those not part of it, had been largely ignored but now became the justification behind increasingly interventionist tendencies throughout Central America. This interference drastically changed the relationships between the United States and many countries in Latin America, and encouraged distrust and hostility towards the United States.

⁴ Chasteen, *Born in Blood and Fire*. 183.

⁵ Chasteen, *Born in Blood and Fire*. 207.

The new strain between the United States and Latin America necessitated, in the minds of many responsible for the canal, evidence of U.S. superiority. The growing empire of the United States utilized the unhealthful reputation of tropical environments to demonstrate and secure its preeminence. The ability of U.S. physicians to control the infamous tropical diseases that were so dangerous to the French construction effort in Panama was a key element to the success of the U.S. construction.

At the turn of the twentieth century, the United States, reveling in the success of the 1898 Spanish-American “splendid little war,” began exerting its power throughout Central America, the Caribbean and the Pacific Islands by annexing the Philippines, Puerto Rico and Hawaii within the same year.⁶ The Western hemisphere, perceived as the United States’ backyard, became a sort of social laboratory, a place where U.S. priorities and cultural standards could be preserved and cultivated.

For decades, the idea of a canal linking the Atlantic and Pacific Oceans through Central America preoccupied leaders around the world. As the prominence of the United States rose drastically going into 1900, so did the preoccupation of her leaders, such as Theodore Roosevelt, with the idea of a trans-continental canal. However, it would not be until the United States acquired the Panama Canal Zone through political machinations, the appropriation of millions of dollars, and heavy pressure from Theodore

⁶ This sudden expansion, paralleling the European scramble for ‘spheres of influence’ in Africa two decades before, created a perception of the United States as a Western colossus. For more, see Chasteen’s *Born in Blood and Fire*.

Roosevelt, that we see the inevitability of such a colossal project.

By the middle of the nineteenth century, U.S. and European interest in building a transoceanic canal through Central America had greatly increased. Anticipating the great advantage that a transcontinental canal could bring to a nation, the United States and the United Kingdom agreed in the 1850 Clayton-Bulwer treaty that neither country would construct such a canal. Twenty-nine years later, Ferdinand de Lesseps, the hero of the Suez Canal construction, proposed another French effort of immense magnitude, this time in Panama. De Lesseps used his legendary status to raise capital and support in France for this canal effort, despite firmly supporting what many engineers claimed was the least practical option: a sea-level canal through the jungles of Panama. In 1884, construction on the canal began, and was immediately beset by problems. Workers succumbed to tropical diseases at outstanding rates, and construction was difficult in the wet climate, which was prone to mudslides and flooding. The work lasted almost a decade before the project folded amidst tremendous scandal.⁷

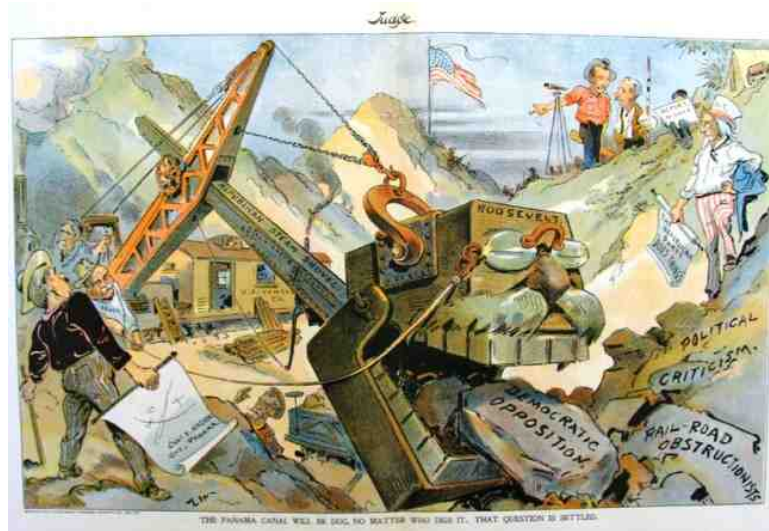
Following the French failure, the United States and Britain nullified their 1850 agreement in the 1901 Hay-Pauncefote Treaty, which allowed the United States to build and manage a canal through Central America, so long as all nations were permitted equal access. With the ratification of this treaty, the construction of a U.S.-built canal was under way. That same year, Theodore

⁷ David McCullough, *The Path Between the Seas: The Creation of the Panama Canal 1870-1914*, (New York: Simon & Schuster, 1977). 204, 236-7.

Roosevelt became President of the United States, and the Panama Canal was to be his self-described “most important action during the time [he] was President.”⁸ In 1903, the United States offered the Hay-Herran treaty to Colombia, then in control of Panama. The treaty would have permitted the United States to lease the land through which the canal was to be built. When Colombia demanded more money, however, Roosevelt angrily refused. The canal appeared to be put on hold, until later that year, when Panamanians led an uprising against Colombia and declared themselves an independent Republic.

The United States was the first country to recognize Panama as an independent entity in November 1903. Numerous critics, both contemporaries and those studying the canal years later, directly or indirectly accused Roosevelt of intervening in Panamanian affairs for U.S. gain. The political cartoon depicted on the following page is one such example of contemporary, albeit indirect, protest against Roosevelt’s heavy-handed methods.

⁸ Theodore Roosevelt, “How the United States Acquired the Right to Dig the Panama Canal” in *History of the Panama Canal: Its Construction and Builders* (Washington, DC: Historical Publishing Company, 1915). n.d. 225



Weeks after the rebellion, the Hay-Bunau-Varilla treaty granted the United States control over a strip of land, labeled the Canal Zone, for the building of the canal. U.S. Marines were quickly sent to the isthmus with the goal of guarding U.S. interests throughout the canal construction, adding to the melding of civilian and military presence in the Canal Zone.¹⁰ In order to manage construction on the canal, the Isthmian Canal Commission was created by President Roosevelt, and given complete control over all affairs in the Canal Zone, albeit under the umbrella of Congressional supervision. The Isthmian Canal Commission (ICC) was composed of a Chairman, originally the engineer John Walker, four engineers, an Army officer, and a businessman who was a

⁹ "The Panama Canal will be Dug, No Matter Who Digs it. That Question is Settled," Illustration. New York: *Judge Magazine*. From "The Almanac of Theodore Roosevelt," <http://www.theodore-roosevelt.com/toonsbytopicpanamacanal.html> (accessed July 2011).

¹⁰ Richard Grimmett, "Instances of Use of United States Armed Forces Abroad, 1798-2004," (Washington, D.C.: Library of Congress Congressional Research Service: Foreign Affairs, Defense, and Trade Division, 2004), accessed April 2, 2012 <http://www.au.af.mil/au/awc/awcgate/crs/rl30172.htm>

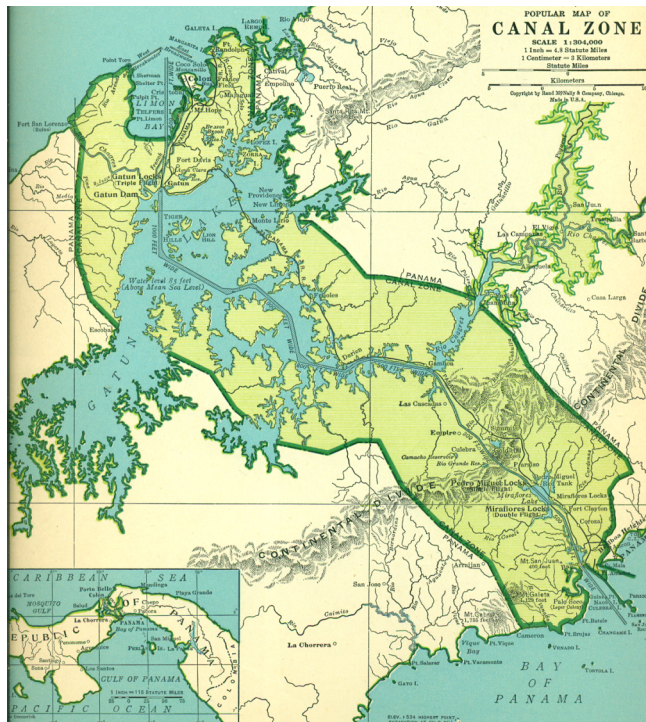
close friend of the President. These men were given complete freedom to accomplish their work within the confines of the Canal Zone, and were entirely responsible for building the canal; a construction effort that was begun in 1904 and was completed a decade later, in the summer of 1914, at the beginning of World War I.¹¹

The Panama Canal Zone was granted to the United States in a ratified treaty with the new Republic of Panama on February 26, 1904. The Canal Zone was defined as the ten-mile wide tract of land through which the Canal would be built, with five miles on each side of the Canal's planned center.¹² The Zone extended three marine miles into the Caribbean Sea and the Pacific Ocean on each end. The President of the United States was granted permission to purchase additional land as deemed necessary, and to determine the organization of towns and cities within the Zone. The Zone itself was to be entirely under U.S. control.¹³ The figure on the following page is a map of Panama's Canal Zone, with the Canal following a route exactly through the Zone's center. The major cities of the Canal Zone consisted of Ancon, the largest, on the Pacific end near Panama City, and Colon, as the Caribbean port the one through which Americans traveling to the isthmus would reach the Panama Canal Zone.

¹¹ McCullough, *The Path Between the Seas*. 12-13.

¹² *Canal Zone Code: An Act of the Congress of the United States of America to Establish a Code of Laws for the Canal Zone, Approved June 19, 1934.* (Washington, D.C. Government Printing Office, 1934). 3.

¹³ *Canal Zone Code*. 4.



The Panama Canal attracted a diverse group of people to the isthmus, both American and foreign, skilled and unskilled, male and female. By November 1904, three thousand five hundred men were employed to work on the Canal, two thirds of which were unskilled black laborers living in improvised shacks or the slums of Colón, the second biggest city in the Canal Zone.¹⁵ Of the remaining one third, the majority were Americans who, in the words of Lieutenant Robert E. Wood, an Army officer sent to Panama by the Isthmian Canal Commission, “had left the United States for this country’s good - railroad men who were blacklisted on the American railroads, drunks, and what we called tropical tramps...”¹⁶ Americans were attracted to the Canal Zone with the

¹⁴ *Popular Map of Canal Zone*. Map. Chicago: Rand McNally & Company. From <http://qalabist.com/wp-content/uploads/2011/03/panama-canal-1.jpg>

¹⁵ McCullough, *The Path Between the Seas*. 444.

¹⁶ McCullough, *The Path Between the Seas*. 444.

promise of free transportation to the isthmus, free housing, free medical care, and an average pay of \$87 per month, significantly higher than many could hope to make in the United States.¹⁷ Despite these attractions, the early reputation of Panama as a dangerous country for Americans made it difficult to get the number of employees initially desired by the ICC. The challenge of attracting U.S. workers to the Canal Zone is one of the reasons for the ever-increasing numbers of Afro-Caribbean and Central American laborers throughout the construction.¹⁸

By 1906, there was no appreciable increase in the experience or skill level of most Canal workers, but the number of workers had expanded to nearly 24,000 men. Despite heavy recruiting efforts in multiple U.S. cities, there was initially a dearth of skilled American laborers on the isthmus, even with transportation and housing provided free of charge. The vast majority of unskilled workers, employed primarily with the task of shoveling, were black and most often from Barbados, a country which ultimately supplied twenty thousand men throughout the construction.¹⁹ Segregation by color transitioned from an implied understanding to established policy, with even the pay dividing by color- skilled white American employees formed the “gold roll,” while black unskilled workers compiled the “silver roll.”²⁰ In addition to segregation, racism frequently surfaced in the recruiting practices and the attitudes of those in charge

¹⁷ McCullough, *The Path Between the Seas*. 473.

¹⁸ McCullough, *The Path Between the Seas*. 473.

¹⁹ McCullough, *The Path Between the Seas*. 472.

²⁰ McCullough, *The Path Between the Seas*. 472.

of the ICC, who believed that the heavy labor required would be best completed by an enormous number of men suited to physical labor in a harsh environment, which meant quite simply black workers from the West Indies.²¹ The segregation present on the isthmus helped to confirm notions of U.S. superiority through the maintenance of American workers as those skilled and well paid while black workers performed menial tasks for significantly lower wages.

Upon the acquisition of the Canal Zone, Panama was transformed into an enormous, and costly, showcase of U.S. power. The ability of the United States to insert itself into a foreign country and gain uninhibited ownership over a specific tract of land was an early demonstration of power and the United States' firm commitment at the turn of the twentieth century to maintaining order and influence in Latin America. This, combined with the technological marvel of completing a transoceanic canal, particularly where the French had tried and failed twenty years earlier, helped to establish the Panama Canal as a permanent, tangible manifestation of U.S. might and money.

The Panama Canal, by drastically cutting the distance traveled from the Atlantic to Pacific Oceans, offered immense economic benefit to the country in possession of such a canal, both through the money saved by cutting through Central America rather than circumventing the entire continent and the tolls of ships hoping to pass through. In addition to this economic gain was the strategic importance of controlling such a canal, particularly in the event of threats to U.S.

²¹ McCullough, *The Path Between the Seas*. 473.

power in the Western hemisphere. President Roosevelt, perhaps the biggest supporter of the canal project, claimed that, “no other great work now being carried on throughout the world is of such far-reaching and lasting importance as the Panama Canal. Never before has a work of this kind on so colossal a scale been attempted. It is worthwhile to remember just how it was that America won for itself and the world the right to do a world-job which had to be done by some one, and the doing of which by anyone else would have been not merely a bitter mortification but a genuine calamity to our people.”²² The Panama Canal was built for many reasons, economic and strategic, and of course, for the sake of national pride.

The significance of the Panama Canal, and the advances made in engineering as well as health care and statistics collection, had a substantial impact on early twentieth century life, and not just in Panama. The regulations put in place helped to transform Panama, and similar tropical environments, into more ‘habitable’ places for those from temperate climates. This, combined with faster travel, allowed for a new freedom of mobility, particularly for Americans and Europeans. Additionally, the Panama Canal was fundamentally a financial investment, not so much valued for the land itself as a physical representation of the millions to be spent, and later earned, by such a canal. Thus the focus on preserving the health of laborers in the years to come was in many ways another way of minimizing costs while maximizing profits, more good business than

²² Roosevelt, “How the United States Acquired the Right to Dig.” 225.

humanitarian interest, at least as far as the politicians and bureaucrats whose primary focus was the appropriation of funds were concerned.

Disease and the Canal

Countless contemporaries, from politicians to authors, claimed that the Panama Canal was one of the greatest accomplishments of the twentieth century, not only in terms of the engineering achievement, but also for the successes in tropical disease control by other engineering and technological advances. The contemporary historian Ira Bennett described the canal as “the greatest liberty man ever took with nature.”²³ Throughout the decade-long construction, sanitation efforts were in a state of constant evolution, from the statistics collected to the healthcare provided. By 1914, incredible advances had been made in the fields of statistics, disease control, and death prevention that were applicable beyond the Canal Zone, and often beyond the tropics. Understanding the management of death during this time period provides important insights into the multi-faceted aspects of the canal’s success.

While the canal proved to be a highly successful venture for the United States, in 1904 many were preoccupied with the mystery of the isthmus, the failure of the French to build a canal, and the criticism surrounding Roosevelt’s actions towards Colombia. The apprehensions surrounding Panama in the early years of construction primarily centered on the idea of the country as

²³ Ira Elbert Bennett, *History of the Panama Canal: Its Construction and Builders* (Washington, DC: Historical Publishing Company, 1915). 114.

unwholesome and dangerous for one's health. Reports circulated within, as well as outside of, Panama of numerous deaths due to the unstoppable tropical diseases, peaking with a yellow fever outbreak in 1905 that engulfed many on the Isthmus - particularly American employees unprepared for yellow fever - with fear, despite being comparatively smaller than many earlier epidemics.²⁴ As the dirt flew and the canal took shape, disease control also improved for both white and black laborers, and the death and illness rates decreased. With the conversion of Panama into an environment in which people could safely live, the popular perception of the land was transformed. Indeed, the suppression of disease was yet another example of the United States' ability to triumph over nature that could be attributed to the successful construction of the canal.

At the end of the nineteenth century, the United States gradually embraced more imperial goals, which in some ways paralleled but also strongly deviated from earlier European imperialism. For the United States, more than any other nation, imperialism was fundamentally rooted in engineering feats and practical advances²⁵. U.S. imperialism was strongly rooted in technological achievements and superiority, a factor that proved to be a defining aspect of the U.S. Panama Canal construction effort as well as a means of legitimizing U.S. intervention in technologically inferior places. Many American officers and engineers came of age in an environment in which they were constantly reminded of the technological superiority and overall advancement of the United

²⁴ McCullough, *The Path Between the Seas*. 454.

²⁵ Michael Adas, *Dominance by Design: Technological Imperatives and America's Civilizing Mission*. (Cambridge: Belknap, 2006). 150.

States, and told that U.S. achievements would spread throughout the world.²⁶ These advancements in technology and organization were believed to be responsible for the rise of the United States as a world power, and as such they could not fail to succeed anywhere there was U.S. colonization. Especially by the beginning of the twentieth century, technology and engineering became central concepts in the American identity, two of the most important factors in its emergence as a major global power. While many other European countries embraced the technological anchor for colonial efforts, the United States assumed that their successful sharing of U.S. advances could result in the adoption of Western culture and organization on the part of the colonies.²⁷

Although many supported the idea of a U.S. presence controlling the construction of a transoceanic canal, the beginning of the twentieth century was also a time when strong anti-imperialism sentiment was felt by many Americans . Following the Spanish-American war of 1898 that left the United States in possession of the Philippines, anti-imperial backlash rippled throughout the country. Anti-imperialists vocally protested against what the American Anti-Imperialist League, an interest group formed by politicians and other prominent men, described as “the extension of American sovereignty by Spanish methods... [holding that] imperialism is hostile to liberty and tends toward militarism.”²⁸

Public perception in the United States was torn between supporting the country’s

²⁶ Adas, *Dominance by Design*. 139.

²⁷ Adas, *Dominance by Design*. 165.

²⁸ “Platform of the American Anti-Imperialist League, 1899.” *Platform Of The American Anti-Imperialist League*, 1899 1.

recent trend towards international involvement and aggressively attacking what they perceived as a crime against liberty and democracy. Those who shared anti-imperialist sentiment were a widely disparate group of people, including African Americans who protested the inherent racism of such intervention, pacifists like the American Anti-Imperialist League who were afraid of the negative implications for the country's democratic character, and labor leaders who were concerned about the impact that foreign laborers from the colonies could have on national labor interests.²⁹

The highly public nature of anti-imperialist protest, as well as the variety of people who espoused anti-imperialism, proved a prominent challenge to the interventionist aspirations of U.S. leaders that required a positive demonstration of U.S. power abroad to help quell the anti-imperial protest. The successful control of disease during canal construction operates in the larger body of U.S. empire by providing legitimacy for U.S. interference, supporting the growing notion of the United States as similar to more blatantly expansionist European nations, and solidifying methods for gathering vital statistics that were put into widespread use.

This essay looks at how, what a contemporary surgeon described as the "triumph of American medicine" over what many Americans believed to be the hostile Panamanian environment, furthered the perception of Americans as more advanced than other nations. This superiority extended to interactions with

²⁹ "Platform of the American Anti-Imperialist League, 1899."

Europe, where the ability of Americans to control yellow fever when the French had failed provided more proof that the United States was destined for greatness. It also allowed the medical profession to accept concepts of U.S. growth and imperialism. The management of death and sanitation efforts during the construction of the Panama Canal played a critical role in the development and manifestation of imperial control by the United States.

The Panama Canal construction effort provided a chance to exhibit many different notions of U.S. superiority at work. U.S. expansionism was supported early on “with the notion of American exceptionalism based on a moral and political superiority over Europe.”³⁰ For example, the well-developed concepts of the racial superiority of whites over blacks remained highly prevalent throughout the construction, continually supporting the belief that the United States was preordained by racial superiority to help preserve order in Latin America³¹. This superiority extended to U.S. domination over disease, a major issue following the earlier decades that saw the rise of germ theory and significant advances in scientific understanding.

By using scientific prowess as another means to advance U.S. superiority, those statistics seen as ‘vital,’ such as births, marriages, and deaths, gradually expanded and became another means of extending superiority and exerting control by U.S. authorities on occupied territories. Vital statistics, fastidiously collected by health authorities on the isthmus from explicit records on hospital

³⁰ Mona Domosh, *American Commodities in an Age of Empire* (New York: Routledge, 2006). 4.

³¹ Chasteen, *Born in Blood and Fire*. 206.

admissions and deaths, are a means through which the management of health can be better understood.

Vital statistics also provide a lens through which to view the American pre-occupation with social reproduction in the specific geographic region of the Panama Canal Zone during the construction efforts. Social reproduction in this work is taken as the recreation and extension of a parent culture, in this case American society at the turn of the century. American bureaucrats on the isthmus fixated upon creating a microcosm in a foreign tropical environment. They utilized their ability to create and implement wide-scale regulations that allowed for the reproduction of U.S. culture. This reproduced culture also harbored distinct characteristics fitting to Panama. Social reproduction relies on active conscious replication encouraged by governmental input from central powers. It also depends on the melding of components of the old organization, U.S. culture, with new elements as deemed appropriate by those responsible.³² Along with social reproduction, legibility plays a critical role in the development of the Panama Canal Zone's unique society between American and Panamanian. A population is rendered legible by the clear identification of individuals, households, and even geographic features within a given area under official control.³³ The collection of statistics and the institution of specific regulations regarding various aspects of life on the Canal Zone to establish legibility was also

³² Richard Adams, "Social Evolution and Social Reproduction," *New Literary History* volume 22, issue no. 4. (Autumn 1991). 857-876.

³³ James C. Scott, John Tehranian, Jeremy Mathias, "The Production of Legal Identities Proper to States: The Case of the Permanent Family Surname," in *Comparative Studies in Society and History*. (Cambridge: 2001, Cambridge press). 4-44.

a means of state-making in the foreign isthmus. This quest for legibility in the Canal Zone rapidly superseded local practices, giving way to the need of officials in Panama to assert their colonial authority. This authority was exerted through monitoring the population of the Canal Zone and, by extension, their physical and social health.

My thesis will look at vital statistics through both angles, with the first chapter focusing on the collection of statistics and development of regulations. Chapters Two and Three will progressively delve into the more complex nature of managing cultural values and social reproduction through the enforcement of regulations and focus on the so-called vital statistics in describing and understanding the life of those living on the isthmus.

The work done by U.S. doctors and other healthcare providers in the Panama Canal Zone was a crucial aspect to the construction's success. Not only was the assurance of health necessary for the ability of laborers to continue work uninhibited, but also the larger ramifications of their work had a massive impact on the development of an early twentieth century American empire.

