

**Keeping Fear at Bay:
Twentieth-Century Ecuador and the Eradication of Plague**

by

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Abstract

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Until plague's reappearance in China in the latter nineteenth century, plague had often been thought of as belonging to a distant continent and even more distant time in history. Turn-of-the-century maritime and technological advances, however, exponentially increased the fear, the panic, and the power that plague had over people throughout the globe. Ecuador fell victim to this scourge in 1903 and had to find ways to confront a disease with which it had minimal experience.

Ecuador's anti-plague efforts, led by men such as Dr. Carlos A. Miño, were important steps in the confrontation of the disease. The campaign to fight plague took the form of four phases that ultimately helped Ecuadorian public health experts bring plague cases under control and eradicate the disease. This was not done, however, without assistance. On the one hand, the general Ecuadorian population seemed willing enough to follow the recommendations set by Miño and his staff: disinfection, fumigation, whitewashing, and other new scientifically hygienic measures. On the other hand, foreign experts from the United States were also instrumental in the eradication of the disease.

By 1930, Ecuador had succeeded in eradicating the disease as a result of several intersecting factors. First among these was the constant vigilance of a public health apparatus that focused on information gathering and familiarity with the zones most affected. Second was the implementation of public health measures that focused on cleanliness, disinfection, and elimination of the rodent vector. Finally, it was the epidemiological and entomological expertise of Americans Dr. John D. Long and Dr. Clifford R. Eskey who dedicated themselves to the epidemiological studies of plague in Ecuador that helped seal the fate of the disease. Thus, the ambitious public health policies of Dr. Miño and his colleagues, combined with an infusion of new technology and expertise and the disinfecting of homes and public spaces, led to the nearly complete eradication of plague from the country in the 1930s.

In the end, Ecuador's campaign against plague was married to Ecuador's modernizing drive of the late nineteenth century. In other words, modernization led to the eradication of plague in Ecuador and the disease's eradication was, in turn, a way by which to modernize the peripheral sectors. The evidence questions the notion that modernization and modernity had always negative impacts on autochthonous communities. The case of Ecuador's highland areas illustrates that despite some unintended consequences there exist exceptions critical of modernization and that peripheral communities or peoples did indeed benefit from and, more importantly, took advantage of the scientific hygiene that was a product of turn-of-the-century epidemiological and microbiological knowledge.

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It is all too common to hear that a work of this sort is the product of countless hours and impossible without the support of not a few people. This is, of course, true for me and there are several people and institutions that have to be acknowledged and recognized for either their one-time or their continuous support throughout the dissertation writing process.

First and foremost, my thanks have to go to those people who have inspired my love for history and, especially, in the histories of Latin America and of Medicine. It was, for example, a small number of faculty members at Lehman College, of the City University of New York, who not only introduced me to the academic study of history, but who also inspired me to read as much as possible and to delve deeper into those fields that most attracted my attention. Professor José Luis Rénique encouraged my reading of South American history and helped me understand Andean history particularly by introducing me to the social dynamics that comprise that history. Evelyn Ackerman has perhaps been my most dedicated supporter and it is to her that my deep appreciation must go. She not only introduced me to the wonderful world of the history of medicine, but also was there to follow up on my progress whether it was at Lehman College or at the Graduate Center. Not only am I proud to be able to call her one of my advisors, but also my friend. Also at Lehman is Professor Marie Marianetti, instructor of Greek and Roman History, who consistently demands the best from her students and whose words of advice when I first started my studies at the Graduate Center did not go unheeded. To the three of you, my most heart felt gratitude.

At the Graduate Center I had the opportunity to meet a number of very talented and dedicated scholars. Professor Margaret Crahan, with her meticulous writing requirements and her total professionalism, was an inspiration for me in so many ways as she introduced me to Central America and to the religious and cultural nuances of Latin America. Other professors include historians Susan Besse, Gerald Oppenheimer, and Laird Bergad as well as anthropologist of medicine Shirley Lindenbaum who had no small influence in the way that I approached the fields on which I would eventually focus. I must also express my sincere thanks to Professors Amy Chazkel and Murphy Halliburton who agreed to be on my dissertation examining committee. At the Graduate Center, though, I had the opportunity to meet the person who has most influenced my love for history and who has been, in innumerable ways, such an important part of the journey that has been this process. I do not know exactly how to appropriately express my gratitude to Professor Alfonso Quiroz for he has not only been a professor, but my primary advisor and a great supporter over the years. His many words of encouragement, his introducing me to the philosophical and intellectual branches of history, and his constant demand for precision in the writing of our essays have not fallen on deaf ears.

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Part of my love for history has been a result, I sincerely believe, of the opportunity I have had to teach my own students about what I have learned, to be able to apply what I have read in so many articles and monographs in my own courses and thus make history a dynamic subject for my students. So, to all of my former, present, and future students at Cardinal Hayes High School and Manhattan College in New York, and Cardinal Gibbons High School and the Ana G. Méndez University System in Florida I say thank you. Special thanks go to Nery Estévez, one of my students at the Graduate program in Guidance and Counseling, who made sure I had a copy of every imaginable article she could find on plague in Latin America. Thank you all for allowing me to share my love of learning with you all and

for sharing with me on this journey whether it was as your history teacher, your counseling psychology professor, or your own personal counselor.

Thanks too go to my parents for instilling in all three of their children the importance of an education and providing the support necessary to be able to do it full time while in high school and college. I certainly hope that the next generation will find it in them to fall in love with something and to pursue it. Of course, I cannot forget those people who have had to bear the brunt of my escaping into my academic world: mom and dad, members of my family, and, perhaps most importantly, Ken. I really do not know where I would be without you and I realize that in the end, a doctoral degree is something I cannot take with me to the next plane of existence, but I guess the journey is what makes the degree meaningful as do the people who came along with me on that journey, each person enhancing it every step of the way.