The development and implementation of strict health regulations offer a striking example of the concept of "bio-power" operating in a colonial setting. Defined by the prominent twentieth century philosopher and social theorist Michel Foucault, bio-power relies fundamentally on the assertion that the modern interest of those in power is the securing and extending of life. The

assertion of bio-power first takes the form of the discipline of the human body, developing in institutions such as schools and the military. This disciplining of the body results in the management of life as an effort to increase the discipline and effectiveness of a given population.³⁴ The assertion of bio-power through the disciplining of the body is reflected in the preoccupation that the ICC Commissioners had with productivity and efficiency. The regulations developed to monitor where employees were working and where they were sick became a fundamental way through which to control the Canal Zone.

Bio-power is also understood as the regulation of population; that is, the assertion of institutional power to maintain a continuous reinforcement of the working population.³⁵ The use of statistics to understand, and subsequently control, a given population through a detailed understanding of demography, is a fundamental feature of Foucault's definition of bio-power. The importance for ICC bureaucrats of making the Canal Zone legible is in itself a reflection of their assertion of bio-power, as are the increasingly detailed statistics collected throughout the construction on every aspect of health on the isthmus, from birth to death.

This thesis fits into a genre of writers who are thinking about the ways in which concepts of power are structured through projects of statistics and advancing technologies. While many works choose to focus on the engineering aspect of the assertion of power, my thesis instead looks at perceptions of power

³⁴ Michel Foucault, *The History of Sexuality: Volume 1*, (New York: Pantheon, 1978). 140.

³⁵ Foucault, *History of Sexuality*. 143.

through medicine and disease control. This project is an attempt to dialogue with works such as Julie Greene's *The Canal Builders*, Michael Adas' *Dominance by Design*, and Warwick Anderson's *Colonial Pathologies*, among others. Greene's work emphasizes the laborers who built the canal, as well as their families, and the policies established to maintain order in their lives in the Canal Zone.³⁶ Her work, like mine, focuses on a particular group of those on the isthmus, although this thesis has an additionally narrow perspective by virtue of the significantly smaller population I investigate. I am specifically looking at the actions of U.S. doctors and public health officials in the Panama Canal Zone. Laborers, rather than the subject as in Greene's book, are the means through which to gain more information about my subjects and as such are not a focus of this work. Adas' *Dominance by Design* focuses on the technological aspect of the assertion of U.S. power, based on its position as a technologically superior nation.³⁷ While Adas investigates the significant role of engineers in advancing this technologically based imperialism, I am looking at doctors as they first struggled to assert their advances as useful tools worthy of as much interest as engineering. Along with their work to assert professionalism and their scientific preeminence, these doctors became agents of the U.S. state abroad. This thesis, by focusing on doctors and public health officials, adds to Greene and Adas by exploring the sanitation efforts in the Canal Zone. *Colonial Pathologies*, likewise based on U.S. involvement in the Philippines, deals more directly with the attempts of U.S.

³⁶ Julie Greene, *The Canal Builders: Making America's Empire at the Panama Canal*. (London: Penguin, 2009).

³⁷ Adas, *Dominance by Design*.

doctors and colonists tried to exert control over the new territories by controlling disease and hygiene in the Islands.³⁸ U.S. occupation in the Philippines, however, was compounded by active resistance on the part of many Filipinos, a factor that did not play a role in Panamanian health control. My thesis closely parallels, on a much smaller scale, Anderson's *Colonial Pathologies* in the investigation of doctors' attempts to create a legible, controllable space in newly established colonies.

In order to understand the multifaceted impact of the management of both life and death, multiple primary sources will be investigated. The majority of these sources are the observations, whether officially recorded in statistics or unofficially summarized, of physicians working in Panama during construction. These sources offer an understanding of the quantitative aspect of disease prevention and death tolls in Panama, as well as insight into the knowledge that physicians had about tropical diseases and how that knowledge developed over the decade-long construction efforts in Panama. Instruction manuals for sanitation officers are also important sources for determining what the most pressing health issues were considered to be and what the sanitation authorities thought was the best response to these threats. The manuals, for example, included extensive regulations regarding the dead, demonstrating the significance of death from a health and social perspective, and the impact that a death from 'infectious' disease could have on the surrounding community.

³⁸ Warwick Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines*. (Durham: Duke, 2006).

Another set of sources that will be utilized is the official records kept by non-health authorities, for example letters from the Consul General and records of the Isthmian Canal Commission. These sources, while still from the perspective of elite white males on the Isthmus, offer insight into the changing views towards healthcare and sanitation on the Isthmus from those who had no understanding of the scientific basis for the regulations. Their observations, therefore, are more culturally based and may be closer to reflecting the layman's attitude towards health in Panama. These sources will be analyzed through the intersection of politics and anthropology.

The story of disease control during the building of the Panama Canal is one that centers on U.S. doctors and bureaucrats, and the ways in which they struggled for mastery over disease. The doctors attempted to use Panama as a means of creating their own legitimacy and confirming their ability to control their environment. In conjunction with these doctors' efforts, and in an increasingly coordinated manner, the bureaucrats in charge of the Canal Zone wanted to make Panama legible and disease controllable under their definitions of health and disease. Far from being a straightforward effort to jointly accomplish these goals, the construction of the canal was an often-difficult struggle for authority and preeminence among the Americans in charge, as well as against the challenges innate to maintaining health at the turn of the twentieth century in a tropical environment. Ultimately, out of the inherent difficulties and messiness came the emergence of an idea of U.S. superiority and the triumph of

American scientists over primitive ideas and the tropical landscape of Panama.

Chapter One will trace the development of the scientific ideas that helped to control tropical diseases in Panama, as well as the struggles facing healthcare providers hoping to implement the necessary changes. Chapters Two and Three will investigate the gradual development of strict regulations to limit disease without spending more money than the commission felt necessary. Finally, Chapter Four will look into the effect of the canal construction on perceptions of U.S. power and superiority in the minds of non-medical Americans and foreigners towards the canal's completion.

The end of the nineteenth and beginning of the twentieth century saw rapid changes in scientific understanding, particularly in the field of disease transmission. These new developments would prove crucial to the success of disease control, and therefore the construction itself. However, it took a long time for the ideas to gain widespread acceptance. The struggle of Isthmian doctors to convince those in charge of the canal construction that their new methods were viable was one of the most substantial challenges facing the early years on the isthmus.

CHAPTER ONE: THE FIRST MOUNTAIN TO BE REMOVED

The years directly prior to the acquisition of the Canal Zone set the stage for U.S. doctors to possess the knowledge that would allow them to utilize sanitation reform effectively in Panama. The establishment of a Department of Sanitation proved a vast challenge in a foreign country that nobody had previous experience with, mostly due to the task of controlling disease across a body of land that was, particularly at first, very difficult to traverse quickly. The struggle of doctors, and under them nurses and sanitary inspectors, to understand the rapid increase in knowledge about tropical diseases, to implement it under the supervision of a bureaucracy dominated by engineers and businessmen with no medical experience and no inclination to spend thousands of dollars to fumigate or screen every building, and to determine the best ways to treat sick patients in the Canal Zone, led to many debates and the gradual development of specific, highly detailed regulations regarding the obligations of healthcare providers.

This chapter will address the understanding of tropical diseases when the construction of the Panama Canal began, and how Dr. William Crawford Gorgas, upon assuming control of sanitation in the Canal Zone, utilized this knowledge and often struggled with bureaucratic red tape to accomplish what he deemed necessary in the first years. Chapter One will also discuss the early regulations developed by the Isthmian Canal Commission, under advisement by doctors and sanitary officers. These regulations were an early effort by the ICC and U.S. doctors in Panama to ‘decide’ the value of certain diseases, but most importantly

of certain lives, on the isthmus. Was a black West Indian laborer who worked with pick and shovel worth the same amount of paperwork and medical care as a white American engineer? The question of who counted, and how much they counted, was one of the main issues facing ICC Commissioners and, by extension, the doctors who relied on their approval.

I will first turn my attention to these U.S. doctors and how their experiences with disease control, particularly for yellow fever and malaria, as well as their gradual development of important regulations and practices, helped to form the attitude of U.S. superiority that provided further justification for expansionist involvement throughout the early twentieth century. The physicians were able to combine their healthcare exertions with the bureaucratic accumulation of data and strict regulation of sanitation efforts, creating an environment where health regulations were paramount.

Construction on the Panama Canal began at a time when health professionals advocating germ theory were beginning to dominate, but still clashed with, those firmly entrenched in the traditions of medical care. In the years before construction of the Panama Canal began, knowledge about tropical diseases, once greatly limited and almost completely ineffective, was significantly advanced by research conducted by doctors in the field, in countries from Cuba to India.³⁹ The 'tropics,' widely regarded as dangerous for white men and women, became a new realm of possibility for safe and productive

³⁹ Gordon C. Cook, "History of Tropical Medicine, and Medicine in the Tropics." In *Manson's Tropical Diseases*. 22nd ed. (China: Elsevier, 2009). Google E-book. 1-9.

expansion. Recent knowledge about the transmission of various infectious diseases, and the importance of proper sanitation for maintaining health in a large population, became crucial aspects of disease control in Panama.

Understanding of disease transmission underwent enormous changes throughout the nineteenth century. In the early 1800s, many public health reformers and physicians agreed with the idea, developed by Thomas Sydenham in the seventeenth century, of miasma, a contamination of the atmosphere caused by invisible particles that came from 'unhealthful' substances like refuse. The miasma theory seemed to suggest that environmental alterations would be the strongest way to combat the spread of disease.⁴⁰ Miasma theory was seemingly supported by epidemics throughout the world, particularly of cholera, which appeared immune to quarantine practices. The bulk of the nineteenth century was dominated by miasmatic theory, although many physicians attributed other causes to certain specific diseases. For them, some diseases were more likely to be caused by miasma, while others, like consumption, were still thought of as at least partially hereditary.⁴¹ Miasma theory went hand-in-hand with the concept of filth diseases, which relied on the conviction that filth was the cause of all diseases.⁴²

As the nineteenth century progressed, however, a new theory of disease transmission became increasingly prominent. In the 1880s, the idea of bacteriology, advanced by findings from prominent scientists like Louis Pasteur

⁴⁰ Dorothy Porter, *Health, Civilization and the State* (New York: Routledge, 1999). 82.

⁴¹ Porter, *Health, Civilization and the State*. 85.

⁴² Porter, *Health, Civilization and the State*. 82.

and Robert Koch, was gradually introduced into the forefront of the contemporary medical consciousness. Bacteriology introduced the idea of microscopic organisms as causes of disease. However, a greater understanding of bacteria and the development of antiseptic techniques did not solve the issue most applicable to tropical diseases- transmission via insect vectors. This advance remained a few decades away.⁴³

While numerous doctors were excited about the therapeutic possibilities of bacteriology, which advocated rationality sustained by laboratory experimentation over just clinical observations, and a new idea of disease as an objectified challenge rather than an inherent imbalance, there were significant numbers of physicians who resisted the theory, especially in the United States.⁴⁴ Many physicians, particularly those of older generations, resisted bacteriology by claiming that it did not contribute to therapeutic methods that actually cured patients, and more importantly, that germ theory would oversimplify the practice of medicine, as it could not hope to account for the complexity of clinical symptoms or the judgment of a skilled physician.⁴⁵ While U.S. physicians were largely unwilling to embrace germ theory, many citizens were fascinated by the idea of disease transmission caused by bacteria, reflected in the increasing attention given to bacteriological research in non-medical journals.⁴⁶

⁴³ Cook, "History of Tropical Medicine."

⁴⁴ John Warner, *The Therapeutic Perspective: Medical Practice, Knowledge, and Identity in America, 1820-1885* (Princeton: Princeton, 1997). 278.

⁴⁵ Warner, *The Therapeutic Perspective*. 281.

⁴⁶Ira Rutkow, *Seeking the Cure: A History of Medicine in America* (New York: Scribner, 2010). 70.

As physicians debated disease control going into the twentieth century, it was the state of affairs in the United States itself that helped to advance new medical knowledge. Experiences from the Civil War, cholera outbreaks in the United States' biggest cities, and life in Southern states helped form basic tenets of sanitation that were extended to the Spanish-American War and to the U.S. presence in Cuba at the turn of the century.⁴⁷ General George Miller Sternberg, who served from 1893 to 1902 as the Surgeon General of the United States Army, wrote of the lessons learned by the U.S. military before, during, and after the Spanish-American War. In comparing the average annual death rates from typhoid fever of soldiers and residents of Washington, DC between 1888 and 1897, 55 soldiers per 100,000 died whereas 78.1 residents per 100,000 died.⁴⁸ Sternberg utilized these statistics as positive indicators of health during peacetime. However, the advent of the Spanish-American War soon negated this progress, with health rapidly deteriorating in the armed forces. The inadequate sanitation measures and low number of physicians contributed to extremely high death rates, averaging 1,237 per 100,000 during the war throughout the Caribbean and Pacific islands.⁴⁹ Although typhoid was present at low rates during peacetime, its presence exploded due to poor sanitation and low

⁴⁷ The Spanish-American War of 1898 was a particularly important conflict for determining and advancing the role of sanitation in the prevention of disease. The war demonstrated the significance of sanitary measures for preventing the spread of deadly diseases such as typhoid, and for maintaining a viable military force in unhealthy conditions. For more information, see Sternberg's *Lessons of the War*.

⁴⁸ George Miller Sternberg, *Sanitary Lessons of the War and Other Papers*, (Washington, DC: Adams, 1912) Digital copy from National Library of Medicine. 4.

⁴⁹ Sternberg, *Sanitary Lessons of the War*. 5.

physician numbers. Sternberg's observations of the deficiencies in care that encouraged the growth of diseases like typhoid allowed him to gain a unique first-hand perspective on the effect of inadequate sanitation on large populations in close contact. Despite the heavy losses to disease, Sternberg took away valuable lessons from a health standpoint, and used his knowledge to offer advice regarding the imminent Canal construction.

Following the war, hygiene and sanitation became one of the most important tasks for the medical corps of the army, as well as the most significant course at the Army Medical School.⁵⁰ These measures included the establishment of camps on high, well-drained ground, the burial of refuse, the boiling of water to be drunk, and prompt attention to cases of fever, with isolation as the most common method of control.⁵¹

Tropical diseases, by virtue of their exotic and poorly understood nature, proved some of the most fascinating diseases focused on in the end of the nineteenth and beginning of the twentieth centuries, as Americans and Europeans became exposed through increased travel and communication. Of the known tropical diseases, none were more feared than yellow fever and malaria. Yellow fever, also known as yellow jack or black vomit, plagued the tropics from South America to Africa, earning a reputation for decimating the immigrant populations of Europeans and North Americans. For centuries, it was thought that yellow fever was a 'filth disease,' spread through unclean conditions and the

⁵⁰ Sternberg, *Sanitary Lessons of the War*. 5.

⁵¹ Sternberg, *Sanitary Lessons of the War*. 9.

general unwholesomeness of these tropical environments. This theory of 'filth diseases' was rational in the context of contemporary knowledge- diseases like yellow fever did not spread through direct human contact, and therefore at least appeared to challenge the recently established bacteriological model. This view began to change when Dr. Carlos Finlay of Havana, Cuba suggested a radical new idea in 1881- that of mosquito transmission of yellow fever.⁵² While Josiah Nott of New Orleans had suggested that mosquitoes gave rise to malaria and yellow fever in 1848, there were few believers and little evidence until Finlay's assertion gave rise to the first serious investigation of yellow fever transmission from mosquitoes.⁵³ From 1881 until 1900, Finlay conducted research on the role of mosquitoes in transmitting yellow fever by working with non-immune white adults who were considered most susceptible to yellow fever.⁵⁴

Finlay's theory was soon proven correct through the work of William Crawford Gorgas, later the Chief Sanitary Officer of the Panama Canal, the famous physician Walter Reed, and other U.S. doctors stationed in Havana, Cuba. Most of the research into the mosquito transmission of disease was conducted with human patients in 1900; with the doctors themselves often serving as test subjects. Dr. Jesse William Lazear, one of the researchers responsible for the mosquito classification and infection, fell victim to yellow

⁵² Sternberg, *Sanitary Lessons of the War*. 53.

⁵³ Randall M. Packard, *The Making of a Tropical Disease: A Short History of Malaria*. (Baltimore: Johns Hopkins, 2007).

⁵⁴ George Miller Sternberg, "Dr. Finlay's Mosquito Inoculations," *American Journal of the Medical Sciences* CII (1891) 6: 629, 630.

fever in this time.⁵⁵ Some of the tests conducted by this group of physicians, in which non-immunes would allow themselves to be bitten by mosquitoes and would then be observed in a mosquito-free environment to see if they developed the disease, proved conclusively that yellow fever was indeed transmitted via mosquitoes. At the end of 1900, the American doctors successfully proved that the *Stegomyia*, a mosquito with limited local range but deadly effect, transmitted yellow fever to humans.⁵⁶

Sternberg himself quickly embraced the idea of germ theory and was responsible for documenting malaria transmission, identifying the roles of bacilli in tuberculosis as well as typhoid fever, discovering the cause of lobar pneumonia, and even writing a critical text, *Manual of Bacteriology*. It is this combination of achievements, and the fact that he was the U.S. Army Surgeon General until 1902, that led to his moniker of the first U.S. bacteriologist, and gave him credibility among the bureaucrats and politicians looking towards disease control in the imminent Panama Canal construction effort. Sternberg offered his advice to those in charge of the then-imminent canal, claiming that to neglect sanitary advances was bordering on criminal activity. While those lawmakers who developed early sanitation rules may not have agreed as to the criminal nature of neglecting proper sanitation, American Medical Association President Charles Reed stated that, “the question of sanitation on the Isthmus

⁵⁵ “The Mosquito and the Yellow Fever,” *The New York Times*, Dec. 25, 1900.

⁵⁶ H. B. Allen, *Report on the Health Conditions at Panama, Commonwealth of Australia*, 1913. Textual Archives Services Division, Record Group 185, National Archives, Washington, D.C.

was considered of so much importance that it was made a subject of special provision in the Canal Convention entered into between the Republic of Panama and the United States. There is, in fact, no stipulated cession to the United States that does not carry with it the expressed right of sanitation."⁵⁷ While Sternberg did argue for sanitation as morally necessary, the United States' preoccupation with proper sanitation was in fact a result of the previous experiences of the Panama Railroad construction and the French attempt to build the canal. The insurmountable challenges encountered by these efforts, especially the heavy toll from tropical diseases, confirmed for those charged with the U.S. construction effort that sanitation was the most fundamental problem facing the building of the canal, one to be solved even before engineering.⁵⁸ Through observing the devastation wrought upon earlier construction efforts in Panama, those in charge of organizing the efforts preferred to view sanitation as necessary from the perspective of construction continuing, rather than from moral significance.

Despite vociferous humanistic claims, Sternberg went on to say that, "a Jamaica negro who is employed simply to handle a pick or a shovel, may be easily replaced; but when an engineer who has charge of a steam shovel falls sick, the expensive apparatus which he has been trained to control may lie idle."⁵⁹ Like so many of his contemporaries, Sternberg clearly identified one's importance with productivity, and value with how irreplaceable was the service

⁵⁷ U.S. Isthmian Canal Commission, *Sanitary Conditions on the Isthmus of Panama: Reply of the Isthmian Canal Commission to the Report of Dr. C.A.L. Reed With Letters of the President and Secretary of War in Reference Thereto*, (Washington, DC: 1905). 39.

⁵⁸ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 40.

⁵⁹ Sternberg, *Sanitary Lessons of the War*. 39-40.

rendered. This way of judging was to become extremely prevalent during the construction of the Canal, and formed an even stronger part of the American preoccupation with productive and by association, moral superiority. One's productivity, and therefore their usefulness to the construction effort, was for the ICC commissioners a critical way of measuring the success and worth of employees. This preoccupation gradually extended to physicians and other healthcare providers on the isthmus, where racial and social divisions were amplified by this additional consideration of one's productivity.

In 1902, Walter Reed died of appendicitis, leaving William Crawford Gorgas to take his place in professional circles as the outstanding U.S. authority on tropical diseases.⁶⁰ Gorgas was born in 1854, and graduated from New York City's Bellevue Hospital Medical College in 1879, before joining the army as an assistant surgeon in June 1880. Gorgas spent many years in Texas, contracting yellow fever once while he was there, rendering him immune to the disease. In 1898, the same year as the Spanish-American War, he was sent to Cuba, where he became the Chief Sanitary Officer for the city of Havana and assisted Walter Reed and other doctors in proving that yellow fever was transmitted by the *Stegomyia* mosquito, a discovery which allowed for the successful eradication of yellow fever in Havana.⁶¹ In 1904, Dr. William Henry Welch, a celebrated physician at Johns Hopkins Medical School, made a personal call to President

⁶⁰ McCullough, *The Path Between the Seas*. 407.

⁶¹ "William Crawford Gorgas: Major General, United States Army," Arlington National Cemetery Website, accessed April 1, 2012, <http://www.arlingtoncemetery.net/wcgorgas.htm>.

Roosevelt in order to convince him that a sanitary officer was crucial to the construction effort, and that the best man for the job would be none other than William Gorgas.⁶² Upon the formation of the Isthmian Canal Commission, Gorgas was appointed the Chief Sanitary Officer, assigned to work to maintain health in Panama under the command of the ICC.

Despite the earlier work done in Cuba by Gorgas and his colleagues to prove otherwise, many still believed that yellow fever was, in fact, a filth disease. Gorgas himself was highly criticized in his early days as Chief Sanitary Officer by many who refused to subscribe to the germ theory as he did. While Gorgas was actively engaged in a large discussion regarding transmission, internationally and among multiple types of health-care providers, he still encountered resistance among those who did not believe the germ theory to adequately account for the spread of disease. When construction of the Panama Canal began, Gorgas, in his new role as the Chief Sanitary Officer, attempted to eradicate yellow fever through advanced sanitation measures. At the beginning of Canal construction, in July 1904, Gorgas ordered that Ancon Hospital, the largest hospital in the Canal Zone's most populous city, be measured for screens, designed to keep mosquitoes away from patients and therefore reduce chances of transmission. By October, however, hospital buildings were still not screened, and Rear Admiral John G. Walker, ICC Chairman, did not show any indication

⁶² McCullough, *The Path Between the Seas*. 407.

he would ensure their arrival.⁶³ The image of Ancon Hospital below helps to demonstrate the challenge of the hospital atop a hill, surrounded by dense tropical vegetation perfect for breeding mosquitoes. Although taken in 1910, the buildings at the top of the hill were present when Gorgas took control of the Sanitary Department, relics from the French construction effort that were renovated in the first years of U.S. construction.



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Walker, an engineer with no medical expertise, held on to his belief that yellow fever was caused by miasma, not mosquitoes, leading to the delay of sanitation measures in the hospital. Walker's resistance to screening hospital buildings became a symbol for the larger battle of theories: the one, proven by doctors, that mosquitoes transmitted yellow fever, and the other, held by many, including members of the ICC, that yellow fever was fundamentally a filth disease.⁶⁵ Even after proof existed that yellow fever was transmitted via

⁶³ "Construction Days: Ancon Hospital 1904-1914." *The Panama Canal Review: Diamond Jubilee Supplement* Nov. 1, 1957. 7.

⁶⁴ Walter Wyman, photographer. "General view of Ancon Hospital from Ancon Hill, showing all the wards in 1910." Photograph. U.S. Public Health Service, n.d. From National Archives, Washington, D.C.: *Records of the Panama Canal*. Digital copy.

⁶⁵ "Construction Days: Ancon Hospital 1904-1914." 10.

mosquitoes, many influential Americans still refused to believe that a mosquito could be responsible for a disease as devastating as yellow fever.

As large a role as yellow fever played in tropical life, malaria was the infectious disease that proved to be the most influential, and the one that most preoccupied physicians and ICC Commissioners in the Canal Zone.⁶⁶ While not as devastating as yellow fever in terms of fatalities, malaria was an endemic problem, producing high sickness rates that kept laborers unable to work for long periods of time. In 1897, the British physicians Ronald Ross and Patrick Manson concluded a decade of work proving that mosquitoes were responsible for the transmission of malaria. Ross and Manson spent much of their careers in India and Shanghai, respectively, where they were afforded ample opportunity to study mosquitoes and their as yet unknown role in transmitting disease. Over the course of a decade, the doctors shared their findings and theories, ultimately confirming “the transmission of malarial fever by anopheles mosquitoes.”⁶⁷ While malaria continued to plague tropical regions for many years, knowledge about its transmission gradually led to more effective disease control and further support for sanitation reform.

The priority of the Isthmian Canal Commission was to ensure the most cost-effective and quick construction of the Panama Canal. This had far-reaching

⁶⁶ Lt. Col. Charles F. Mason, *Sanitation in the Panama Canal Zone*, (Mount Hope, C.Z.: Panama Canal Press, 1916). 11.

⁶⁷ Samuel Darling, “Transmission of Malarial Fever in the Canal Zone by Anopheles Mosquitoes” in *Section on Practice of Medicine of the American Medical Association*, 60th Annual Session. June, 1909. 1.

implications for medical care and sanitation reform in the Canal Zone, as the desire to cut costs occasionally clashed with, and therefore superseded, the measures advocated by Gorgas and other physicians to achieve optimal health. After the debacle of the French effort, many, particularly politicians, were reluctant to support such an expensive project without the guarantee of success.⁶⁸ Support for the canal increased drastically, fueled mainly by ideas of U.S. dominance and control but the concern over cost and time was still a major obstacle⁶⁹. The ICC was charged with achieving this construction as efficiently as possible, with Congress having the power to approve or reject appropriations to pay for all aspects of Construction.

It is this preoccupation with reducing costs that proved a challenge to Gorgas' disease control efforts in 1904, as then-Chief Engineer Walker resisted spending money for what Gorgas believed were necessary sanitation measures. In contrast to the bureaucrats of Congress and the ICC, Gorgas had a largely different motivation in accepting the position of Chief Sanitary Officer in Panama. For him, the Panama Canal was the ideal opportunity to perfect the medical knowledge of tropical diseases, hard-won in Cuba during the Spanish-American War. It was an opportunity to prove that the tropics could be safe environments for those from temperate climates, that with proper disease control efforts, developed through scientific advances, anybody could thrive in any environment, even one as challenging as Panama. The confidence and

⁶⁸ McCullough, *The Path Between the Seas*. 315.

⁶⁹ Ira Elbert Bennett, *The History of the Panama Canal: Its Construction and Builders* (Washington, DC: Historical Publishing Company, 1915).19.

superiority of U.S. physicians, developed over the preceding century as they struggled to assert themselves professionally, translated into the perception of Panama as a worthy challenge of their skill in eradicating disease⁷⁰.

The successful control of disease in the Canal Zone required the creation of a strong organization that could effectively manage health among a large and diverse group of people. Upon the formation of the Commission, one of the most important tasks facing them at their August 1904 meeting in Ancon was to create a Board of Health. A report presented during this meeting established a Board of Health, which was given the power to make regulations, effective after approval from the Commission itself.⁷¹ While the Board was ostensibly granted power, the oversight of the Washington-based Commission made it impossible for expedited regulation enforcement, and indeed seriously limited the abilities of Gorgas and his department in the early months of the construction.

With Gorgas' frustration mounting, then-Secretary of War William H. Taft sent Charles A. Reed, President of the American Medical Association to Panama in February 1905 to investigate the status of sanitation and the sanitary department in the Canal Zone. Immediately following his visit, Reed submitted a lengthy and detailed report, entitled *The Mismanagement of the Panama Canal: Report to the Government by Dr. Charles A. L. Reed, Showing How the Commission Makes Efficient Sanitation Impossible*. Reed's time on the isthmus allowed him to

⁷⁰ Rutkow, *Seeking the Cure*. 134-7.

⁷¹ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 41.

forcefully conclude that while he was “impressed with the efficiency and the zeal of the sanitary staff [as] very much has been accomplished in the way of sanitation under exceedingly adverse circumstances...very much more ought to be done and would have been done if the facilities had been properly furnished.”⁷² Reed’s anger at the lack of assistance to the sanitation effort manifested itself in a detailed description of the challenges faced by Gorgas, “the foremost authority in the world in solving the peculiar problems that are connected with sanitation on the Isthmus, [who was] made an instrument of a whole series of men who confessedly are ignorant of the very questions with which he is most familiar.”⁷³

Reed divided his report into several sections addressing what he saw as the largest barriers to Gorgas’ success on the isthmus, beginning with the department’s inability to make decisions regarding its own supplies. The Sanitary Department’s exclusion from a group of executive bodies able to appropriate their own supplies resulted in a reliance on the Governor or Commission, and thus the loss of potentially valuable time, as in the instance cited by Reed of an X-ray outfit for Ancon Hospital (still lacking at the time his report was submitted).⁷⁴

Reed also faulted the Commission for their reluctance to hire experienced physicians. Gorgas believed that experienced doctors were crucial in the Canal Zone due to “the fact that medical men in the Zone would have much executive

⁷² U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 39.

⁷³ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 42.

⁷⁴ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 43.

work to do; that they would have to deal with large bodies of workmen, and that their duties would require the exercise of trained judgment in a very broad sense.”⁷⁵ The challenges facing doctors in Panama, dealing with tropical diseases they were unlikely to encounter in the United States, convinced him that doctors serving on the isthmus would be most useful if they were experienced prior to their arrival. Instead, the Commission decided to train young physicians in tropical diseases, paying them a nurse’s salary to come to the Isthmus for a year with the expectation that they will return to the United States after their brief time in Panama. On the one side, Walker represented the commitment of the ICC to limiting expenditures and not spending significantly more money on experienced doctors who were not guaranteed to remain on the isthmus, when they could instead spend much less money on relatively young interns who would ostensibly learn how to treat these tropical diseases and, if they were to return to the United States, would not be a gigantic loss to the disease control effort. On the other side, Reed represented knowledgeable physicians who believed that a challenging tropical environment like Panama provided more incentive for recruiting the most skilled physicians, regardless of the possible cost, due to the probable benefit that having such an experienced doctor would offer. The willingness to recruit inferior, untrained doctors demonstrates the degree of emphasis placed on reducing expenditures despite recommendations by experts to the contrary. An intern in the Canal Zone earned \$600 a year, while

⁷⁵ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 45.

physicians earned between \$1,500 and \$2,400 a year, almost three to four times as much.⁷⁶ The salaries of doctors and interns on the isthmus serve a greater purpose within the context of this chapter, however, as they are illustrative of the larger debate between physicians and the non-medical ICC commissioners regarding notions of efficiency. For many doctors, represented by Charles Reed, the well-trained researcher/doctor was invaluable for their ability to think and revise disease control efforts, and thus paying a full salary for an experienced physician was entirely worthwhile. On the opposing side, however, are the ICC commissioners, who, in their fixation on maximizing productivity with minimal costs, were willing to acquire untrained physicians, likely to be capable of managing typical or more straightforward cases, if it meant saving a significant amount of money. The debate over who to pay to be responsible for healthcare in Panama is emblematic of a larger debate, present throughout the first years of construction, over how to balance the desire for maximized efficiency with the need to prevent the spread of deadly, and thereby costly, diseases in the Canal Zone. By recruiting interns rather than fully trained physicians, the Commission was able to save a substantial amount of money.

Reed's anger at the impossible challenges facing those attempting to control the spread of disease was such that he requested the resignation of the entire Commission, claiming that through their spiteful and ignorant actions, they directly disregarded the responsibility given to them by the President, to

⁷⁶ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 15.

serve with “utmost efficiency.”⁷⁷ Efficiency was the driving force behind the Commission’s actions and regulations, and this preoccupation became a pervasive aspect of disease management during the construction. The idea of maximizing efficiency also came to be a defining characteristic of modernization and of modern medicine. Gorgas himself, despite his primary focus on adequate disease control, and ideally eradication, felt the pressure of “efficiency.” For the Commission, efficiency was clearly defined by the least possible expenditure while still accomplishing visible results. Being able to show Congress and the president a certain number of tons of dirt removed and decreasing hospitalizations and deaths, while at the same time staying within the budget allotted, was the main concern. For Gorgas, efficiency would be defined as effective sanitation that required less output of both money and labor on the part of the sanitation division. The most economical treatment of the diseases encountered, without lengthy hospitalizations or high mortality, was a large part of how Gorgas and his sanitary team defined their effectiveness.

Perhaps the most damaging aspects of Walker’s reply to the credibility of Reed’s report are the (admittedly few) direct quotes from the Chief Sanitary Officer, William Gorgas, himself. While Gorgas had professed frustration with some of the handling of sanitary measures on the part of the Commission, it appears that he largely understood their positions, such as his February 1905 letter wherein he stated, “in my opinion no special regulation by the Commission

⁷⁷ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 62.

is necessary for carrying out the views expressed... The scheme seems to me good and to fulfill the requirements. If upon trial it is not found satisfactory, I shall report the circumstances to the proper authorities."⁷⁸ It seems that Gorgas' frustrations, while real and selectively shared, were not all-pervasive problems with the Commission as a whole, or were perhaps improved by Reed's report and the Commission's subsequent determination to prove his allegations wrong.

In forwarding the debate to President Roosevelt, Secretary Taft expressed his belief that Reed's report, while possessing some merit regarding undue delays and the difficulty of acquiring supplies, was biased and largely unprofessional. In committing himself to agreeing with the ICC, Taft firmly sided against the most medically sophisticated figure in this debate. In Taft's mind, the targeting of the Commission by Reed, without accounting for any information collected and distributed by the Commission, was the main fault of Reed's argument. In addition, the fact that Reed's assessment was published by medical journals despite the desire on the part of Taft, Roosevelt, and the Commission to maintain confidentiality, branded the report 'unprofessional.' In defending the Commission's actions, Taft stated that, "Colonel Gorgas and his staff believed that it would be wiser to give them an entirely free hand in the matter of ordering construction, supplies and the employment of subordinates. It is quite probable that had the approval of the Commission... been dispensed with there would have been fewer delays and less complaint on this account; but in the

⁷⁸ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 19.

expenditure of such large sums as were necessary for the organization of the sanitary system... it may well be doubted whether the Commission would have been discharging its duty in withholding supervisory control.”⁷⁹ For Taft, and under him the Commission, health was important, but primarily for the purpose of advancing the canal construction. In his capacity of Secretary of War and the supervisor of the Commission and canal project, Taft shared the prominent desire to reduce expenditures wherever possible, and limiting the Commission’s oversight ability would grossly undermine this priority. Thus, as important as sanitation endeavors on the isthmus were, Taft clearly prioritized the limiting of costs whenever possible, and was willing to accept that some results would therefore be less satisfactory. While this approach was condoned by the ICC, and even presumably by Gorgas to some extent due to his indicated approval of the Commission’s actions regarding the sanitary department, it appears that Reed did not agree with the subordinate role assigned to disease control.

Eventually, despite the doubts of ICC supervisors and considerable questioning of Gorgas’ fitness for the job of Chief Sanitary Officer, President Roosevelt threw his entire support behind Gorgas and insisted on full cooperation, influenced largely by the support Gorgas maintained from prominent physicians like his longtime mentor and supporter William Welch. Roosevelt’s response to Taft’s 1905 message, while largely in agreement with Taft’s view of Reed’s report, also faulted the laws restricting the Commission and

⁷⁹ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 4.

informed Taft that, “in view of our experience with the workings of the Commission, a rearrangement of duties and a change of personnel in view of this rearrangement should be made.”⁸⁰ According to an article profiling Ancon Hospital and the work of Gorgas, yellow fever remained containable for the first ten months of U.S. construction. In April 1905, however, an outbreak of yellow fever began in Panama’s Administration Building, spreading across the Canal Zone and causing 233 cases with 37 deaths from October 1904 to the end of September 1905.⁸¹ This proved to be the heaviest toll of yellow fever on the isthmus during the construction effort, attributed to the increasing “number of non-immunes – individuals who had never been exposed to yellow fever or malaria” in the Canal Zone.⁸²

After this first deadly outbreak of yellow fever in Panama, the sanitation reforms began to gradually take effect. With support from Roosevelt ensuring that Gorgas received more cooperation from ICC Commissioners, he was able to enact reforms that were not as extensive as he had originally hoped to use in Panama but were far better than those prevented by the resistance he had faced earlier. Roosevelt’s full support of Gorgas, combined with the positive results of sanitary efforts to control the spread of disease, led to a degree of autonomy under the umbrella of Commission control. In November 1905, Gorgas correctly predicted that he and the doctors under him had seen their last yellow fever

⁸⁰ U.S. ICC, *Sanitary Conditions on the Isthmus of Panama*. 6.

⁸¹ “Construction Days: Ancon Hospital 1904-1914.” 10.

⁸² “Construction Days: Ancon Hospital 1904-1914.” 10.

victim in the Canal Zone.⁸³ The successful control of yellow fever was a tremendous milestone in the fight against tropical diseases, and a step towards making tropical environments safe for white Americans and Europeans. In the popular perception, yellow fever was harder to eradicate, but Panama gradually began to be seen as less threatening, in large part due to this achievement.

In addition to yellow fever, malaria posed an undeniable challenge to the physicians and sanitation officers in Panama, but the creation of sanitation regulations and their strict enforcement helped to manage the disease and solidify the power of those in charge of health on the isthmus.

For the year 1906, Gorgas reported 21,739 cases of malaria with 233 deaths. 1907 showed slight improvement with 16,753 cases and 154 deaths, resulting in a slightly lower death rate. Malaria remained the most prevalent illness for several years of the construction, but extensive efforts at mosquito eradication helped to control its spread and limit the deadly impact.⁸⁴ Gorgas himself said that, "Panama, I suppose, is as favorable a place for the development of malaria as could be found... We knew from the experience of our predecessors on the Isthmus that malaria would be our greatest trouble, and we did what we could toward correcting the conditions. Our greatest endeavor has been toward draining the localities near towns and dwellings, so as to make the ground as dry as possible... With a large body of laborers, such as we have here, I think an equally important measure is the giving of prophylactic doses of

⁸³ "Construction Days: Ancon Hospital 1904-1914." 10.

⁸⁴ "Construction Days: Ancon Hospital 1904-1914." 10.

quinine. We also screened as many of the houses as possible and influenced all inhabitants to use mosquito-bars.”⁸⁵ In his own words, Gorgas’ appraisal of the disease control efforts in the early canal construction demonstrates his primary focus on prophylaxis and the eradication of mosquitoes through the elimination of areas with standing water. In the absence of malarial cures, Gorgas prioritized through inexpensive yet influential disease prevention measures.

While yellow fever and malaria were the main concerns for those attempting to maintain a healthy and functional labor force, other diseases, particularly those that were known to be infectious, were seriously combated throughout the Canal Zone. In order to ensure the best possible health for employees, particularly white Americans, on the isthmus, strict regulations were enforced through sanitation inspectors. Health, a main object of concern to those in charge of the construction, was mainly thought of in productive terms, and in the ability to maintain a significant portion of men able to perform the tasks for which they were hired. The inspectors made regular visits to the areas under their responsibility, beginning with the first regulations under the Isthmian Canal Commission’s *Laws of the Canal Zone*, which enacted Act No. 9, Sanitary Rules and Regulations, on September 2, 1904. This act, compiled by the ICC Commissioners Chairman Walker and six other men, among them four Chief Engineers and a Major-General in the U.S. Army, included plans for controlling the spread of over twelve diseases thought to pose a threat to the health of

⁸⁵ Mason, *Sanitation in the Panama Canal Zone*. 11-12.

laborers on the Isthmus, from cholera to venereal diseases. Under the authority of the President of the United States, the Commission outlined ten pages of regulations and consistently updated them throughout the construction of the canal as the knowledge about diseases afflicting workers increased. According to Section 1 of the Act, the Chief Sanitary Inspector was given the authority to make necessary charges for the completion of sanitation work, as well as being provided with “Sanitary Inspectors serving under him, who shall have the powers of deputies in such districts as the Board of Health may indicate.”⁸⁶ The creation of deputy inspectors allowed for farther-reaching sanitation reform, widespread throughout the entire Canal Zone and under the direct control of the Board of Health rather than the umbrella organization of the ICC. Gorgas was required to submit monthly reports of the status of health in the Canal Zone, submitted to the ICC Chairman and Congress itself. Many of Gorgas’ reports indicate his understanding of, and perhaps identification with, the bureaucratic priorities, as he described success in terms of ‘working efficiency.’ His usage of terms such as this demonstrates Gorgas’ ability to understand the priorities of his superiors to efficiently build a canal, and to advance his own work through association.

Gorgas’ compiled reports, as well as the *Sanitary Rules and Regulations Act* and numerous other formal reports, did not often address the workers or anyone else living in the Canal Zone, with the very specific exception of white

⁸⁶ John G. Walker et. al, *Laws of the Canal Zone: Isthmus of Panama Enacted by the U.S. Isthmian Canal Commission*, (Washington, DC: Government Printing Office, 1906). 69.

Americans. While the bulk of documents refer to workers only insofar as determining the average sick and death rates, the death of a white American resulted in a specific note of every case. Many of these correlate with letters of the American Consul General, whose records from the year 1912 demonstrate communication between the Consul General and the last known family member of any white American male who died on the Isthmus. The focus that bureaucrats on the isthmus directed towards sick or dead Americans, sharply contrasted with the reduction to statistics of nearly every other racial and ethnic group, again demonstrates the priorities of the ICC. As these priorities are clearly reflected in the reports of Gorgas and other sanitary workers as, it appears that Gorgas did prioritize American laborers strongly as well. The regulations, therefore, were intended more for the benefit of American labor preservation, but as Gorgas began insisting on widespread reform and disease control throughout the Zone, the restrictions thought of as necessary for maintaining productivity also helped to create a healthy environment for all other Zone inhabitants.

Coexisting with Reed's report, Gorgas' efforts, and the construction of the Canal, itself, was the development of a health bureaucracy as outlined in the 1904 ICC *Laws of the Canal Zone Act No. 9*. This act related specifically to the maintenance of health, and a detailed analysis of its structure, organization, and specific regulations offers insights into the mindset of the bureaucrats and physicians who developed these regulations. First, observing the order in which

diseases were addressed emphasizes the knowledge available at the time, and the priorities accorded to specific diseases in keeping with this knowledge. Second, the details within the disease-specific sections suggest the consensus at the time, with some addressed purely in the interest of prevention and others not addressed at all. Third, the lack of treatment-specific regulations highlights the focus of the ICC's efforts on prevention over cure and the primacy of efficiency. Fourth, and perhaps most importantly, the role and elevation of Sanitation Inspectors and the legalizing of sanitation efforts itself shows the focus of the health efforts in the canal.

With the 1904 Act of the Isthmian Canal Commission's *Laws of the Canal Zone*, Sanitary Inspectors joined doctors and other caretakers, such as nurses, to help prevent disease before it spread. Health efforts in Panama were to be largely managed by regulation and prevention through sanitation. This was based on the current theories of disease at the time, namely the debate between miasma and bacteriology & vector transmission. The first section of the Act concerned the description of 'nuisances,' which were defined as "whatever is dangerous to human life or health, whatever building, or part or cellar thereof, is overcrowded... and whatever renders soil, air, water, or food impure or unwholesome."⁸⁷ In addition to declaring these particular nuisances illegal, Act No. 9 outlined specific courses of action for their disposal. Various sections of the

⁸⁷ Walker et. al, *Laws of the Canal Zone*. 69.

Act outline the proper maintenance of privies, the use of the public water supply, and the closing of wells, among numerous other subjects.⁸⁸

The priorities of the ICC to maintain economical healthcare wherever possible were clearly established in the beginning of the construction. This was demonstrated in their willingness to recruit cheaper, yet more inexperienced doctors who had just completed medical school, to the Canal Zone, as opposed to senior doctors who had years of experience. Numerous physicians, most especially those dedicated to bacteriology, strongly advocated the hiring of experienced senior physicians, capable of curing these tropical diseases, albeit with a large requirement of time and money. Despite the successes of these doctors, those in charge of the Canal construction decided that this method was too expensive to be viable. As a result, the act and resulting policies enumerate many specific courses of action rather than individual physician-directed treatment. They therefore developed a cost-benefit analysis based not on the curing of these diseases, but on large-scale disease prevention, primarily through the eradication of mosquitoes and the cleaning of cities. The priorities of these young doctors and public health officials became the construction effort, not the patients themselves. Despite vocal complaints from some, such as Reed, this technique worked surprisingly well, even persuading doctors such as Gorgas. As demonstrated in Section 10 of Sanitary Rules Act, this approach filtered down to heads of families and teachers, transforming health on the isthmus from a

⁸⁸ Walker et. al, *Laws of the Canal Zone*. 69-74.

professional field exclusive to experts, to a more practical concern that all could achieve through community standards and management.

Numerous sections of the Sanitary Rules and Regulations Act understandably dealt with the issue of contagious diseases, but these diseases were addressed as a communal concern as well as a main priority of the Board of Health. By making these contagious diseases a matter of public interest, health and its active maintenance was transformed into an issue that concerned everyone, not just healthcare providers and the bureaucrats who dictated regulations. Similar to U.S. disease control efforts in the Philippine islands, the U.S. presence desired the incorporation of local populations into active participation in the governance and maintenance of the occupied territory.⁸⁹ While many occupants of the Canal Zone were not local Panamanians, they were helping to establish a colony in its own right in the Zone, and as such were subject to various attempts at encouraging prescribed involvement with the public health efforts

This expansion of bureaucratic disease control efforts to all residents of the Isthmus is one of the earliest examples of efforts to exert bio-power in the Canal Zone. Section 10 of the Act is titled *Contagious Diseases*, and outlines the obligation of “every physician, druggist, school-teacher, clergyman, midwife, nurse, and every head of the family having knowledge of any of the following named diseases [to] report the same to the Sanitary Inspector, or to the Board of

⁸⁹ Anderson, *Colonial Pathologies*.

Health: Asiatic cholera, yellow fever, typhus fever, small-pox, chicken pox, plague, dysentery, diphtheria, and membranous croup.”⁹⁰ It is clear from the language of this report that the head of family had a role almost as important as that of the healthcare professionals themselves in identifying disease. While not explicitly defined as such, the head of the family was understood to be the male father figure. Heads of families, therefore, joined schoolteachers as the two non-professional healthcare providers charged with reporting the presence of disease. While the schoolteacher may not have been as prevalent on the Isthmus, it is clear that there were some children and provisions were being made to ensure their safe and healthy education.

The majority of diseases were accorded their own section for additional, specific regulation. Smallpox was the first such disease to have a section dedicated to its specific management, despite the existence of a successful vaccine for 100 years. Seemingly, those in charge of health on the Isthmus still believed it posed a danger, and a substantial enough one to merit a “hospital, or other building, designated for [the] district and for this purpose by the Board of Health.”⁹¹ The Board of Health, and not the ICC itself, was the power capable of determining and appropriating buildings in the Zone for the successful control of disease.

One of the primary methods for disease control under the Board’s supervision was fumigation, a common technique for destroying mosquitoes

⁹⁰ Walker et. al, *Laws of the Canal Zone*. 71.

⁹¹ Walker et. al, *Laws of the Canal Zone*. 71.

and, ideally, discouraging their return for a short period of time. The role of fumigation in the minds of these doctors as a crucial sanitary measure was made clear by its frequent appearance in these regulations, including the sections on smallpox, yellow fever, and plague. Although yellow fever was considered to be a much more dangerous disease, at least so far as common perception was concerned, smallpox is addressed in the section prior to yellow fever. This helps to demonstrate that the Act was based on science and therefore, starting with a disease rooted in bacteriology with a known mechanism of transmission, as well as a vaccine already present, was a way to demonstrate their medical knowledge and ability to control some diseases while others were still poorly understood.

Yellow fever formed the subject of Section 12 of the Act, and was understandably addressed with the most rigor and detail, given its preeminence among contagious diseases in early twentieth century Panama. The regulations regarding the control of yellow fever suggest that, while significant advances were being made in the prevention of the disease, care upon infection was still in its infancy, and healthcare providers could do little more than isolate the patient and the house from which the infection arose. Section 12 contains four rules for managing yellow fever once a case has been found in the Canal Zone. The first three rules mandated the proper screening of the patient, house, and all “places connected with the house, where mosquitoes may breed,” in the hopes of preventing transmission of the disease, and an outbreak like those that

devastated the French forces only a quarter century before.⁹² The patient was consistently referred to as a passive individual, whose sole role was to be transported from the origin of infection and moved into the hospital at the behest of the Board of Health. The patient himself had no part to play in disease control, other than by his confinement. At the time these regulations were first written, yellow fever patients were confined in screened cages, like the one from Ancon hospital depicted below , in order to minimize chances of spreading the disease.

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The fourth rule for dealing with yellow fever was the provision that mandated “a thorough and careful fumigation of all rooms in the house where the case occurred,” again emphasizing the importance of fumigation as a sanitary measure.⁹⁴

⁹² Walker et. al, *Laws of the Canal Zone*. 72.

⁹³ “Yellow fever cage.” Photograph. U.S. Public Health Service, n.d. From National Archives, Washington, D.C.: *The Panama Canal Historical Society*. Digital copy.

⁹⁴ Walker et. al, *Laws of the Canal Zone*. 72.

Cholera, another disease of specific mention in the Act, was addressed by lawmakers in a significantly more general fashion. The freedom given by this section demonstrates the need for quick action by the Board of Health, uninhibited by the process of gaining approval from the ICC. In contrast to the detailed regulations found in the earlier sections, Section 13 merely stipulated that “the Board of Health shall take such precautions as may be necessary to prevent the spread of the disease.”⁹⁵ Certain diseases, therefore, gave the Board some autonomy from the ICC. Cholera, a devastating disease with high mortality for which a vaccine was only developed in 1900, did not have any specific regulations attached. This suggests that cholera was likely a disease that could be easily controlled and therefore did not require specific regulations. Alternatively, it suggests that cholera was a disease that was highly situational and commissioners could not rely on prescribed methods to control outbreaks. Section 14 of the Act, in addressing typhus fever, diphtheria, and membranous croup, also prescribed rules and regulations as deemed necessary by the Board. Section 15 of the Act addressed plague, and mandated that the patient be visited by a physician and then relocated to the nearest hospital, after which the building must be disinfected.⁹⁶ Plague was the last disease to be specifically addressed in Act No. 9, and was a disease that was mentioned largely for quarantine information regarding arrival of ships to either of the two major ports on either side of the Canal Zone.

⁹⁵ Walker et. al, *Laws of the Canal Zone*. 72.

⁹⁶ Walker et. al, *Laws of the Canal Zone*. 72.

The focus on contagious disease throughout Act No. 9 is also a mirror of the type of healthcare work that was to become most significant within the isthmus microcosm. These contagious diseases were subject primarily to the sanitation efforts of the Health Inspectors, with very little mention as to the actual care of patients afflicted with the disease. As early as 1904, *Laws* began a transition where the chief medical power on the Isthmus resided not solely in the physicians who care for the ill, but the Sanitary Inspectors whose job it was to prevent outbreaks. This transition demonstrates both the professional social reproduction in the Canal Zone with the developing professionalization of doctors, but also a unique transformation of the professional health worker with Sanitary Inspectors. The Sanitary Inspectors evolved into a class of their own, eventually earning more attention than the physicians on the isthmus. Sections 16 and 17 gave the Board of Health full power to adopt rules deemed necessary for dictating the roles of physicians and clergymen in visiting those ill from infectious diseases, and outlined provisions for the consultation of a Sanitary Inspector to determine “the character and nature of any case thus laid before [the Board].”⁹⁷ The role of these inspectors as a consultant of disease gave them the power of the final word- if they believed that a case was non-infectious, the physician had no authority to contradict.

The focus on efficiency and the enormous scale of the Canal construction, as well as the pragmatic focus of ICC engineers, resulted in the common

⁹⁷ Walker et. al, *Laws of the Canal Zone*. 73.

reduction of workers, particularly non-Americans, to a status as little more than an object. For the ICC, a person and thing did not merit distinguishing from one another, particularly if they carried potentially hazardous diseases that might threaten the construction. A person working on the Canal project was, in that case, fundamentally very much like a 'thing' that carried the bonus of performing labor. Sections 18 and 19 of the Act prohibited the 'Importation of Infected Persons and Things' and the 'Exposure of Infected Persons or Things,' respectively. According to Section 18, "no person or article liable to propagate a dangerous disease shall be brought within the limits of the Canal Zone without special permission from the Sanitary Inspector."⁹⁸ The language of this Section thus gives another perspective on the priorities and interests of the ICC, insofar as persons and things are included in the same section. In addition, the Sanitary Inspector yet again superseded the physician as the entity that may give permission, despite the physician very probably providing a more accurate assessment of the infectious nature of the disease. Section 19 again emphasized the predominance of the Sanitary Inspector, in this case identifying them as the authority that can write the special and necessary permits for somebody with a contagious disease to move. Thus, the efforts to sanitize in order to prevent further disease were crucial within the regulations, and of more importance than the physician's treatment of the infirmed, a consistent action with the focus on efficiency and construction over health.

⁹⁸ Walker et. al, *Laws of the Canal Zone*. 73.

Despite strict regulations and advancing medical care, doctors and sanitary officers also had to implement regulations for cases in which a patient died from contagious diseases. In efforts to control the spread of these diseases, Section 20 of the Act dictated that “after death from a contagious disease there shall not be a public or church funeral... the family of the deceased shall, in all such cases, limit the attendance to as few persons as possible and take all precautions possible to prevent... exposure.”⁹⁹ In this way, proper sanitation on the isthmus became more important, or at least a higher priority, than established cultural standards of funerals arranged by the family, or any traditions associated with burial. While regulations such as this had been implemented in the past, they were typically used in the presence of a substantial, ongoing epidemic rather than as prophylaxis.

The Commission, in asserting these controls among others, firmly established itself as the definitive power on good health practices by exerting control over minute aspects of life in the Canal Zone. The strict regulations covering nearly all forms of health in the Canal Zone demonstrated the clear desire of the ICC to firmly establish themselves through the exertion of bio-power as the means to managing aspects of life on the isthmus. Part of health management thus included rules regarding burial of the dead, normally a cultural event. The language of Section 25 demonstrated the social concerns present in the health regulations designed by law-making bureaucrats under

⁹⁹ Walker et. al, *Laws of the Canal Zone*. 73.

advice from American physicians. The *Marriages and Births* section specified that such forms be to be filled out upon either event occurring, although no specific reference is made to wife or husband, mother or father in the brief section. This became a new form of social management and encouragement of social reproduction, under the umbrella of statistical data collection to understand the composition of those living in the Canal Zone. The fact that those controlling the canal construction cared about marriage and childbirth indicates that good health was seen as not just physical, but also cultural and emotional, a way of ensuring social and cultural reproduction through marriage and childbirth. The primary concern appeared to be the arrival of a new infant, by mandating the form be filled out within three days of the child's birth. This section demonstrates that the concern of these doctors and bureaucrats was not solely based on preserving physical health. The concern with statistics unrelated to the management of illness and death in an Act dedicated to sanitary measures demonstrated the rise of a state that wanted to make a given group of people, those living in the limited territory of the Canal Zone, legible. After the Canal was completed, the story of its construction was retrospectively treated as a story of heroic characters successfully dominating tropical diseases and dangerous terrain, and demonstrating through their actions the might of the United States. In the process of building the canal, however, the bureaucrats were trying to build the canal, understand diseases through the efforts of their doctors, govern a zone under U.S. control that served in many ways as an extension of US culture,

and just as importantly, make the Canal Zone legible. This concern led to the collection of statistics beyond how people are dying, but as importantly, how they are living.

This focus on social and cultural health, while important, was still often subsumed to the physical management, demonstrated by the fact that the requirements for marriage/birth reports were significantly less intensive than those relating to death and burial. This also demonstrated the larger impact of death in the Canal Zone, which saw 5,609 deaths throughout the construction.¹⁰⁰ According to *Laws*, a certificate of death must be “duly signed by the physician who last attended the deceased, and must be presented to the Board of Health and a burial permit obtained before the body of the deceased person is removed for burial.”¹⁰¹ In addition to these, a certificate of death was required to be left in the hands of the family, and transit permits, issued by the Board of Health, were necessary for moving a body “outside the limits of the Canal Zone”. These provisions were later expanded upon and outlined for Sanitary Inspectors in great detail, as the implementation of bureaucratic requirements became more streamlined and information was easier to demand and manage.

In addition to the contagious diseases addressed in Act No. 9, diseases that were not definitively contagious were accompanied by regulations. The placement in the Act of these diseases, following examples of regulations with implications for the advancement of social reproduction in the Canal Zone,

¹⁰⁰ McCullough, *The Path Between the Seas*. 610.

¹⁰¹ Walker et. al, *Laws of the Canal Zone*. 74.

indicated the social role of these diseases. Contagious diseases were crucial to the isthmus for the successful management of large numbers of employees, but these later diseases had greater implications for the social organization, and social ostracism, within the Canal Zone. Section 27 dealt with leprosy, elephantiasis, and beriberi, diseases that were mainly known and feared for the deformation and social isolation that were associated with them. Any case of these diseases was required to be reported immediately to either a Sanitary Inspector or the Board of Health. The section did not contain any additional regulations or recommendations for dealing with such diseases, but merely stipulated the necessity of reporting. Palo Seco leper asylum was established in the Canal Zone on an isolated Pacific island for the express removal and isolation of all those diagnosed with leprosy, a historically common method of dealing with lepers around the world.¹⁰² Typhoid fever, the subject of Section 28, required the same immediate reporting of cases but also added the extra requirement of disinfecting the urine and feces of typhoid patients before disposal.¹⁰³ Typhoid, while not a disease that typically manifests in an obviously physical way (unlike leprosy), was still a disease with a large societal impact in the Canal Zone. Many infected with typhoid exhibit mental illness, whether in the form of dementia or depression.¹⁰⁴ Typhoid fever is caused by the bacteria *Salmonella typhi*, and commonly transmitted through infected sewage, and therefore also had a large

¹⁰² Lewis A. Smith, "Drugs in Panama Canal Zone." In *The Pharmaceutical Era*. New York: D.O. Haynes, 1910. Periodical. Vol. 43. Google E-book. 672.

¹⁰³ Walker et. al, *Laws of the Canal Zone*. 75.

¹⁰⁴ Ray M. Merrill, "Chapter Two: Historic Developments in Epidemiology," in *Introduction to Epidemiology*. (London: Jones & Bartlett, 2010). Google E-book. 38.

impact on sanitary reform and encouraging the hygienic management of waste in the Canal Zone, although its exact mode of transmission was unclear for much of the construction. Typhoid fever, with its transmission through unhygienic practices and more importantly, impact on mental health, joined the ranks of diseases with vast cultural impacts, diseases for which isolation was a main form of control.

Venereal diseases fall under the purview of the Board of Health's obligations as they were diseases known to be contagious, and many of which had been understood to be transmitted through sexual contact for decades. However, due to the lack of treatment options and the moral implications of such diseases, particularly where prostitutes were involved, venereal diseases received the lowest status, and therefore last mention, of all diseases in the Canal Zone. Venereal diseases played an important role to the ICC's management of life on the isthmus. They were diseases that carried immense social stigma and were associated with immoral behavior, and as such made the prostitutes who carried such diseases even more ostracized from the rest of society in the Canal Zone. The exertion of bio-power on the isthmus in part relied on the successful control of these venereal diseases, by reducing immorality through ostensibly attempting to control diseases. Disease and morality thus became intertwined through the regulations regarding venereal diseases, which were in the unique position at the turn of the twentieth century of possessing both moral implications and medical problems.

The separation of venereal diseases, addressed in Section 30, from other diseases within *Laws* indicates the stigma with which those diseases were labeled. Prostitutes became the particular targets of such regulatory actions against venereal diseases in the Canal Zone, indicating the threat they posed to desired society organization on the isthmus. Indeed, the only regulation in Section 30 is that “venereal diseases of prostitutes must be reported to a Sanitary Inspector or the Board of Health by anyone having knowledge of the same, and such prostitutes are to be isolated and subjected to medical treatment...”¹⁰⁵ In keeping with the American preoccupation with morality, infected prostitutes were isolated and required to have treatment, but the *Laws* makes no mention of others infected by such diseases, for example the prostitutes’ clients, nor any mandate for treatment if they become aware of such an infection. This role of the Sanitation Inspectors within society sidestepped the American preoccupation with morality and, in effect, treated those infected prostitutes in a similar manner to the houses of yellow fever weekends - a 'thing' that required decontamination to prevent further spread of the disease. Prostitutes in the Canal Zone became in a sense, an object of fear for those in charge of the Zone, in terms of the threat they posed to the order of the U.S. microcosm, intended to serve as a model society abroad, rather than a colony full of immoral sexual activity. Fear translated into the exertion of further controls, and the reduction of prostitutes to object status within the Canal Zone.

¹⁰⁵ Walker et. al, *Laws of the Canal Zone*. 75.

Laws also carefully defined the role of the Sanitary Inspector on the isthmus. This explicit outlining of inspector duties indicated that the position was comparatively new to ideas of long-term public health maintenance, and as such needed to be carefully considered and defined. In addition, the careful attention to the job of Sanitary Inspector highlighted the comparatively high position they were to occupy in the Canal Zone. Even as early as 1904, inspectors were granted large amounts of power and authority, even going so far as to say that they were allowed to enter “any premises where conditions dangerous to public health are known or believed to exist.”¹⁰⁶ Inspectors were responsible for highly detailed official reports of their investigations and disease control efforts, to be submitted regularly to the Board of Health. The Board of Health had the ultimate say in whether or not measures should be taken, and what exactly those measures would be, but the Sanitary Inspectors formed the ‘front line’ against disease transmission in the Canal Zone.

Act No. 9, in outlining the necessity of permits and detailed plans before any building could be built in the Canal Zone, established another level of sanitary control for an ostensibly separate realm, where sanitation would not necessarily be perceived as having an integral role. The eventual commitment of the ICC to Gorgas’ disease control efforts resulted in the *Laws* allowing the Department of Sanitation to have oversight power over many different realms of the canal construction, including, as seen here, with the construction of any new

¹⁰⁶ Walker et. al, *Laws of the Canal Zone*. 75.

public or private building. Permit applications had to include details regarding the ventilation, plumbing, and drainage of the proposed building.¹⁰⁷ The last sections of the Act then deal with the issue of punishment, classifying any “violation of any of the provisions of the foregoing rules and regulations... a misdemeanor, and any person, corporation, or association, upon conviction of such violation, shall be fined in any sum not exceeding twenty-five dollars, or imprisonment not to exceed thirty days, or both.”¹⁰⁸ To place this punishment in perspective, the crime of perjury earned “not less than one, nor more than ten years” imprisonment, while assault would be punished with a “fine not exceeding five hundred dollars, or by imprisonment in jail not exceeding three months.”¹⁰⁹ Evidently, violations of sanitary regulations were thought of as comparatively minor crimes, for which a conviction would mean far less than for even a social crime such as adultery, which carried a \$200 dollar fine and up to one year of imprisonment.¹¹⁰ Sanitary regulations, while deemed important for the continued wellbeing of the construction effort, were not thought of as crucial for sustained discipline and law enforcement in the Canal Zone.

At the turn of the twentieth century, the ability to control diseases, particularly those most prevalent in tropical environments, underwent a rapid and widespread revolution, precipitated by the arrival of germ theory. The U.S.

¹⁰⁷ Walker et. al, *Laws of the Canal Zone*. 75.

¹⁰⁸ Walker et. al, *Laws of the Canal Zone*. 75.

¹⁰⁹ Walker et. al, *Laws of the Canal Zone*. 99, 109.

¹¹⁰ Walker et. al, *Laws of the Canal Zone*. 115.

construction of the Panama Canal was begun at a time when medical professionals were struggling to make their new knowledge accepted by the public. Panama itself provided an ideal environment to test these opposing theories of disease transmission. Initially, the sanitation reforms recommended by Gorgas in his capacity as Chief Sanitary Officer were met with resistance by the non-medical ICC commissioners, who strongly prioritized economization over spending money on reforms that they doubted were strictly necessary. However, as President Roosevelt more strongly supported Gorgas and the lack of appreciable reform meant no real decrease in sickness rates, the bureaucrats of the ICC gradually accepted the advice of their Chief Sanitary Officer and began wide-scale implementations of the techniques used in the successful eradication of yellow fever in Cuba. The desire to maximize efficiency and maintain strict control over doings in the Canal Zone led to increasingly detailed regulations, begun by the healthcare providers but continued in conjunction with non-medical bureaucrats desirous of making the Panama Canal an example of U.S. power and knowledge.

CHAPTER TWO: A BUREAUCRACY OF LIFE AND DEATH

With the advent of strict sanitary regulations advocated by physicians, the maintenance of good health, defined by Gorgas and his superiors as the lowest death tolls and highest return rates of laborers to active work, became a matter of bureaucratic ICC control. By endowing sanitary inspectors with certain powers and closely monitoring their actions and allocation of funds, the sanitary division of the Isthmian Canal Commission gradually expanded its power, and eventually, the public perception of where control truly resided. These efforts proved a direct assertion of bio-power in the Canal Zone, and a way of increasing the Zone's legibility through increasing regulations and emphasis on control over aspects of health, and by extension, life. In Chapter Two, the constantly changing struggle of doctors, sanitary inspectors, and bureaucrats to make Panama legible and disease controllable under their own definitions of health will be examined through the regulatory documents created and reports formed. Chapter Two also explores the increased involvement of the bureaucratic powers in the efforts of the Department of Sanitation, and the way in which disease control was extended to include vital statistics regarding life on the isthmus, not merely for individuals in states of poor health. While earlier bureaucratic involvement in the beginning of the canal construction was characterized by its inhibitory effect on disease control, the increased regulations from 1906 and beyond demonstrated a unique melding of bureaucratic priorities and the specific scientific regulations and control measures espoused by doctors.

The Isthmian Canal Commission mandated regular reports from each department as a way of making the Canal Zone legible and of maintaining evidence for reports to Congress, which was necessary for continued funding. Every month of the construction, the Chief Sanitary Officer submitted a report on the state of health on the isthmus, containing death rates, sick rates, and of course, expenditures for the Sanitary Department. By 1906, the canal had been under U.S. control for two years, and Gorgas was able to report that the Canal Zone was in a state of general good health, with disease rates comparatively low and records becoming increasingly thorough as the positive implications of Gorgas' sanitary methods also increased. In January 1906, the *Report of the Department of Health of the Isthmian Canal Commission*, submitted by Chief Sanitary Officer Colonel Gorgas, began by describing the excellent health conditions to the Governor of the Canal Zone.¹¹¹ For Gorgas, these excellent conditions were demonstrated by the fact that during the month of January there were "no quarantinable (sic) diseases at any point on the Isthmus- no yellow fever, no plague, no smallpox." Less than two years into the Construction effort, yellow fever and other well-known contagious diseases with high death rates were still the object of greatest concern and interest to those in charge. The 1906 records for each month begin with a chart of yellow-fever cases and deaths, from July 1, 1904 to the end of that month in 1906. This chart is divided three ways: by area, employment, and cases compared to deaths. The Canal Zone was divided for

¹¹¹ William Gorgas, "January 1906 Report," in *Report of the Department of Health of the Isthmian Canal Commission*. (Washington, D.C.: Government Printing Office, 1907), Google E-book. 3.

record collection into three main regions: Panama, Colon, and the Canal Zone. Foreign ports were also included in many of these charts. Cases were also divided into multiple different employment groups; in 1906, they were separated into “Employees of Commission, appointed in United States,” “Employees of Commission, appointed on Isthmus,” “Employees of the Panama R. R. Co.,” and “Not employees of the Commission or Panama R. R. Co.”¹¹² This distinction helped to separate the classes of employees appropriately, with the majority of American, and therefore more valuable workers being appointed in the United States, whereas those appointed on the isthmus were most often Afro-Caribbeans performing hard labor.¹¹³ In addition to the Commission employees, Panama Railroad Company employees lived and worked on the isthmus, although they were rarely included in the works of the Commission. The segregation present on the isthmus is reflected in the groupings of employees that the Commission determined. Among all groups regardless of classification, yellow fever was clearly an object of intense fear in Panama, even as disease control efforts helped to eradicate its presence.

The fear of yellow fever was pervasive, at least partially due to the immense damage done to labor forces during earlier attempts to build in Panama. Throughout the Canal construction, the French efforts remained the

¹¹² Gorgas, “January 1906 Report.” 5.

¹¹³ Note: The racial classifications, as described throughout this work, are U.S. racial categories established in the United States prior to the beginning of Canal construction. As far as is known, they remained constant throughout the canal’s building. For further discussion of racism in U.S. imperialism, see: Paul Kramer, *Blood of Government*. (Chapel Hill: UNC Press, 2006).

basis for constant comparison, with conclusions always in American favor. Comparison to the French effort carried the additional benefit of providing information to the ICC about the successes and failures that were encountered in creating a French microcosm on the isthmus. The success of the Americans where the French had failed was a point of pride, and one from which evidence grew to defend the growing idea of U.S. superiority. In Gorgas' January 1906 report, a comparison to the French effort immediately followed his assurances that yellow fever is abating on the isthmus. Gorgas claimed that in January, 22,000 employees were in the Canal Zone, "a larger number than the French had at any time. The January in which they approximated this number nearest was January 1885, when they had 17,751 employees. They had in that month 11 deaths from yellow fever, and approximately 50 cases."¹¹⁴ In the first years of the American canal construction, the success of the construction was measured not only in terms of the amount of progress digging, but also in terms of the health of workers on the Isthmus. For example, during Congressional hearings on the progress of the Canal construction, sanitation was an issue that was frequently brought up in questioning the success of the work being done, and one in which the Senators were actively concerned.¹¹⁵ It was a point of pride for Gorgas that, even with a significantly higher amount of employees on the Isthmus who were presumably vulnerable to the dangerous Panamanian diseases, the Americans

¹¹⁴ Gorgas, "January 1906 Report." 3.

¹¹⁵ United States Senate Committee on Inter-oceanic Canals, *Hearings before the Committee on Inter-oceanic Canals of the United States Senate in the Matter of the Senate Resolution Adopted January 9, 1906, Providing For an Investigation of Matters Relating to the Panama Canal, etc.* (Washington: Government Printing Office, 1906). Google E-book.

were able to decrease the susceptibility to diseases to such an extent that there were no cases of yellow fever, compared to 50 cases during the French construction. Gorgas did not measure his success on the Isthmus just by the measurable decrease in fever cases, but also by comparison to the seemingly inferior French.

While utilizing comparisons as a means by which to measure success was extremely common throughout the construction, statistics proved a more dependable tool. The reliance on statistics by the ICC was a way to measure and control its own productivity, not solely in the forms of tons removed or diggers active, but also in terms of the amount of illness, and more importantly, the number of men rendered inactive due to illness. This detailed statistic collection was a means of asserting bio-power in the Canal Zone, of controlling life through a detailed understanding of disease and the state of employees lives in Panama. Gorgas claimed that, “the daily sick rate is an accurate measure of the loss to the Commission from sickness. It does not necessarily mean a low death rate, as our report will illustrate.”¹¹⁶ The daily sick rate was for Gorgas a critical aspect of the efficiency that so preoccupied his superiors, and, as a result, one of the most important ways in which he reported the success of sanitation efforts in the Canal Zone. The absence of disease was in itself a measure of efficiency. He also said that the sick rate, calculated for January 1906 to be 22 per thousand, “would

¹¹⁶ Gorgas, “January 1906 Report.” 3.

compare very favorably with that of any body of men working anywhere in the United States.” Gorgas’ comparison to sick rates in the United States was offered as a reassurance, a proof that despite the depictions of Panama as a dangerous tropical environment full of disease, the advanced sanitation efforts did, in fact, result in a Panama that was as safe for the laborer as anywhere in the United States. Secondly, the desire to quantitatively measure the loss of labor through sick rates and death rates, and the detail to which the report later addresses, by month, the average number of sick days per sick camp and hospital, clearly placed the priorities of the Isthmian Canal Commission with maximizing productivity and preventing the abuse of those using illness as a way to avoid labor. Gorgas’ usage of health statistics to understand labor capacity month to month indicated that the sanitation efforts of the ICC led not only to positive health outcomes, but also to production and therefore profit.

Race also played a significant role in determining the state of health in the Canal Zone, as it was a prevailing method of separating and classifying diseases throughout the Canal construction. Race therefore provides a unique lens into the preoccupation with productivity and efficiency on the construction project. For the month of January, pneumonia proved to be the disease with the highest death rate: 26 of the 50 cases resulted in death, for a mortality rate of 52%.¹¹⁷ Gorgas did make note of the fact that the majority of the cases were among Afro-Caribbeans, with only one case being an American white man. With such a focus

¹¹⁷ Gorgas, “January 1906 Report.” 3.

on ensuring maximum productivity while minimizing expenditures wherever possible, the sickness of unskilled black laborers was in fact of little consequence to the Commission, and subsequently those reporting on the state of health in the Canal Zone. For the Commission, the unskilled labor done by black workers was easily replaced, and therefore it was little more than inconvenient if one took ill or was seriously injured. Comparatively, however, a white American fulfilling a role of engineer, doctor, or other professional, merited significant concern. In cases of illness among white workers, most particularly Americans, significantly more attention was paid in reports, and by inference, in healthcare, than for black laborers who earned scarcely any mention. While the diseases affecting them were the same, the amount that the ICC cared for their welfare was certainly not based more upon whose productivity mattered, and was altered the most by disease, than the illnesses suffered.

A review of all sanitation measures in the Canal Zone was necessary for the continued assessment of overall success, and particularly for the large-scale implications of creating the Canal Zone as a microcosm of the U.S. For Gorgas, the city of Colon posed a particular challenge, as “a good part of the town is built over swampy ground, and the privies are frequently mere boxes over the swamps. It is desirable from both a sanitary and aesthetic point of view to have these conditions corrected...”¹¹⁸ The swampy terrain on which Colon was built was by then understood to be almost ideal for cultivating mosquito-borne

¹¹⁸ Gorgas, “January 1906 Report.” 3.

diseases, not for controlling them. Gorgas relied heavily on his experience in Cuba to determine what was most important for disease control. According to his time in Cuba, “after three years of the most indefatigable cleaning of privies and streets that had probably ever been done, that it had no effect whatever upon yellow fever and malaria; that at the end of the three years we were having much more of these diseases than we had when we began, but that when we turned our attention to the water barrels and cisterns and prevented the breeding of mosquitoes, we eliminated yellow fever.”¹¹⁹ The cleanliness of streets and privies, therefore, was a matter of social standards for cleanliness as well as direct sanitation requirements to aid in the prevention of disease. This helps to demonstrate the desire of the ICC to exert controls through sanitation reform that also had societal implications and helped to establish the Canal Zone as a viable, entirely self-governable entity (albeit under Congressional oversight).

Gorgas, while publicly lauding the efforts of his sanitation brigades and boasting of the elimination of yellow fever on the isthmus, was also careful in his report to remind the Governor that perfection is unattainable.¹²⁰ By 1906, therefore, it appeared that Gorgas completely embraced the idea of managing health. The success of the sanitary techniques focused more towards efficient control than total destruction of disease evidently convinced Gorgas that this was in fact a viable option. Seeking a manageable homeostasis of disease rates,

¹¹⁹ Gorgas, “January 1906 Report.” 3-4.

¹²⁰ Gorgas, “January 1906 Report” 4.

instead of perfection, was not only more realistic, it was also far more economical.

That same month, a Board of Consulting Engineers submitted their report of the canal progress. Sent to Panama in October under an executive order issued by then-President Theodore Roosevelt, their purpose was to evaluate the canal work and offer recommendations. Although the Board primarily focused on the engineering challenges of the canal construction, the largest section of the report focused on health outlined the successes and challenges faced by the ICC in making the Canal Zone legible through disease control efforts. The Board was impressed with sanitation and healthcare on the isthmus, and its endorsement of ICC efforts served as a strong early step towards supporting the establishment of a U.S. territory whose power was based, at least partially, in the bio-power of disease control and statistical collection. The fact that 'Sanitation and Hygiene' is one of the first sections of the Engineers' report demonstrated their belief in the significance of sanitation efforts to the success of the canal construction. The Board traced the development of the American presence in Panama, beginning with the high-mortality travels through Panama to reach the California gold rush in 1848. The construction of the Panama Railroad brought more American laborers to the Isthmus, many of whom succumbed to disease. The Board is careful to point out, however, that those Americans thriving on the Isthmus prior to the arrival of the Isthmian Canal Commission were "strong and vigorous

when they observed ordinary sanitary rules. Of course they were well sheltered, their food was adequate and suitable, and medical attention and hospital treatment, with medicines, were available.”¹²¹ In an unusual departure from many contemporaries who claimed that the French fiasco was due to a moral and material deficiency, the Board asserted that qualified physicians and nurses operating in state-of-the-art hospitals in fact supported the earlier French canal-building effort.¹²² Their failure to prevent the spread of disease was due to lack of knowledge about modern methods of disease control, rather than any lack of skill.¹²³ This view indicated that for the French, the primary issue was not the skill of laborers or ability to train them, but the lack of experience and knowledge about tropical diseases and disease transmission.

The Board’s assessment of the sanitation and disease control after two years of American construction supported the work done by Gorgas and his Board of Health. However, they focused on death rates as the primary means to establish success, rather than general sickness rates. They paid particular attention to Gorgas’ own focus on the sanitation effort in October 1906, where he said, “The French in October, 1884, with their 19,243 employees, had 161 deaths, making a rate for that year of 100 per thousand (sic). We with a force of about 22,000 have had 61 deaths, which would give us for the year a death rate of 32 per thousand. I have no doubt that when the sanitary improvements at present

¹²¹ Board of Consulting Engineers, *Report of the Board of Consulting Engineers for the Panama Canal* (Washington, D.C.: Government Printing Office, 1906), Google E-book. 18.

¹²² Frederic J. Haskin, “The Panama Canal” (New York: Doubleday, 1913). 206.

¹²³ Board of Consulting Engineers, *Report*. 21.

going on, such as street paving in Panama... and comfortable screened buildings for employees at all points, shall have been completed the health conditions will be still further improved; but I am inclined to think that the sanitary question of Panama has been settled."¹²⁴ Gorgas' confidence was reflected in the Board's further assessment, which complimented the effective bureaucratic control over disease. The Board chose to focus on death regulations as their example of the effectiveness of U.S. sanitation bureaucracy. The Board commented that, "in the city of Panama it is a requirement of law that all burials shall take place in the city cemetery, and that the records of burials shall show the name, age, sex, nativity, cause of death, and the name of the physician certifying to cause in every case."¹²⁵ These regulations, expanded in future years, helped to control disease and to maintain vital statistics regarding the health on the Isthmus. Indeed, the Board mentioned that the only census conducted in the city occurred in 1904, when the Canal Zone's sanitary staff conducted one upon beginning their work.

Having fully committed to Gorgas' sanitary efforts, the report of the Board continuously praised the controlled sanitary environment in which the construction operates. Using the records from the earlier French construction effort, as well as the statistics collected to that point by American sanitary inspectors, the Board asserted that periods of ill health, often in the wake of 'non-immune' immigration, "held true continuously until full effect was had from the

¹²⁴ Board of Consulting Engineers, *Report*. 20.

¹²⁵ Board of Consulting Engineers, *Report*. 20.

sanitary measures taken by the United States health authorities in the Canal Zone, but it required a year and a half to secure full beneficial effect of the preventive means adopted."¹²⁶ This statement was in keeping with Colonel Gorgas' assertion in November 1905 that the Canal Zone had seen its last yellow fever victim.¹²⁷ In addition to this, the Board offered the declaration by United States health authorities that Panama cemetery records demonstrated the "accuracy of their declaration that it is not only possible but feasible to banish yellow fever from the Isthmus and to maintain the whole force of employees in a good state of health."¹²⁸ Their successes against yellow fever were a confirmation of U.S. medical skill and regulatory prowess, capable of creating and implementing such regulations as would eradicate a disease that had, only a few years before, been a colossal threat to non-immune immigrants on the Isthmus. The photograph on the following page is that of a fumigation gang preparing to embark on their daily task of fumigating houses to prevent yellow fever, one of the most important sanitary measures instituted by Gorgas. The vast volume of men employed in fumigation gives some sense of the importance of this task to those responsible for sanitation on the isthmus.

¹²⁶ Board of Consulting Engineers, *Report*. 20.

¹²⁷ "Construction Days: Ancon Hospital 1904-1914." 10.

¹²⁸ Board of Consulting Engineers, *Report*. 21.



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The ultimate praise of Gorgas' sanitation efforts came from the Board's final assessment of sanitation and health in the Canal Zone, that "we now know that men from temperate climates living in the tropics, including Panama, can and do escape the great danger which twenty-five years ago could not be evaded, and that the danger does not appear to be greater than exists in many parts of the United States."¹³⁰ In two years, the Isthmus was transformed from a dangerous environment to a location that was becoming increasingly habitable. While it took longer for Panama to be regarded as 'safe' by the general public, the Board of Consulting Engineers' evaluation indicated that the educated professionals were convinced by the data presented that Panama was, in fact, a climate in which one could live as safely as many places in the United States itself.

¹²⁹ "The Fumigation Gang Making Panama Habitable." Photograph. U.S. Public Health Service, n.d. From National Archives, Washington, D.C.: *The Panama Canal Historical Society*. Digital copy.

¹³⁰ Board of Consulting Engineers, *Report*. 22.

In 1907, the Canal Zone was subject to a large-scale reorganization that ultimately paved the way for greater autonomy of Gorgas and his sanitation department. Then-Chief Engineer John Stevens resigned from his position in early March, to be replaced immediately by George Washington Goethals, an exemplary officer in the US Army's Corps of Engineers. Roosevelt, in appointing Goethals at Secretary Taft's suggestion, desired a complete reorganization of the Isthmian Canal Commission. According to this new reorganization, supported by an executive order from Roosevelt, Goethals was to be the "Czar of the Zone," acting as both Chief Engineer and ICC Chairman. The change that had the most impact on disease control in the isthmus, however, was the appointment of Dr. Gorgas as a full member of the ICC, rather than a subordinate. All members of the commission were changed, the new members being two men from the Corps of Engineers, a senator from Kentucky, a Rear Admiral, and Jackson Smith, already in charge of Labor and Quarters.¹³¹ With the appointment of these men to the Commission, a serious transformation came about in the construction and the management of the labor force in the Canal Zone.

Shortly after Goethals' assumption of command, in April 1907, Gorgas demonstrated the ability of his relatively young sanitation bureaucracy when uninhibited to combat outbreaks of disease through the rapid quarantine, the fumigation, and the ability to quickly organize temporary Boards to helm

¹³¹ McCullough, *The Path Between the Seas*. 510.

investigations and act independently. In that month, pneumonia became “widely prevalent on the Canal Zone, and in order to ascertain the causes of it as far as possible, the Chief Sanitary Officer appointed a Board... to investigate the matter.”¹³² This temporary sanitation Board formed to combat the outbreak submitted a highly detailed report investigating this outbreak, beginning with their inspection of houses where pneumonia was most prevalent. After investigating over 200 houses where cases of pneumonia had occurred, they determined that there was “no evidence that [pneumonia] is spread by house infection.”¹³³ They continued their investigation by looking into such factors as altitude, time of year, exposure to draft and deficient ventilation, none of which were shown to promulgate the spread of pneumonia. The Board did determine, however, that pneumonia was “decidedly more prevalent in men newly arrived-under three months- than in older residents... [And] mainly due to the presence on the Isthmus of an infectious catarrh.”¹³⁴ In much the way that Walter Reed and his fellow doctors helped to elucidate yellow fever transmission a decade earlier the temporary Board of Inspectors established by Gorgas systematically tested numerous factors before coming to their conclusion regarding the transmission of pneumonia on the Isthmus.

Later that year, Colonel Gorgas submitted his *Health Report for August* to the Chairman of the Isthmian Canal Commission, with the subheading “Marked

¹³² H. R. Carter, “Pneumonia on the Zone,” *Panama Canal Record* Vol. 1 (Sept 4, 1907 to Aug 26, 1908). 43.

¹³³ Carter, “Pneumonia on the Zone.” 43.

¹³⁴ Carter, “Pneumonia on the Zone.” 43.

Improvement Shown." Gorgas' primary comparison is between August and July, followed by comparisons with July and August of 1906 to demonstrate the changes made within a year. As with the majority of statistics collected on the Isthmus, Gorgas reported separately the deaths of Negro and white employees. He stated that the death toll among Afro-Caribbeans dropped from 98 in July to 76 in August, for a rate of 31.26 per thousand.¹³⁵ The death rate for all employees for the month of August was only 27.5 per thousand, demonstrating that the mortality of black employees on the isthmus was actually higher than other races, despite prevailing ideas that blacks were immune to tropical diseases, or at least better equipped to resist them if afflicted.¹³⁶ Gorgas ended his summary with the deaths in August of American whites, which was 3, out of 4,290 in the Canal Zone.¹³⁷ What is most interesting in this summary is his distinct focus on American whites, limiting the scope of those who mattered most to a comparatively small group on the isthmus.

Several months later, the reliance of the Isthmian Canal Commission on statistics had noticeably increased, and bureaucratic reorganizations are evident throughout the January 1908 report. For example, Gorgas' monthly report was no longer addressed to the Governor of the Canal Zone, but was instead sent directly to the Acting Chairman of the Isthmian Canal Commission. This indicated that as construction continued and disease control efforts advanced,

¹³⁵ W.C. Gorgas, "Health Report for August: Marked Improvement Shown," *Panama Canal Record* Vol. 1 (Sept 4, 1907 to Aug 26, 1908). 27.

¹³⁶ Samuel Kelton Roberts Jr., *Infectious Fear: Politics, Disease, and the Health Effects of Segregation* (U.S.: University of North Carolina Press, 2009). 43.

¹³⁷ Gorgas, "Health Report for August." 27.

the ICC took greater control over the Sanitation Department's actions. Gorgas' report also featured noticeably more reliance on statistics in summarizing the health conditions in the Canal Zone. Whereas the 1906 report was a more qualitative summary of health, the 1908 report offered statistics for every conclusion and every description of the Canal. This demonstrated a shift in the mindset of ICC authorities and the Health Department, in which statistics became a critical part of assessing conditions on the Isthmus. In addition to their importance for properly assessing situations, these statistics were crucial for establishing legitimacy on the Zone and understanding the make-up of the population on the isthmus. Calculations from collected data were used to determine the death and sick rates, not only generally, but also among different employees and divided by race. What had begun in 1906 was now a fully developed dependence on statistical analysis for determining the success of the Health Department. This success was based primarily on survival, but also on the number of men in hospital/sick camp at any given time. Cost played an important role in defining the Health Department's success as well, evidenced by the detailed expenditure reports included every month and the justifications Gorgas was required to provide when requesting additional funding. Accidents, while reported, apparently did not factor into the Health Department's assessments of success, as they were largely ignored, other than for the required counts of laborers and causes of death.

By 1908, accountability, as well as legibility, became an ever more pressing issue for the reorganized Isthmian Canal Commission, especially with increasingly large amounts of laborers and a growing civilian population in the Canal Zone. The Department of Health for the ICC reported the number of men working, a statistic that would not necessarily be automatically associated with healthcare. The provision of healthcare had become increasingly large-scale with the growing number of employees, and as such the responsibilities of the department increased. The Department of Health began to play a more significant role in everyday lives on the isthmus during the middle years of the construction, contributing greatly to the bureaucratic efforts to meticulously track ICC and Panama Railroad employees. The number of men working on the Isthmus had risen steadily, doubling in the two years since Gorgas' 1906 report. January 1908 saw the first ever drop in the number of laborers, a fact that Gorgas was quick to point out. The number of men on the rolls dropped from 45,715 to 43,390 within the span of a month.¹³⁸ Gorgas made no attempt to explain the drop, but was careful to point it out, laying the groundwork for the data he later offered in both his summary and the report in general. The number of black laborers increased steadily, making up the bulk of the employed population on the Isthmus. According to Gorgas, in January 1907, there were 23,548 black employees, while a year later the number had climbed to 31,894 black

¹³⁸ William Gorgas, "January 1908 Report," in *Report of the Department of Health of the Isthmian Canal Commission*. (Washington, D.C.: Government Printing Office, 1907), Google E-book. 3.

employees.¹³⁹ Thus, while the number of total employees on the Isthmus dwindled, the number of black laborers increased, making up an even larger proportion of the ICC employees on the Isthmus.

Gorgas also addressed the death rate of employees, another category of extreme importance to the Commission. The death rate of employees was one of the most significant ways in which the ICC measured the success of sanitation and healthcare measures, and one of the statistics that was of greatest concern to the non-medical politicians of Congress, responsible for approving appropriations for the canal construction. According to Gorgas, the death rate dropped steadily even in the space of one month: in December the rate was 18.11, while in January, it had dropped to 12.72.¹⁴⁰ He was quick to point out the “most marked thing is the decrease in the death rate among the negroes. It is [now] very little larger than that among the whites. This is very unusual in our rates.”¹⁴¹ For Gorgas, the most significant aspect of January’s death rates was based on race. Despite early views of Panama describing tropical environments as unhealthy and dangerous for whites, the highest death rates during the first years of the canal construction were among black laborers. In the beginning of 1908, the death rate among blacks drastically decreased, from 30.06 per thousand in January 1907 to 13.16 per thousand in January of 1908. In a year, the death rate for these black laborers was almost as low as that of the white workers, calculated to be 11.48 per thousand in January 1908. Gorgas was obviously

¹³⁹ Gorgas, “January 1908 Report.” 3.

¹⁴⁰ Gorgas, “January 1908 Report.” 3.

¹⁴¹ Gorgas, “January 1908 Report.” 3.

intrigued by the sudden drop in mortality from a statistical but also from a racial perspective. One explanation by others claimed that the movement of black laborers to better, independent housing, rather than the housing provided for them by the ICC, helped them to live in more sanitary environments.¹⁴²

Gorgas also reported on the death rates for the populations of Panama and Colon, which were significantly higher than the death rates of employees. Again, the detail of these statistics formed a clear picture of ICC efforts to increase legibility on the Zone through the collection of information and constant comparison to earlier statistics collected. For Panama, the January 1907 death rate was calculated to be 41.93 per thousand, dropping to 37.68 per thousand for January 1908.¹⁴³ While the rate dropped, it was still more than three times larger than that of the entire Canal Zone. Colon had a slightly improved death rate, decreasing from 46.78 per thousand for January 1907 to 29.85 per thousand for January 1908¹⁴⁴. The Canal Zone population had the lowest death rate, decreasing from 27.41 per thousand in January 1907 to 19.43 per thousand in January 1908. In his overall analysis, Gorgas reported the total population to have grown from 89,174 to 112,062 people in January 1908.¹⁴⁵ The 1908 death rate for employees was less than half of the death rate for the general population, at an annual rate of 26.66 per thousand. Gorgas attributed this to the presence of

¹⁴² Gorgas, "January 1908 Report."

¹⁴³ Gorgas, "January 1908 Report." 3.

¹⁴⁴ Gorgas, "January 1908 Report." 3.

¹⁴⁵ Gorgas, "January 1908 Report." 4.

women and children in the general population, whose greater susceptibility resulted in much higher death rates.

While Gorgas emphasized the lower death rates from month to month, he also focused on the long-term decrease in death rates throughout the canal construction, referring to his 1906 report of death rates at 40.36 per thousand for 22,000 employees, in contrast to the 1908 rate of 12.72 per thousand for 43,490 employees.¹⁴⁶ As construction continued and more men came to the isthmus to work, good sanitation and disease control became ever more important. The improvement of care and sanitation, although still in need of progress particularly in the two main cities, helped to lower the death rate even as the population increased. Gorgas conceded that, “the improvement in the rate of the total population in the same time has not been so great, but is very marked,” again demonstrating the need for further progress in the larger cities where the bulk of the general population was concentrated.

Gorgas additionally utilized specific diseases of interest to ICC Commissioners in order to highlight the good health in the Canal Zone, thereby further validating the ICC’s support of his Department of Health and the work of his sanitary inspectors. While yellow fever was the disease of greatest concern in the 1906 report, by 1908 Gorgas had turned his focus to malaria. In the absence of yellow fever on the Isthmus, malaria became one of the most dangerous and feared diseases, although even the rates for malaria dropped in January 1908,

¹⁴⁶ Gorgas, “January 1908 Report.” 4.

from 1,813 cases among 31,851 men in 1907 to 642 cases among 43,390 men in January 1908.¹⁴⁷ While malaria was the individual disease that Gorgas focused his attention on, he also reported the total sick rates among employees. These too decreased from 1907 to 1908, from 26 sick daily to 19 sick daily. All in all, the beginning of 1908 brought a larger population but lower mortality and morbidity, achievements that Gorgas readily reported in his January summary.

Yellow fever, despite being eradicated in the Canal Zone two years earlier, still warranted mention as the final section of Gorgas' report. Its significance derived mainly from the enormous mortalities posed to the French effort, and by extension, from the incredible achievement of U.S. doctors and sanitary workers in transforming a deadly disease from a major challenge to a minor player. Gorgas stated that, "yellow fever continues to be present in the countries around us with which we have commercial relations, but no case occurred in the Zone during the month, nor has any case occurred since May, 1906."¹⁴⁸ Plague was another disease that, while eradicated on the Isthmus itself, maintained a strong presence in bordering countries. These two diseases were no longer a primary concern due to their absence in the Canal Zone, but their effect on the Canal construction effort, and the concern that they caused for the Health Department and the Isthmian Canal Commission as a whole, ensured that they were to remain, two years later, a necessary part of the Department of Health records.

¹⁴⁷ Gorgas, "January 1908 Report." 3.

¹⁴⁸ Gorgas, "January 1908 Report." 5.

By 1908, the success of the sanitation efforts in the Canal Zone, and the thorough record-keeping that was able to prove decreased rates, at least for some of the more well-known and feared diseases, led to a widespread change in opinion towards the ability of Americans and Europeans to live healthily in a tropical environment like Panama. In March 1908, an article was published in the *New York Tribune* that suggested to the general public that Panama was no longer the dangerous tropical locale that proved so costly to the French construction effort. According to the *Tribune*, "Panama reports for 1907 not a single case of bubonic plague nor of yellow fever (it is now twenty-two months since the last case of yellow fever on the Isthmus), only one death from smallpox, a 50 per cent reduction from the preceding year in 'malaria'..."¹⁴⁹ Health conditions in the Canal Zone were improving drastically each year, with greater success against diseases like malaria and dysentery in 1907, after the 'triumph' over yellow fever. The article also references the early nineteenth century German naturalist Alexander von Humboldt as well as the mid-nineteenth century English historian James Froude. Both these men declared the Isthmus dangerous, with Humboldt condemning it as forever 'ravished by yellow fever and malaria,' while Froude moderated his viewpoint with pronouncing it the locale with the highest concentration of foul disease and 'moral and physical abomination.' As the *Tribune* article stated, "Humboldt was wrong and Froude was right, but time

¹⁴⁹ "Health at Panama," *New York Tribune*, March 15, 1908. In *Panama Canal Record* Vol. 1 (Sept 4, 1907 to Aug 26, 1908). 254.

has reformed the conditions which Froude saw as thoroughly as it has corrected the errors which Humboldt cherished."¹⁵⁰

The article's assessment of how these two Europeans were ultimately proved wrong relied fundamentally on a trust in U.S. superiority. While the canal itself was universally viewed as a monumental U.S. achievement, this article lauded U.S. notions of superiority, extending to include sanitation and disease control efforts. As the *Tribune* noted, "the work has been done, or chiefly done, by Americans... it remained for Reed, of the American army, to rob yellow fever of its terrors... moreover, it was under American administration that the knowledge and resources of modern science were applied to the hygienic redemption of the Isthmus."¹⁵¹ For this paper, the ability of Americans to control disease is no less heroic or significant than the building of the canal itself. Both cases, the eradication of yellow fever and the construction of an enormously significant canal, existed primarily as testimonies to the power of U.S. administration and organizational skills. The gradual association of medicine and management through the course of developing disease control efforts to maintain the most productive construction possible led to highly developed medical management skills that allowed for the successful curtailing of tropical diseases as construction proceeded.

¹⁵⁰ "Health at Panama," *Record*. 254.

¹⁵¹ "Health at Panama," *Record*. 254.

The middle years of the Canal construction saw doctors, now able to limit if not entirely control the spread of many of the most deadly diseases, come up against a new struggle. This time, doctors and bureaucrats found themselves working together more closely in order to make Panama legible and to make disease controllable under their specific definitions of health and disease, while working in the context of maintaining a large, viable construction force. This is fundamentally a story of constant difficulty, with numerous issues arising that challenged the creativity and abilities of bureaucrats and doctors alike. Their challenges continued well into the last years of Canal construction, and after its completion.

CHAPTER THREE: THE FINAL YEARS

Throughout the building of the Panama Canal, the bureaucrats in charge of maintaining timely and efficient construction gradually embraced the sanitation reforms enacted by Gorgas and his sanitary officers. Chapter Three will investigate the further development of advanced regulations in the second half of the construction, as well as the logistical challenges of transitioning from a fully functional construction force to a significantly smaller number of workers.

With acceptance of the Board of Health's demands for maintaining health on the isthmus, made more prominent upon Gorgas' appointment as a member of the ICC, the bureaucracy of the ICC and doctors, particularly those sent from the U.S. Army, worked together to create and implement an unprecedented level of regulation and control over nature, based primarily on statistics and data collection. The second half of Canal construction, from around 1909 on, marked an incredible transition in the amount of information collected and the development of formal reports with their own strict templates. This transformation was reflective of a larger reorganization occurring in the United States Army at the same time. Following the war of 1898, the Army's leaders felt the need to adapt the Army into larger fighting units. The main focus of this reorganization, however, was to improve administrative formation and mobilization.¹⁵² As the U.S. military began to improve their data collection in the United States, the bureaucrats on the Isthmus of Panama implemented

¹⁵² Richard W. Kedzior, *The U.S. Army Division in the Twentieth Century. Prepared for the United States Army* (Santa Monica: Rand, 2000) p. 7.

regulations and statistic collection as well, sometimes through templates provided by the U.S. Army, and sometimes of their own creation. The continued effort to control disease and make Panama legible was spurred on by the added goal of creating in Panama a transplanted American microcosm. The continued development of and reliance on the regulations and care provided by the Board of Health is reflective of the constantly developing challenges that required regulation, but also of the pressure from the United States, however implicit, to create a viable community that furnished large volumes and varieties of vital statistics.

As the ICC was a government entity established under Congress, all appropriations, including those of the Board of Health, had to gain congressional approval. The Board was in a strange sort of limbo between independence from the ICC and dependence on the bureaucratic and monetary power it bestowed. At the end of December 1908, Colonel George Goethals, the Chairman of the ICC and Chief Engineer of the Canal project since his appointment by Roosevelt in 1907, wrote to Luke Wright, the Secretary of War. Goethals lauded the success of the sanitary work as a necessary cost, a far cry from the opinion of the original ICC Chairman. As he said, "the sanitary conditions, which were deplorable at the time of the American occupation and considered at that time a menace to the health of all employees on canal construction, have been improved by the construction of waterworks, sewers, and pavements at an expense of about

\$2,240,000 to July 1, 1908.”¹⁵³ He claimed to the Secretary of War that return with interest through the water rates was assured to the United States- a critical assurance that what money is spent on improving sanitation is worth it, not only from the vantage point of improved health, but also by being an expenditure that will eventually pay for itself. A committee of experts, headed by Chief Sanitary Officer Gorgas, decided to request \$1,200,000 for the fiscal year 1909-10, in order to expand and improve the sanitation measures. Goethals submitted their request to Secretary Wright with his approval, and continued in his letter to re-state, twice, that the United States would be paid back for this expenditure and it would greatly help living conditions in Panama and Colon cities. Clearly, the Chairman had a definite understanding of the priorities of the U.S. government back in D.C., who would not look lightly at an expenditure that large that did not seem entirely necessary. It was his goal to make the appropriation seem both necessary and reasonable, and to provide evidence for the effectiveness of the sanitation measures without overwhelming the Congressmen whose job it was to approve the appropriation of funds. The letter from Goethals, with all the supplemental information that allowed the committee to determine the amount of money required to adequately fill the sanitation needs, was quickly approved by Secretary of War Wright. From Wright, the appropriation request was sent to, and approved by, the Secretary of the Treasury, before being passed to members

¹⁵³ U.S. Isthmian Canal Commission, 1905-1914. “Sanitation, cities of Colon and Panama. Letter from the acting secretary of the Treasury, transmitting a copy of a communication from the secretary of war submitting an estimate of appropriation for continuing sanitation...” (Washington, D.C.: Government Printing Office, 1909) (60th Cong. 2d sess.) Library of Congress, Washington, D.C. RA192.A6, Digital copy.

of Congress by the Speaker of the House of Representatives. With all the changing of hands, the appropriation took one month just to be brought before Congress after being submitted by Goethals. This is indicative of the slowness with which bureaucracy moved, and the effect it had upon the activity of the Board of Health. As sanitary measures became more entwined under bureaucratic control, they contended with the administrative challenges more and more.

In addition to the often-arduous path that approvals took, the increasing bureaucratic involvement helped to develop more streamlined and formulaic regulatory manuals. Many of these were adapted or directly pulled from reports already in use in the United States, another way in which ICC bureaucrats irrevocably linked life in the Panama Canal Zone to the mainland United States. By October 1910, the Medical Department of the U.S. Army had redeveloped Form 51, *Report of Sick and Wounded*. Utilized in the United States in a less detailed format since 1867, Form 51 made its way to Panama for implementation in the hospitals of the Canal Zone.¹⁵⁴ This form provided strict outlines for information required every month from “every military post and separate command which is attended by a medical officer or private physician. It will be rendered separately for regular and volunteer troops, that of regulars to embrace

¹⁵⁴ National Archives, Washington, D.C., Records of the Office of the Surgeon General (Army), Record Group 112.2.2.

all data pertaining to civilians."¹⁵⁵ These reports were to be sent to the Surgeon General, and a copy was to be kept with the other medical records. Form 51 is unique in its formality, detailed instructions, and strict template. This form was the final version, used for years after the Canal was completed in 1914.

The way that Form 51 divided the 'items,' or men, demonstrates how social classes were divided on the isthmus, at least according to the Medical Department. The classification of items included officers, white enlisted men, and colored enlisted men as the three main categories listed, although they do stipulate that there are others not listed. These three 'items,' however, indicate the three main social classes in the Canal Zone, at least as far as the military prioritized, with officers occupying the position of highest privilege and colored enlisted men at the lower end of the social spectrum. According to Form 51, the Mean Strength was the number that mattered the most to the Surgeon-General's office, and there are detailed instructions for calculating the Mean Strength each month. It was computed using the 'totals of strength' for every day of the period within the report, meaning the number of men working and not incapacitated. Within each item, the number of men working was divided by the days that were covered under the report, giving the mean strength by item. Adding up these items gave the total mean strength, the number that was seen as most indicative

¹⁵⁵ Army Medical Dept 1913, "Report of Sick and Wounded." National Archives, Washington, D.C., Records of the Office of the Surgeon General (Army), Record Group 112.2.2.

of how well construction, and other work in later years, was progressing.¹⁵⁶ The mean strength was also required for the staff of any hospital in the Canal Zone.

Along with the mean strength, the Army Medical Dept. insisted on knowing the “number of civilians with the command... together with the number of cases of disease and injury among them.”¹⁵⁷ While the desire to know the number of civilians as well as the state of their health was nothing new to Panama, the official place given to it in *Report of Sick and Wounded*, a specific fold of the report, was a shift to increasing levels of bureaucratic control. Following the list of civilians, Form 51, much like records from the beginning of construction, required a report of all births, marriages, and deaths. Again in a departure from the past, however, a specific fold of the form is designated for these events. The requirements for reporting a death in this particular form were similar to those instituted at the beginning of Construction, i.e. date of death, name, sex, age of deceased, and cause of death, demonstrating a degree of continuity in the concerns of those charged with regulating death. In contrast, the requirements for reporting a birth or marriage increased greatly, to now include the occupations and ranks of father/groom, place of birth/marriage, and in the case of a birth, what number child was born to the parents. It may be that keeping track of the number of children in the household helped make it easier to know what the population of women and children in the Canal Zone was, as

¹⁵⁶ Army Med. Dept., “Report of Sick and Wounded.”

¹⁵⁷ Army Med. Dept., “Report of Sick and Wounded.”

well as perhaps being of some use in determining child mortality rates on the isthmus.

Report of Sick and Wounded also requires that a 'report card' for every case during the month of the report be sent along with the form, with an addendum sent when the case has been concluded. Another set of regulations, the *Manual for the Medical Department*, contain the "complete instructions for the preparation, authentication and correction of the report cards."¹⁵⁸ Perhaps the most interesting thing about the report card requirement, however, is the strictness of their preparation. The instructions on Form 51 dictate that "entries on the report sheet, nominal lists and report cards should be made with the typewriter, when possible; should be plainly and carefully written, using permanent black ink, the black record ribbon being preferred."¹⁵⁹ By the finalization of this Form in September 1910, the bureaucratic power of health regulations had extended so far as to dictate the type of ink used in composing a report. Six years earlier, Gorgas was struggling to implement even the most rudimentary changes of screening and fumigation, with the only official reports submitted to higher powers being those composed by himself as Chief Sanitary Officer. The progress in bureaucratic oversight is nothing short of astounding when viewed in comparison to the weak infrastructure developed by Gorgas in the first few years of construction.

¹⁵⁸ Army Med. Dept., "Report of Sick and Wounded."

¹⁵⁹ Army Med. Dept., "Report of Sick and Wounded."

In addition to the regulatory forms perfected by 1910, numerous other regulatory publications became more prevalent in the last years of Canal construction. In 1912, the ICC Press published a *Manual of Instructions for Sanitary Inspectors*, designed by the Department of Sanitation. This manual reinforced many of the goals and expectations of the Sanitary Department from the beginning of the construction effort, but provided a more formal background for the work of these Sanitary Inspectors. The introduction of *Manual* clearly outlined the expansion of a Sanitary Inspector's duties and the rise of their position as one of respect and worth, rather than one given little attention by the ICC in 1904-5. According the 1912 *Manual*, the Sanitary Inspector has duties that "embrace every phase of sanitation, involving not only the health, but the comfort, contentment, and general well-being of the people of his district. He must organize and carry on vigorously, persistently, and smoothly a work of vast importance to the community..."¹⁶⁰ The tacit approval of the work done by these men, as demonstrated in these complimentary words in the introduction, indicated the advanced position of Sanitary Inspectors from their early start. The approving adjectives used throughout this first section are proof of the vital importance of sanitation. Additionally, the scope of sanitation efforts had been dramatically altered. Whereas the job of inspectors was once largely limited in its power and effectiveness, by 1912 it was openly acknowledged that the job of the Sanitary Inspector could not be limited to just fumigating and installing screens.

¹⁶⁰ Department of Sanitation, Isthmian Canal Commission: *Manual of Instructions for Sanitary Inspectors*, (Mount Hope, Canal Zone: I.C.C. Press, 1912). From National Library of Medicine, Washington, D.C. Digital Copy.

Rather, the Sanitary Inspector was transformed into a social leader, a man whose job had immense importance for the community and was finally recognized as such. With the rise of the Sanitary Inspector, Panama was to be healed with statistics and numbers, with doctors' roles becoming subsumed by the Sanitary Inspectors, a sign that health in Panama was dependent, at least in the eyes of those in control, on the preservation and extension of a social body, rather than medicines for individual patients.

With this new status firmly established by the introduction of *Manual*, the rule book addressed in great detail all perceived duties of Sanitary Inspectors, and provided strict expectations for how to conduct one's job in the best manner. The beginning pages outlined the laws of the Canal Zone as applicable to Sanitary Inspectors, with a large focus on the dignity of the Inspector's position and his obligations to the Zone in fulfilling his duty. One of the first points made in *Manual* is a reminder that the laws of the Canal Zone determined any neglect of one's duty to preserve public health was a misdemeanor punishable by law.¹⁶¹ While this was established in the *Laws* at the beginning of construction, the fact that it is still present as an early reminder in *Manual* implied the significance of this rule. It also demonstrated how seriously the work of Sanitary Inspectors was taken, as their failure to properly fulfill their duties resulted in the conviction of a misdemeanor crime.

¹⁶¹ Walker, *Laws of the Canal Zone*. 121.

While this law may not have changed since the beginning of construction, the attitude of the ICC Commissioners and the significantly higher paid engineers towards the work of these Sanitary Inspectors vastly improved. Immediately following this reminder, *Manual* discussed the role of the Sanitary Inspector as educator, rather than merely the enforcer of sanitary regulations. As the canal construction proceeded, the average American on the isthmus gradually began to understand more about disease control and, more importantly, the successful results of that control, as demonstrated by the 1914 memoirs of the American woman, Evelyn Saxton, from her visit to the Canal Zone, and the previously mentioned 1908 *New York Tribune* article praising the health and safety of the isthmus.¹⁶² The Commission recognized this and accommodated this growth in understanding by introducing the Sanitary Inspectors as those working with the community at large, not just following orders to fumigate and conduct inspections. According to *Manual*, “the advancement of sanitation is a matter of education rather than force. Sanitary inspectors should also remember that sanitary regulations often cause considerable temporary inconvenience to the public; and they should endeavor to secure the cooperation of the public by pointing out that the benefits to be derived from aiding the Sanitary Department are of far more importance than the inconvenience caused.”¹⁶³ This section clearly demonstrated the transition from the public as playing a completely passive role in sanitation efforts to

¹⁶² For more on Evelyn Saxton, see Chapter Four.

¹⁶³ *Manual of Instructions*. 7.

becoming actively engaged, and most importantly, capable of understanding the impact of proper sanitation.

In addition to this new role of Sanitary Inspectors as educators, *Manual* also granted a legal power to them that was previously unseen in Panama and the United States. Sanitary Inspectors were given permission to personally arrest an offender without a warrant, albeit only when the inspector witnessed the violation personally, and with the caveat that the prisoner be surrendered to the nearest police officer immediately.¹⁶⁴ While this is still an extremely limited case in which action is deemed appropriate, the fact that the Inspectors were still permitted to act without the presence of a police officer is a pronounced step in their acceptance as viable authorities in the Canal Zone.

Along with these implicit acknowledgements of the growing role and status of Sanitary Inspectors towards the end of the construction effort, *Manual* proceeded with more mundane regulations. These rules were the ones that most affected the work of the Inspectors and dictated how they accomplished their tasks. One example clearly highlighted the growing importance of, and reliance upon, properly filled out reports and charts for the bureaucrats of the Zone. While the importance of these reports was consistent throughout construction, the regulations regarding them and the amount of template forms drastically increased, as shown with Form 51. According to *Manual*, the required routine reports had to be submitted within 48 hours of their due dates, and curve charts

¹⁶⁴ *Manual of Instructions*. 8.

of the prevalence of malaria were required to not only be up to date, but also “displayed conspicuously on the wall of the District Sanitary Inspectors’ offices.”¹⁶⁵ The malaria mandate in particular offered insight into the preoccupations of the Canal Zone officials, with malaria still posing a formidable enough problem to be the one disease specifically mentioned in this section. The typically cyclic nature of malaria transmission was also noted, as the curve charts demonstrated the cases of malaria by month, and were frequently noted to be at their highest in the summer, when the heat and dampness provided the best environment for mosquitoes to breed. With the public display of these charts, too, malaria completed its transformation from a feared killer to a disease that, while still dangerous, could at least be monitored and restrained. The public nature of the chart display introduced to the Canal Zone sanitation efforts the idea of transparency that anybody who would go into the District Inspectors’ office would be able to see the chart and be interested in what it meant.

While in certain cases, the public involvement in the sanitation work on the Canal appeared to be increasing, the role of Sanitary Inspectors was still quite varied and detailed, and the public’s involvement remained at the very superficial level of basic comprehension and granting permission. One of the subjects that grew in the bureaucrat’s estimation and concern was the management of the dead, and it is fittingly one of the first subjects to be addressed, following ‘General Instructions’ and ‘Material and Supplies’ to

¹⁶⁵ *Manual of Instructions*. 10.

acquaint the Inspector with the supplies at his disposal. This chapter demonstrated the increased amount and intensity of regulations surrounding the dead, beginning with the cemeteries in the Zone. According to *Manual*, "District Sanitary Inspectors are responsible for the care of the cemeteries, the care of the dead and the final disposal of their bodies, the issuance of death reports and burial permits, and the keeping of graveyard plans and record books for future information and identification of same throughout the Zone."¹⁶⁶ As the population of the isthmus grew, and the number of dead rose from sheer increase in overall population rather than any increase in rate, the question of disposal became more pressing. Cemeteries in the Canal Zone became highly planned and regulated, and the subject of much debate well into 1914.

In 1906, Chief Sanitary Officer Gorgas received a report of the investigation into Panama graveyards. The report found that there were "seven cemeteries, six of which are under the management of the creditors of Obarrio & Co. a firm that existed in this city some thirteen years ago." These creditors were responsible for specific cemeteries, Jewish, Children, Catholics, Protestant, Chinese, and a burial ground for the poor.¹⁶⁷ The maintenance of cemeteries in the beginning of the construction appears to be largely unstructured, with some, such as those mentioned above, privately managed, and others based more by location than religious or ethnic identity. Gradually, however, the cemeteries

¹⁶⁶ *Manual of Instructions*. 19.

¹⁶⁷ Panama Canal Zone, Health Department. *File No. 77-C-575*. Memorandum by Acting Health Officer (name unknown) to W.C. Gorgas, Chief Sanitary Officer. January 27, 1906. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

transitioned more under the control of the ICC and U.S. military presence. By 1912, the transition is clearly under way, with the Sanitary Inspectors taking on more of a supervisory role over the cemeteries, and graveyard plans being introduced as a necessary part of death management. Two years later, in 1914, another report, this time issued to Col. Charles Mason, Gorgas' successor as Chief Health Officer, addresses the turning over of cemeteries as an impending project, proposing necessary modifications for successful management as well as introducing the possibility of cemetery relocation/the cremation of bodies in order to achieve higher sanitary standards.¹⁶⁸ The issue of cemetery management came increasingly under observation as sanitation itself was given more attention by canal bureaucrats, and the effect was, as in other areas of sanitation, more bureaucracy and more management, with the U.S. taking on more of an active role as the controlling force. This shift from the sanitary management of individual patients to the bureaucratic monitoring and management of the social body extends from birth to the grave, making health in the Canal Zone not about the individual, but rather about the aggregate social body.

In 1912, the cemetery turnover was beginning to take shape. The focus on cemeteries and the proper management of corpses demonstrated a view of death as the final responsibility of sanitary management, with ultimate control over bodies and entities no longer capable of acting. The proper care of dead bodies became considerably more complicated in the final years of Canal construction,

¹⁶⁸ ICC Records; July 25, 1914, Health Officer to Charles Mason. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

with more forms to be filled out and more people to notify before internment, particularly when a death occurred outside the hospital. In that case, the District Sanitary Inspector was required to report the death to the police and local physician, and await their orders for proper disposal. An 'Auditor's Stub' was required before any remain could be interred, and the burying of a person outside cemeteries specifically designated by the Chief Sanitary Officer could result in fines or imprisonment.¹⁶⁹ The area of management that grew the most in its regulatory capacity was the proper transportation and exact disposal of the body. According to *Manual*, bodies had to be shipped, when possible, in boxes lined with lead or zinc. Coffins thus lined were better at preserving the bodies within, which proved particularly useful in hot, humid climates.

In their determination to ensure that these regulations were strictly followed, bodies were accompanied through their entire route from the place of death, until it reached the hospital. In addition to the proper containment of remains and registration of deaths, District Sanitary Inspectors were now required to take charge of a body from the District Physician, and "must remain with the body constantly until delivered at the morgue. An Inspector will accompany the body to Ancon Hospital by the first available train, delivering the body to the official embalmer, who will receipt for same."¹⁷⁰ In this way, not only was death transformed into a highly regulated process that necessitated the intensive and carefully monitored transportation of remains, but it also became a

¹⁶⁹ *Manual of Instructions*. 19.

¹⁷⁰ *Manual of Instructions*. 21.

more economically and politically couched matter. By 1912, human remains were effectively transformed from something to be managed by family and friends in a largely social funeral, to property of the state, stripped of personal identity in the quest to mandate every aspect of the burial process, from escorted transportation to the requirement of ‘receipts’ at every time that a body changed hands. Rather than allowing personally directed burials, the ICC took complete control over the disposal of the dead, leaving a long, detailed paper trail that provided the most complete documentation of movement within the Canal Zone. The photograph below is that of Ancon Hospital morgue, the final destination for remains in the Canal Zone before burial or cremation.



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While 1912 resulted in regulations and statistics covering nearly every aspect of life on the isthmus, and ample data concerning numbers of employees and their location, it was still in the case of managing dead bodies that the most

¹⁷¹ “Ancon Hospital Morgue.” Photograph. U.S. Public Health Service, n.d. *The Panama Canal Historical Society*. From National Archives, Washington, D.C. Digital copy.

regulations and paperwork were generated. According to *Manual*, all deaths were to be reported to the Zone police, the District Physician, and the Chief Sanitary Officer (two copies for non-employees, seven copies for employees).¹⁷² In the case of an American's death on the isthmus, a telegram was to be sent immediately to the Chief Sanitary Officer and the Chief of Laboratory at Ancon Hospital, emphasizing the higher priority Americans held in the eyes of the ICC bureaucrats, themselves American. Throughout the construction effort, the employees who were the focus of most concern were those who were United States citizens, and this is continuously reflected in the 1912 *Manual*.

In addition to the expansion of regulatory power and bureaucratic oversight seen in these instructions, 1912 saw correspondence from an American Consul General in Panama whose papers demonstrated a deep concern and involvement in the long-term maintenance of proper health on the isthmus from a layman's perspective, particularly as far as American employees was concerned. The Consul General was responsible for handling correspondence regarding deaths of U.S. or European citizens, as well as solicitations from advertisers and various inquiries about funding and the status of things in the Canal Zone. A letter dated Mid-June, 1912 from the Consul General, provided "information relative to the identification of the American citizen, John F. Weichers, who died in Santo Tomas Hospital on January 21, 1910. [The Consul

¹⁷² *Manual of Instructions*. 21.

General] examined everything in the records, and every employee who had any connection with this case, and who is now connected with the Hospital..."¹⁷³

Demonstrating the high level of information collected on employees in the Canal Zone, the Consul General was able to describe not only when, where, and with what Weichers was admitted to the hospital and passed away, but also his religion, residency, marital status, occupation, and ability to pay for medical care, more than two years after his death.¹⁷⁴ As the Consul General, his concern was U.S. interests in the Canal Zone, which included the gathering and reporting of information regarding the deaths of American citizens, who typically received more attention, and thus more correspondence.

The Consul General was also given the responsibility of notifying family members of U.S. employees who died on the isthmus. In keeping with this responsibility, the Consul General was also expected to forward on important documents and valuables regarding these Americans. In some cases, this was required years after the death, such as the case of John Haralson, an American who died in Panama in December of 1905. The Consul General requested Haralson's death report in July 1912, nearly seven years after his death. The Superintendent of Ancon Hospital sent a copy of the report to the Consul General, "with the request that you kindly forward same to Mrs. Haralson."¹⁷⁵ It is a testament to the strength of data collection even as it was first developing in

¹⁷³ ICC Records. June 22, 1912. Consul General to Casper L. Drier. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

¹⁷⁴ Consul General to Casper L. Drier, June 22, 1912

¹⁷⁵ ICC Records. July 11, 1912. Superintendent Ancon Hospital to Consul General. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

the beginning of the construction, and the dedication to maintaining these records that a specific death record could be rapidly obtained nearly a decade after the death of said American. The availability of such information throws into sharp relief the social structure of the isthmus, and the importance placed on American citizens first and foremost in the Canal Zone. Throughout the Consul General's available correspondence, black and Chinese workers are never mentioned, and European employees are seldom referenced. When the Consul General mentions European citizens, frequently Greeks, it is as a perfunctory notification to be forwarded to the applicable embassy. American employees are the only ones noticeably treated with any serious degree of correspondence or information, displaying the significantly higher interest in Americans over other nationalities by the bureaucrats of the Canal Zone. It also demonstrated the significantly lower number of deaths for Americans on the isthmus, allowing for the greater level of detail in comparison to the higher volume of the more 'expendable' black laborers. Throughout the entire construction effort, roughly 350 white Americans died from disease and accidents, in comparison to 4,500 black employees.¹⁷⁶ This significantly smaller volume made it substantially easier to collect such information on Americans in the Canal Zone, coupled with the natural tendency of bureaucrats to desire this information.

1912 was also a year of continued improvements in the field of record collection and data for hospitals. After eight years of construction and a vital U.S.

¹⁷⁶ McCullough, *The Path between the Seas*. 610.

presence in Panama, the successful control of disease to a manageable level allowed for bureaucrats involved in the creation of forms and regulations to focus more strongly on developing what statistics were truly necessary, and would continue to be so after the construction was completed. In September, Charles F. Mason, the Superintendent of Ancon Hospital in Panama during the construction of the canal, issued a circular to hospitals and sanitary officers entitled *Instructions for Preparing Admission Slips*.¹⁷⁷ This circular contained a strict template for each admission slip, similar to the *Report of the Sick and Wounded* form established two years earlier. After determining the ward and number of previous admissions, an indicator of the prevalence of certain illnesses among specific populations on the isthmus, the patient's name was to be written, with emphasis on "special care to get the correct name."¹⁷⁸ Married women, as to be expected, were a caveat to the proper reporting of a name. For this special category, women were to be reported with their husband's Christian name first, followed by their Christian name and the couple's surname. This requirement for reporting married female patients puts the role of these women on the isthmus in perspective as largely subordinate entities, identified mainly through their husband's name. The role of women, while significant in terms of reproduction and the continuance of social and cultural norms, was still almost completely superseded by the men in their lives. As reinforced in *Instructions*, women served

¹⁷⁷ George Mason. *Instructions for Preparing Admission Slips*. Issued by Ancon Hospital, Office of Superintendent. Circular No. 326. Sept. 21, 1912. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

¹⁷⁸ *Instructions for Preparing Admission Slips*.

secondary roles in the Canal Zone, and were to be treated as such, even in the case of hospital admission.

Following the names of admitted patients, the department from which the patient came, i.e. Subsistence, Civil Administration, Panama Railroad, Quartermaster, etc. was required. Following their department, the admission slip was to include birthplace, with a special indication if the patient was an U.S. citizen, residence, age, gender, and color. The only color distinctions made for the admission slip are 'white' or 'black,' with "all patients who are believed to have negro blood are to be considered black."¹⁷⁹ In addition, the admission slips to hospitals, which largely remained segregated based on color, solely discriminate between two racial groups, rather than accounting for the various European and Asian ethnicities, as well as Latin-American laborers. This clearly demonstrated that the highest preoccupation, as far as race was concerned, was with the distinction between white and black employees and their families.

Along with their department identification and general features, *Instructions* wanted the date at which the patient was last employed. As regulations increased, so did the oversight of bureaucrats in control of the construction effort, and more importantly, the expenditures. For these bureaucrats, reducing hospital privileges was a quick way to cut costs, particularly as employees were categorized upon employment. According to *Instructions*, ex-gold employees, and their families were not entitled to hospital

¹⁷⁹ *Instructions for Preparing Admission Slips.*

privileges, while ex-silver employees were still regarded as employees if they fell ill within one month of terminating employment. This categorization helped to limit the amount of money spent on healthcare, at the same time as the number of people who had to pay for their time in hospital increased.

After these logistic requirements, *Instructions* turned to the actual reason for the admission slips- the cause of the hospital visit. Included in this portion of the admission slip is the date and hour of the patient's first reporting to the district physician. This marked the beginning of an employee's sick leave, and as such was a crucial detail in the admission of any employee to the hospital. A template of the slip itself was included, with a section for Diagnosis and the patient's status (i.e. improved, not improved, or transferred). The last information required, indicative of the uncertainty still present in hospital admissions, was the contact information for a patient's family or friend, who would be notified in the case of the patient's death¹⁸⁰. The process for admitting someone to the hospital, be they employee or child, had become by 1912 highly regulated and detailed, a way of limiting costs and expanding knowledge about the medical care provided on the isthmus.

In addition to the demonstration of long-term health maintenance and recordkeeping in the Canal Zone, 1912 also saw the beginning of plans for healthcare following the completion of the construction effort. With the projected completion looming, ultimately two years ahead of schedule, the Office of the

¹⁸⁰ ICC Records, *Ancon Hospital Admission Form*. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

Surgeon General in Washington compiled a memorandum for the Secretary of War in early November, professing his opinion that “it is assumed that the present system of hospitals will be continued as a somewhat reduced scale for the purpose of caring for the employees of the Government engaged in operating the canal. It also will be necessary to have abundant hospital facilities for the military garrison... If hospital facilities are afforded for their families also as is the case at present and as would undoubtedly be necessary, a hospital service for approximately 5000 civilians would be required... there should also be added twenty-five per cent for the Quartermaster Corps and families and servants, making a total of 11,700.”¹⁸¹ With the labor force peaking at nearly 30,000 laborers during the construction, the completion of construction meant a drastic cut in isthmian construction employees, but also the continued presence of a significant amount of employees and families in the American Canal Zone for maintenance of the canal. The necessity of planning well in advance for the maintenance of health also indicated the delicate balance perceived by those in charge of sanitation and disease control on the isthmus. Despite the heavily lauded success, diseases like malaria and pneumonia still persisted, particularly among the nonwhite, non-American labor force, and would continue to disrupt the unqualified success of the ICC’s disease control efforts.

In April 1914, the canal was near completion, but the problem of providing adequate, cost-effective healthcare still plagued those in charge of

¹⁸¹ George H. Torney, Surgeon General *Memorandum for the Secretary of War*.. November 8, 1912. War Department, Office of the Surgeon General, Washington. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

sanitation and disease control in the Canal Zone. Charles Mason, now the Chief Health Officer as Gorgas had recently accepted the role of Surgeon General for the U.S. Army, sent a letter to the Superintendents of Ancon and Colon Hospitals regarding the challenges of providing care for malaria patients. One of the largest challenges facing malaria was its endemic nature and the possibility of it remaining contagious for an extended period of time. Ideally, employees would remain in hospital throughout their entire convalescence, but with the substantial number of employees on the isthmus and the desire of bureaucrats to cut costs wherever possible, it became “impracticable to hold in hospital silver employees suffering from malaria a sufficient length of time to render them non-infective... [As such] it has been suggested that when such cases are returned to work they be required to report to the District Physicians and that the latter advise the hospitals if there is any necessity for continuing anti-malaria treatment.”¹⁸²

Despite advanced disease control efforts, constantly implemented throughout the construction effort, malaria still remained a problem in 1914. According to the rigorous statistics kept of hospitalizations, “while only 14 employees died of malaria in 1913-1914, more than 2,200 were hospitalized for the same disease.”¹⁸³

Thus, while the fatalities due to malaria decreased drastically by the end of the canal construction, the disease itself could not be completely eradicated, as was hoped ten years earlier.

¹⁸² *File No. 37-H-8*. George Mason to Superintendents of Ancon and Colon Hospitals. April 9, 1914. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

¹⁸³ McCullough, *The Path Between the Seas*. 582.

With the completion of the canal just a few months away, in August 1914, the issue of reducing the labor force in the Canal Zone was pushed to the forefront. While this issue was brought for consideration two years earlier, in 1914 the necessity and challenge of minimizing the labor force was more pressing than ever before. In April, Goethals issued a circular to the entire Canal Zone, regarding deportation from the isthmus based on health. While nobody was to be forcibly deported, Goethals authorized the Chief Health Officer of the Panama Canal to “certify for deportation from the Canal Zone employees known to be chronically sick and incapacitated for further work... the Chief Health Officer will designate a medical examining board composed of physicians employed by The Panama Canal, which will examine and report to the Chief Health Officer on the fitness for further work of all patients who come before it.”¹⁸⁴ Health committees, a common presence on the construction effort for evaluating the fitness of employees, were now utilized to select employees to leave the Canal Zone entirely, not just for evaluations as to workability. As the canal’s completion came closer, the need for able-bodied, healthy laborers to continue at the canal became more pressing, and the desire to screen for these healthy employees became a higher priority of the Canal’s leaders, who were finally able, through the reduced numbers of men necessary and increasingly good reputation of the Canal Zone’s safety and culture, to be more discriminating in the people they employed.

¹⁸⁴ George W. Goethals, *Deportation of Invalids*. The Panama Canal Office of the Governor, Circular No. 619. April 1, 1914. From National Archives, Washington, D.C. Record Group 185. Digital Copy.

On August 15, 1914, the *Ancon* made the first official transit of the Panama Canal, with no dignitaries and little fanfare. After months of crisis, Europe had exploded into World War I on August 1. While the United States did not become involved until 1917, the war irrevocably changed international relations and affected countries worldwide. While the Panama Canal was undoubtedly a monumental accomplishment, its opening paled in comparison to World War I. Until the war ended, traffic through the canal was relatively slow, averaging two thousand ships a year. By 1924, however, ten years after the canal opened, more than five thousand ships were going through the canal each year.¹⁸⁵

In 1916, the Panama Canal had been operational for two years, but many hallmarks of the decade-long U.S. construction still remained. The Panama Canal Health Department, a United States government entity operating under the ICC, issued in 1916 a bilingual pamphlet. This pamphlet, entitled *Sanitary Rules and Regulations for the Cities of Colon and Panama in the Republic of Panama*, outlined health and sanitation requirements for the Canal Zone, under control of the Chief Health Officer for the Canal Zone. The pamphlet was careful to state that the President of the Republic of Panama accepted all sections of the Sanitary Rules and Regulations. The Sanitary Rules and Regulations demonstrated the continuity of basic tenants of sanitation throughout the construction of the Canal,

¹⁸⁵ McCullough, *The Path Between the Seas*. 611.

as well as the perseverance of notions concerning the spread of disease and control through the dead.

Throughout the construction of the Canal, health officers played a large role in preventing the spread of disease and maintaining order, particularly in the main cities of Panama and Colon. While the maintenance of order in the sense of preventing fights, burglaries, or other crimes was a police matter, the Department of Health extended the prevention of disorder to the eradication of vehicles for disease transmission. One of the duties of the health officers in these cities was to prevent the presence of 'nuisances.' Strong regulations against the presence of dangerous nuisances were maintained in the pamphlet of 1916, which carefully stipulated what qualified as a nuisance. According to *Rules and Regulations*, nuisances included buildings "not sufficiently ventilated, drained, lighted, or cleaned, and whatever renders soil, air, water, or food impure or unwholesome."¹⁸⁶ In addition, the "propagation or harboring of insects, rats, or such other forms of life as may menace the health of the community" was an illegal nuisance.¹⁸⁷ By regulating these nuisances under the umbrella of sanitation control, further regulations could be imposed on city life, ensuring the more orderly and uniform maintenance of communities while at the same time controlling the spread of disease.

The Health Department continued to be careful with the description of disease, maintaining an extensive list of possible infectious and venereal

¹⁸⁶ ICC, "Sanitary Rules and Regulations..." 13.

¹⁸⁷ ICC, "Sanitary Rules and Regulations..." 13.

diseases, as well as those of an unknown origin, with which to classify the sick. These diseases were referred to as 'notifiable diseases' by the Health Department, and their presence was, even more than during the Canal construction, accompanied by strict regulations. While many earlier regulation manuals issued by the Department of Sanitation under the Isthmian Canal Commission required notification for the most serious infectious diseases, the list of "notifiable diseases" expanded in the 1916 pamphlet.

For physicians practicing in the Canal Zone, fear of these "notifiable diseases," and the panic that typically accompanied them throughout the community, was such that a detailed report was required with every appearance. According to the *Rules*, "every physician who treats or examines any person suffering from, or afflicted with, or suspected to be suffering from or afflicted with, any one of the notifiable diseases shall immediately report such case of notifiable diseases in writing to the local Health Officer."¹⁸⁸ For the Health Department, even suspicion on the part of the physician was enough to merit a detailed report. Included in the report, other than the date and disease, were many descriptive details concerning the patient. In addition to name, age, and sex, the "color, occupation... and school attended or place of employment of patient," were also required portions of the physician's report.

Despite the successful efforts to eradicate yellow fever on the isthmus by 1906, fear of the disease remained strong in Panama, to the point where, a decade

¹⁸⁸ ICC, "Sanitary Rules and Regulations..." 25.

after Gorgas famously demonstrated to his doctors the 'last case' they would ever see, *Rules* still maintained a section on yellow fever management.¹⁸⁹ If a case of yellow fever was reported to the Health Officer, it was his duty "to cause the person afflicted to be removed to the hospital or other building provided for such cases."¹⁹⁰ If the patient could not be removed from his home, a series of rules were to be observed, including the constant enclosure of the patient by mosquito netting.¹⁹¹ Thus, despite the absence of yellow fever in the Canal Zone for several years, fear of the disease was still strongly embedded in the local consciousness, and regulations were provided to ensure the safe management in the case of reoccurrence.

Leprosy was another disease that received special attention both during and after the Canal's construction, most likely due to the universal social stigma associated with it. The disfiguring nature of leprosy, along with centuries of negative associations, contributed to making leprosy an isolating disease, both physically and in its treatment in *Rules and Regulations*. Per *Rules*, "all cases of leprosy, in which the diagnosis is confirmed by the Board of Health of the Canal Zone, shall be sent to the colony provided for the isolation of such cases."¹⁹² Throughout the construction of the Canal, an isolated leper's colony was maintained for this purpose. The provisions for a leper colony as well as the regulations surrounding leprosy remained constant throughout the Canal's

¹⁸⁹ "Construction Days: Ancon Hospital 1904-1914." 10.

¹⁹⁰ ICC, "Sanitary Rules and Regulations..." 29.

¹⁹¹ ICC, "Sanitary Rules and Regulations..." 29.

¹⁹² ICC, "Sanitary Rules and Regulations..." 36.

construction, as well as the years immediately following. The punishment outlined by *Rules* for “concealing or secreting, any leper” were among the most severe, amounting to a fine of “not more than one hundred balboas.”¹⁹³ Balboas, the Panamanian currency, were equivalent in value to U.S. dollars. Typically, other fines for health violations were between ten and fifty balboas, indicating the severity with which leprosy was still viewed by health authorities in 1916.¹⁹⁴

The cultural demand for isolation in the face of uncontrollable or poorly understood diseases is further reinforced in the pamphlets section on quarantine. Again, the refusal of isolation for those considered to be sick or at risk for sickness resulted in heavy fees, of “not less than twenty-five balboas nor more than one hundred balboas for each offence.”¹⁹⁵ If a person under quarantine endangered others by leaving the quarantine station, they experienced the same penalty as those keeping lepers from the isolation of a leper colony.

As during the construction of the Canal, some of the strictest regulations outlined in *Rules and Regulations* concerned the proper disposal of the dead. While the fines were not as severe for these types of transgressions, typically between ten and fifty balboas, the number of rules that undertakers and physicians had to follow was very extensive. *Rules* provided a list of contagious diseases, from plague to smallpox, all of which required the special attention of undertakers. One of the most detailed mandates for the care of the body of persons dead from these infectious diseases concerned their disinfection.

¹⁹³ ICC, “Sanitary Rules and Regulations...” 36.

¹⁹⁴ ICC, “Sanitary Rules and Regulations...” 38.

¹⁹⁵ ICC, “Sanitary Rules and Regulations...” 38.

According to the pamphlet, the body had to be disinfected “by wrapping it in several thicknesses of cloth wrung out of a solution made by dissolving 60 grains of corrosive sublimate... in one gallon of hot water, or out of a solution made by dissolving 6 ounces of pure carbolic acid in a gallon of hot water.... Every part of the body shall be enclosed in the cloth and not thereafter exposed to view.”¹⁹⁶

Undertakers would be fined for noncompliance in the proper disinfection as well as other areas of regulation.

In addition to the strict regulations surrounding the work of undertakers or others caring for the dead, *Rules* continued the requirement of detailed reports for the dead. These reports included the exact place of death, conjugal condition, exact age in years, months, and days, occupation, birthplace, and the name and birthplace of the decedent’s mother and father. In addition, a required component was “color or race, as white, black, mestizo (or other negro descent), Indian, Chinese, Japanese, or other.”¹⁹⁷ This detailed description of the decedent’s race allows insight into the ethnic make-up of laborers in the Canal Zone as well as those most likely to immigrate to or remain in Panama, as well as offering a view into the priorities of classification and racial views of those in command of the Canal Zone. Another fascinating requirement was the “signature and address of informant,” a precaution to ensure that a person dead of infectious diseases was easily traceable. Finally, the certification of medical attendance was required, with a detailed description by a medical authority of

¹⁹⁶ ICC, “Sanitary Rules and Regulations...” 38.

¹⁹⁷ ICC, “Sanitary Rules and Regulations...” 40.

the individual's death. This physician's report was supposed to include specific tracing of complications throughout the individual's illness, as well as, perhaps most importantly, "whether [the death was] attributed to dangerous or insanitary conditions of employment."¹⁹⁸ The Commission, through intense regulations applied to not only the living, but also the dead, benefited indirectly from the management of corpses. The numerous cemeteries, and their subsequent relocations, served as a sort of claim staked in the Commission's name, a reminder of the casualties of the Canal project but also the fact that the construction continued successfully in the face of challenges to life on the isthmus. Sanitation and its intimate connection with death, remained forefront in the minds of those responsible for the Canal Zone's health.

¹⁹⁸ ICC, "Sanitary Rules and Regulations..." 41.

CHAPTER FOUR: DROLL STORIES- PERSONAL EXPERIENCES OF THE CANAL

As construction continued and sanitation became more effective, more Americans immigrated to the Isthmus, either to work or join husbands and relatives. The presence of disease and ways in which health regulations affected their personal lives were relayed in letters and journals, offering a fascinating perspective into the ways that ordinary Americans experienced this revolution of disease control, and more particularly, how their experiences diverged from those of the U.S. doctors on the isthmus. Chapter Four will investigate select writings of these ordinary Americans, published both during and after the Canal's construction. These sources offer a glimpse into the sometimes unexpected interplay between cultural norms and sanitary principles, and how these interactions changed over time, occasionally clashing but also at times reinforcing each other. The publication and sharing of these personal experiences also divulges much about how the Panama Canal was seen. From the challenges facing those responsible for healthcare in the Canal Zone developed the gradual emergence of an idea in the minds of average Americans of U.S. superiority, of the triumph of U.S. scientists over primitive ideas and the tropical landscape of Panama. Finally, Chapter Four will also investigate the writings of a wealthy visitor from Jamaica who traveled to the Canal in 1912. His fascination with the sanitation work on the isthmus is a wonderful example of the international

impact of the Canal, and the creation of a legend of U.S. triumph in the minds of those abroad as well as in the United States.

In 1913, the popular and prolific author Logan Marshall, the pen name of Logan Howard-Smith, published *The Story of the Panama Canal*. While the canal itself was not yet complete, Marshall claimed that, “no task has ever been undertaken before which can compare with it either in magnitude or difficulty, and the great waterway will stand forever a monument to the dauntless courage, infinite resourcefulness, ingenuity and administrative ability of the American people.”¹⁹⁹ Marshall’s work was full of praise for the American construction, proclaiming it as one of the most significant achievements the United States had seen. A chapter dedicated to the “Health Problem” revealed how completely Marshall supported the U.S. sanitation efforts, fully heroicizing the efforts of U.S. doctors rather than acknowledging the struggles by healthcare providers and sanitary inspectors to first develop the necessary regulations and then implement them. Marshall focuses on “the wonderful transformation which has converted this land of pestilence and death into an abode for Americans which is as healthy as the average city in the United States.”²⁰⁰ This simple statement reveals much about how Americans were beginning to romanticize the canal, even as it was not yet complete. First, Marshall’s description of the transformation negated the struggles to accomplish it, even as he praises the work done. More importantly,

¹⁹⁹ Marshall, *The Story of the Panama Canal*. 7.

²⁰⁰ Marshall, *The Story of the Panama Canal*. 7.

Marshall's comparison of Panama to a city in the United States demonstrated that, not only was the United States the standard to which Panama, and by extension all other tropical countries, were to be held, but it also showed that comparison of a city in Panama to one in the United States is, in his mind, the highest possible praise for the disease control efforts.

His chapter outlined the work done to successfully combat disease, but constantly remained focused on the nobility of the work and the incredible success, making those in charge of disease control heroes, rather than men who genuinely struggled against disease and, often, the constraints of bureaucracy. Marshall's popular book is a perfect example of the romanticizing of Panama, made more romantic by the 'triumph' of the superior United States over a place that had been a 'deathtrap' only ten years earlier.

Memoirs published after the completion of the Panama Canal, however reflective of the time during which the person visited the Canal Zone, also told the stories in the voice of one who knew the Canal had been successfully completed. One such work is the memoir of Evelyn Saxton, an example of an individual who would attempt to create a story about what Panama was, what the doctors did, and what life in Panama was like. Saxton's memoir not only provided a layman's perspective of healthcare on the ground in Panama during construction, but also helped with the mythologizing of the Canal construction, and making the story of U.S. superiority. Back in February 1905, as the sanitation

measures were beginning to show results, Saxton first left New York for Panama City, intending to join her husband. In 1914, the year of the Canal's completion, Saxton published her memoirs of her time in Panama, *Droll Stories of Isthmian Life*. The book is a fascinating glimpse into life in the Canal Zone from a white, presumably Northern, female American perspective at the height of the construction effort. Saxton proved to be highly insightful, and many of her comments, even on the journey to Panama, revealed the prevailing sentiment of common citizens towards the Canal. Of her fellow passengers, Saxton said, "a number of tourists were on board bound for West Indian ports, for at that time none of them would have dreamed of stopping off at Panama... there were [also] several nurses for the American hospitals on the Canal Zone..."²⁰¹ These two groups of passengers by themselves say much about the cultural landscape of Panama in the beginning of the construction effort. First, the impossibility of visiting Panama as a tourist demonstrated the prevailing belief in that country's danger, most especially to one's health. In addition, the movement of nurses indicated that skilled nurses were needed in Panama, as well as the fact that many of these nurses were from the United States. Saxton also comments on class divisions, particularly in her somewhat acerbic evaluation of several physicians' wives, who "felt themselves of such high degree in the profession as to positively refuse to occupy state-rooms in that part of the ship where the nurses had been assigned. They refused to eat at the same table with them, and

²⁰¹ Evelyn Saxton, *Droll Stories of Isthmian Life* (New Orleans: L. Graham Co. 1914), <http://archive.org/details/drollstoriesofis00saxtrich> (Accessed July 2011). 7.

never, by any chance, would they sit in company."²⁰² Clearly, healthcare providers lived and worked in an environment in which their professional credentials correlated directly to their social standing, which in turn extended to family members and social situations.

On Saxton's journey from the Colon port to Panama City, she met a train conductor who gave her the ominous advice to procure a coffin. In their conversation, the conductor told her, "All the folks that come in on this train'll be measured for their coffins as soon as they land at Panama. Folks is dyin' like sheep here now with yellow fever, and the place ain't fit for Americans to live in."²⁰³ Saxton, despite only recently describing Panama as a place nobody would think of visiting, took the opportunity to then inform the mistaken conductor that, according to the information she was able to access in the United States, only a small number of people had actually died from yellow fever. This exchange is a glimpse into two ways in which health on the Isthmus was evidently perceived, as well as, perhaps more significantly, the way in which health was portrayed to those in the United States. On the one hand, the conductor's attitude displays the pervasive fear of diseases, particularly yellow fever, which led to an exaggeration of the real dangers, in the minds of both Americans on the Isthmus and some back home who remained terrified of Panama's dangers.²⁰⁴ Another apparently common reaction is mirrored in Saxton's insistence that the death toll from yellow fever was not actually that

²⁰² Saxton, *Droll Stories of Isthmian Life*. 8.

²⁰³ Saxton, *Droll Stories of Isthmian Life*. 12.

²⁰⁴ McCullough, *The Path Between the Seas*. 421.

high, relying on the increasingly positive reports regarding disease control. The reports that reached the United States were of consistently improved conditions and disease control, and evidently directed towards increasing U.S. interest in Panama.

Despite her desire to believe that proper health was not a problem on the Isthmus, Saxton found herself alone at the Panama train station with no husband to greet her and a young Panamanian who informed her that her spouse was likely a patient at Ancon Hospital. Ancon Hospital was built during the French construction effort, and underwent drastic renovations and constant expansion during the U.S. construction to become the largest and most advanced hospital in the Canal Zone.²⁰⁵ Wards were divided by gender, race, and in the case of diseases like yellow fever, infectiousness and need for increased mosquito netting. Saxton reluctantly took a coach to the hospital gatehouse, where she was told that her husband “had been admitted to the yellow fever ward the night before. There were several men suspected of having yellow fever, and he was among them. [She] was told that it would be impossible to see him, as he was very ill and would not recognize [her].”²⁰⁶ In addition to the difficulty faced by a lone woman in Panama, this experience demonstrated the sanitation regulations of 1905 in action. Those suspected of having yellow fever were immediately removed to the hospital for further monitoring of their condition. In addition, the yellow fever ward was established as an entirely separate ward, specifically

²⁰⁵ “Construction Days: Ancon Hospital 1904-1914.” 7.

²⁰⁶ Saxton *Droll Stories of Isthmian Life* 15.

intended for the care of patients either with or suspected of having yellow fever. The thoroughness with which these men were identified and confined to the hospital ward demonstrates the fear of an outbreak in the Canal Zone as well as the strictness of yellow fever regulations in the beginning of 1905.

With her husband in isolation, Saxton found herself at the Central Hotel in Panama, in a 'disreputable apartment' for \$5.00 gold a day.²⁰⁷ In her description of the room, she mentioned that the beds were "incongruously draped within white net, such as is used by milliners. The servant told me that the net was used to keep mosquitoes from biting the sleepers."²⁰⁸ That Saxton described the netting in such a foreign way demonstrates how little most people knew about disease contagion and control, particularly coming from the northern United States. The institution of mosquito control efforts like netting and the drainage of breeding grounds had helped to limit malaria in the southern United States, but were less prevalent in the North, particularly at the beginning of the twentieth century.²⁰⁹

Saxton spent many days in the city, making her way to the hospital to check on her husband's health, and occupying herself with observing those around her. She went into great detail describing the work to make Panama City a habitable environment, which she found particularly fascinating. As described in *Droll Stories*,

²⁰⁷ Saxton *Droll Stories of Isthmian Life* 16.

²⁰⁸ Saxton *Droll Stories of Isthmian Life* 17.

²⁰⁹ *Malaria Prevention*, <http://www.news-medical.net/health/Malaria-Prevention.aspx> (Accessed April 4, 2012).

The common people had never formed habits of cleanliness, and it was an interesting sight to see the sanitary squad at work cleaning out their houses... Two great wagons, containing barrels filled with oil and disinfectants, were drawn up to the doors of the houses, which were to be cleaned. A rubber hose would be attached to the street hydrant and, after the rooms were carefully prepared with disinfectants, the water would be turned on and a number of men would proceed to scrub the ceilings, walls and floors. Then the oil would be sprinkled upon the spots outside which were thought might be breeding-places for mosquitoes. That rubbish, which is so dear to the heart of every housekeeper in the world, and which is to be found in a greater or less degree in the house of the banker and laborer alike, when discovered in the houses of the poor Panamanians, was confiscated by order of the head of the sanitation department and conveyed outside of the city and burned. In this way Panama was converted into the clean, well-ordered city it is to-day, and to Colonel Gorgas is due the credit of having made it so.²¹⁰

Saxton's description of the actual process of sanitizing a house demonstrated a layman's perspective of what happened when sanitary inspectors went to houses in the Canal Zone, observing strictly out of interest rather than any

²¹⁰ Saxton, *Droll Stories of Isthmian Life*. 20-1.

understanding of the techniques and their purpose. Whereas the regulations and reports merely say that a house or building was successfully fumigated and sanitized, Saxton's description shows how that fumigation occurred, from the perspective of someone who did not exactly know the regulations leading to the cleaning. The photograph on the following page of a man spraying larvacide against mosquitoes is one example of what Saxton would have seen on a regular basis as the work done by the sanitation squads. Her primary interest in the work done on these houses was the effect it had on making Panama a more comfortable and habitable place to live, rather than from any appreciation of their sanitary effects or comparative novelty as a means of disease control.

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Saxton, through her description of meeting an old friend of hers from Boston, also offered a layman's perspective on the experience of quarantining in

²¹¹ "Mosquito Sprayer, Miraflores, C.Z." Photograph. U.S. Public Health Service, n.d. *The Panama Canal Historical Society*. From National Archives, Washington, D.C. Digital copy.

the face of possible yellow fever outbreaks. Her friend was “a member of Colonel Gorgas’ sanitary squad. He told [her] that two men had been taken from the Central Hotel that morning, and it was found that they were suffering from yellow fever.”²¹² According to the sanitary rules already in place, the discovery of yellow fever patients in a hotel meant the entire place would be closed, and those other residents, like Saxton herself, would have to find somewhere else to live temporarily. While Saxton was more focused on the inconvenience and worry caused by no longer having a place to live, it is worth noting that this is yet another example of the broad impact of Gorgas’ sanitary regulations, even as they were still being developed to their full potential. When Saxton returned to the hotel, she found “the sanitary squad at work cleaning out the house... [In her room] the walls and the ceilings had been cleaned, and the color of the paint was quite visible. The color had been thoroughly soaked with the disinfecting fluid...”²¹³ Upon seeing her room, Saxton was under the impression that it had been properly sanitized, and therefore there should be no objection to her continued residence there. She was quite surprised when she received a notification that she must find another place to live. As the eminent contemporary surgeon Ewing Mears stated in discussing the sanitation regulations in the early construction days, “disinfection and fumigation are practiced in all buildings in which cases of infectious diseases have occurred. Permits to repair buildings and to occupy them temporarily or permanently

²¹² Saxton, *Droll Stories of Isthmian Life*. 21.

²¹³ Saxton, *Droll Stories of Isthmian Life*. 22.

must be obtained from the health officials.”²¹⁴ The contrast of Saxton’s observations and Mears’ description of the actual regulations offered a glimpse into how the sanitary measures were intended, and how they came across to average citizens on the Isthmus. It also revealed, like with the bed netting, how naïve Saxton, and presumably many others on the Isthmus, truly were about the precautions necessary for maintaining good health in Panama’s challenging tropical environment. Whereas Gorgas and his sanitary squad saw the evacuation of any building in which a yellow fever case had been found as a necessity for preserving life, to many in the Canal Zone it was little more than an inconvenience that seemed unnecessary.

Saxton’s personal experiences also revealed the difficulty faced by American doctors in Panama in asserting themselves as the medical authorities for native Panamanians and laborers from the West Indies. Many of these inhabitants chose to rely on ‘quack’ doctors, as described by Saxton, who had no license and were not affiliated with one of the American-run hospitals. When Saxton awoke one morning in her new tent to find her foot swollen from what she imagined was a fatal tarantula bite, she asked Maitland, a sort of caretaker, to procure for her a doctor. Maitland returned quickly with a ‘doctor,’ who declared that she must have her foot taken off, at the risk of otherwise being dead within 24 hours. While resigning herself to her fate, Saxton sent for Martin Luther, an American man who took upon himself the role of her protector. Upon

²¹⁴ James Ewing Mears, *Triumph of American Medicine in the Construction of the Panama Canal* (Philadelphia: Wm. J. Dornan, 1913). 32.

his arrival, Luther pronounced Saxton's affliction to be in fact the bite of a young scorpion, which had significantly less dire implications. He immediately sent the doctor away, informing Maitland that if he ever called the 'doctor' again, he would be fired. Luther also informed Saxton that the 'doctor' had in fact been using rusty hundred-year-old knives, inadvertently causing a patient to die of blood poisoning, resulting in his loss of license.²¹⁵ Saxton's story was an example of the perils facing those living on the isthmus, although most afflictions often proved to have relatively minor consequences and were treated with relative ease. While this story appeared to be an extreme example, 'quack' doctors were in fact a common presence on the isthmus, and something that sanitary inspectors and U.S. physicians had to constantly contend with.

Droll Stories, while written from the perspective of a woman with no medical experience or known profession, was unusually insightful and offers a layman's perspective of life in Panama during the construction of the canal. Her story, which was published after the canal had been completed, offered retrospective descriptions of the canal in 1905 and insight into the perceptions of the canal in 1914. This retrospective look failed to take into account the ways in which the doctors struggled to make people understand disease transmission, and instead lauded the success of these men as heroes. The romanticizing of the Canal and the men who were responsible for its construction by both Saxton and Marshall remains a valuable demonstration of how fully the sanitation and

²¹⁵Saxton, *Droll Stories of Isthmian Life*. 29.

healthcare efforts worked. Noted by Saxton as interesting curiosities of Panamanian life in 1905, by 1914 they were transformed, from cost-calculating efficiency measures into the noble work of many to secure health for Americans and Panamanians alike, and as worthy of note and praise as the work of the engineers themselves.

In addition to the published works of Americans in the United States that romanticized the Panama Canal and lauded the success of those 'heroes' in control, many Central American and Caribbean visitors contributed to the legend of U.S. triumph in Panama. In October 1912, the Englishman J.H. Levy, esquire, presented his observations from a recent trip to the Canal Zone to a meeting of the elite men of Brown's Town, Jamaica. Published throughout the island of Jamaica, Levy's talk, entitled "The Vivid Impressions of Mr. J. H. Levy- Excellent Sanitation: Not a Fly or Mosquito to be found on the Canal Zone," described how "it is doubtful if any other nation could or would have undertaken so stupendous a work as building the Canal with the same amount of certainty, and success as the American Nation."²¹⁶ Levy's work was based on his personal observations of the success already achieved through intense work and constantly varying challenges.

One of Levy's first observations in Colon was the "complete sanitation and cleanliness... a complete system of sewerage, concrete side-walks, streets

²¹⁶ "Interesting Description of Panama Canal- the Vivid Impressions of Mr. J.H. Levy- Excellent Sanitation- Not a Fly or Mosquito to be Found on the Canal Zone," *The Daily Gleaner*, October 28, 1912. <http://www.rootsweb.ancestry.com/~jamwgv/panama.htm>

clean as a new pin, and everywhere, cleanliness and sanitary completeness... [the ICC] had the power at any time, not only to enforce, but to do the sanitation themselves in case of failure by the Panama authorities."²¹⁷ Not only was Levy impressed by the cleanliness of the city through the U.S. sanitation efforts, but he also admired the insertion of the American ICC into Panamanian life. Levy also commented on the prevalence of mosquito netting, provided in every building by the time of his visit. He observed that the mosquito netting and prevalence of oil deposited everywhere there was standing water were the two main methods of insect control, with the result that, "in Colon, and indeed the entire length of the Canal Zone into Panama, no mosquitoes or flies could be found."²¹⁸

The extremely positive reaction to the sanitation efforts, along with no demonstrable appreciation for the extreme challenges facing the doctors and sanitary inspectors, demonstrated the tendency on the part of foreigners, as well as Americans, to depict the transformation of the canal construction from a dangerous, costly effort into a romanticized triumph for the United States. Levy's perception of the canal visit as a positive surprise shows how the Canal construction became a way for the United States to achieve international credibility, to prove that not only could Americans build a transoceanic canal, but they could also control the environment in which that canal was built.

The construction of the Panama Canal, and its treatment by the ICC as a microcosm of the United States, allowed for the gradual establishment of bio-

²¹⁷ "Interesting Description of Panama Canal."

²¹⁸ "Interesting Description of Panama Canal."

power in the Canal Zone. By exerting control over nearly every aspect of life for individuals on the isthmus, the ICC was able to create a carefully managed society based on knowledge from scientific advances and extensive data collection. The demonstration of bio-power on the isthmus eventually became a strong feature of the Canal Zone, to the point where Americans and foreigners without medical expertise were able to recognize the importance of disease control efforts and data collection to maintaining the careful order established by the ICC. In the decade-long construction of the canal, the ICC established its hold over death, and more so life, in the Canal Zone, so thoroughly that bio-power in the Zone became an entirely incorporated aspect of life.

CONCLUSION

The Panama Canal was a monumental achievement in engineering, disease control, and perhaps most significantly, U.S. empire building. The ability of the United States to advantageously insert itself into Central American interactions, and gain uninhibited control over a tract of land, was the first step towards establishing a U.S. imperial presence in Central America. The success of U.S. imperialism in this region largely relied on the success of the canal construction. For many Americans, from doctors to politicians to writers, the ability to create in the Canal Zone an environment that was considered by them to be safe for Americans, was one of the most significant aspects of the construction's realization.

Costing almost \$375,000,000 by its completion, the Panama Canal was undoubtedly the largest U.S. engineering project to that point.²¹⁹ Panama posed an enormous challenge to those responsible for building a canal. While the engineering itself was constantly beset by problems from the planning to unpredictable mudslides, the issue of disease control was possibly the most important aspect to the success of the canal construction. Ensuring that workers on the isthmus, from the highly trained American engineers and doctors to the 'replaceable' but necessary Afro-Caribbeans performing the manual labor, were healthy and thus able to do their work, was a top priority for the Isthmian Canal Commission.

²¹⁹ McCullough, *The Path Between the Seas*. 610.

The tropical environment of Panama, with swamps and a long rainy season perfect for mosquito breeding, proved an enormous challenge to doctors who were just beginning to understand new ideas of disease transmission and management. Their attempts to control these tropical diseases were constant struggles to assert their knowledge and professionalism in a foreign environment that they perceived as hostile and significantly less advanced. In his capacity as Chief Sanitary Officer, Gorgas came to the Canal Zone with the lofty goal of completely eradicating disease in Panama, but apparently acclimated quickly to the ICC priority of limiting and controlling disease as much as possible for limited money.

Disease control in the Panama Canal Zone began as what U.S. doctors perceived as a fight to enforce regulations based on new ideas regarding the transmission of disease that many people, including ICC commissioners, refused to believe. For these physicians, the importance of such disease control was augmented by their desire to assert themselves professionally, as scientists in a society that increasingly relied on technological prowess to provide what was perceived legitimacy. After a year of struggle to implement new disease control measures in the Canal Zone, the Department of Sanitation gained the approval of President Roosevelt, a crucial step for gaining the power necessary to successfully control disease. Although this intervention did help the sanitation department's work, the remaining years of the construction were still marked by constant struggles to develop and implement viable disease control methods.

In addition to the Canal's acknowledged engineering significance was the underlying importance of society-building on the isthmus. The ICC, given complete control over the Canal Zone's limited area, was able to develop and exert bio-power throughout the isthmus, as a way of increasing the ICC's controls from merely directing engineering efforts, to directing basic aspects of life. This development came through the regulation of ICC employees primarily as productive entities rather than individuals with human value, and through the increasing focus on gathering detailed information from birth to death in the Zone. The collection of this progressively wider range of statistical information aided in the ICC's goal of making the Canal Zone a legible space.

In the final years of the canal's construction, and after its completion, the non-medical community often overlooked the challenges that faced Gorgas and the other health workers in Panama. The work done to control disease in Panama became a substantial feature of the Canal's mythology. This mythology helped to develop growing feelings among U.S. citizens of their nation's superiority. In the mind of these Americans, U.S. superiority was evidently demonstrated through the eradication of mosquitoes and limiting of disease in an environment that was universally labeled a 'deathtrap' only a decade before. This translated the region, not just for politicians, engineers, and doctors, but for more prosaic travelers as well, for whom the transformed space had become reliable and orderly. In regulating death, American doctors and health inspectors truly helped to build a United States empire.

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