I dedicate this project to my parents who came to the United States for a better life and did what they could to ensure that their children had what they needed to succeed. Those desires were not fruitless and I still believe that we have been taken care of because “good things happen to good people.” Finally, in the weeks leading to submission of this dissertation I was given the chance to attend a Broadway musical in Manhattan. The show was *In the Heights*. The lyrics and theme came together to give me the final push, as well as the laughter and the tears, I needed to want to finish this project. As the song goes, “*con Paciencia y Fe!*” My appreciation goes to Michael Coluccio, my college roommate, for the gift of that experience.

Preface

It is August 3, 2009 and so much has occurred in recent months while trying to finish this project that serve as constant reminders for me of the importance of epidemiology. In June, for example, I took the trip of a lifetime to Peru and Machu Picchu. When I landed in Lima, though, I was greeted with cans of disinfectant, sanitizing lotion, employees in masks, surveys, and cotton swabs. It was the height of the swine flu (H1N1 virus) epidemic and images of quarantined or isolated individuals filled my head. Just this past week, thirteen vacationing American high school students were left behind in China for contracting the flu and the reactions have been the same: isolation, quarantine, observation, etc.

I have not been personally unaffected by epidemiology either. A gastrointestinal scare in July and a general shift in my health have made me realize the precariousness of health. I wish I could be brave enough to say that I left this project without any personal scars, but the truth of the matter is that (as is the case with the famed “medical students’ disease”) I was made more aware of the little (often imagined) changes that my body experienced as I read about plague and its more common flu-like symptoms.

In a rapidly changing world, the realization that viruses and bacteria adapt and mutate is a scary one. If this project has taught me anything, it is not that epidemics can rise in some very unlikely places. But, that sometimes it is the reactions to those epidemic crises that can most have an impact on the lives of the citizens. The fact that terrorists can utilize AIDS, influenza, small pox, and plague as

weapons of mass bacterial destruction is not a comforting idea, and it boggles my mind to think of the potential biological hazards that exist.

The importance of acquiring information à la Miño, Long, and Eskey cannot be overestimated. The surveying and sharing of political, cultural, and social landscapes is key to global community building. The fact that Ecuador was able to be a first stop on the Pan American Sanitary Bureau's international mission to eradicate plague throughout the region makes the country's experience with the pandemic that much more interesting.

Ironically, I still feel that so much of the campaign in the highlands was motivated by racial undertones: the perception of the guinea pig, the burning of thatched roofs, the closing of community gathering places. Yet, all evidence shows that Dr. Miño, Ecuador's national director of health during much of the crisis, had the best of intentions. One of my advisors had recently asked me what one of my next projects would be and if it would have anything to with what has been studied herein. My answer was yes. I believe that the story told herein is an important one because, in one way or another, the story creates a niche for Ecuadorian history within the broader scope of Latin American history and in the history of medicine. The very same socio-cultural and entomological peculiarities that make a study of plague and anti-plague efforts in Ecuador (regional isolationism, Andean modernization, and the highlanders' biological or immunological uniqueness) interesting are also those that make a study of Ecuador and Ecuadorians a subject for further study.

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Chapter One

Introduction: Building an Argument

Any work centering on Latin America in the twentieth century necessarily entails a consideration of progress, order, and scientifically-laden concepts of civilization. The overarching theme, however, that encompasses such a discussion is that of “modernity,” a term that has increasingly become abstract and nebulous. Modernity (and the rational, scientific, ordered and objectivistic values that often accompany it) has come to signify different things to different people and it has attained powerful connotations – as to who or what is modern or not – that have informed the understanding of Latin America over the last several decades. Much of the modernistic work that has focused on the region, however, has depicted it as an area rather reflective of the realities of more technologically advanced and equally socially stratified countries of the West. The proponents of modernist theories have concentrated their energies on attributing overwhelming socio-political influence to bureaucratic entities that, throughout the twentieth century, have focused on a rather elitist-centered, socially divided, and constructivist striving for progress and nation building. As a result, these same thinkers have often omitted the most basic of factors contributing to the successes (and failures) of modern nation building, that of human agency.

The case of Ecuador is no exception to this hierarchical and constructivist approach as it too attempted at the end of the nineteenth century to modernize in order to join the larger community of “civilized nations.” More specifically, Ecuador’s effort to modernize its population(s) possessed significant linkages to the ideas and

practices involved in scientific hygiene. This approach was informed by a bureaucratic tendency to laud the benefits of scientific knowledge and rationality as well as their broad application to the human condition.¹ This was particularly true in the way that Ecuador's public health apparatus approached the spread of plague at the turn of the 1900s and how it viewed attitudes of cleanliness (or lack thereof) attributed to the non-white, non-mestizo, heavily indigenous populations of the Ecuadorian highlands.

The idea, however, that hygienic and sanitary modernization efforts were detrimental to the social and cultural landscapes of those in the periphery is not a universal standard.² On the contrary, I find the idea only marginally relevant in explaining the thirty year-long endeavor to eradicate plague in Ecuador. Much more notable are the unintended consequences that mark the eradication process and its application in the various foci of infection. It is these "unintended consequences" that allow us to explain the successes and failures of the anti-plague campaign. They also allow us to explain the adoption of state-led health measures by Indian neighborhoods and villages. My research indicates that not an insignificant number of towns and communities actively took part in a modernization effort that helped

¹ See anthropologist Henry V. Medina, *Comunidad negra y cambio cultural: El caso de Concepción en la sierra ecuatoriana* (Quito: Centro Cultural Afroecuatoriano, 1996) who discusses the impact of modernization and change in the afro-Ecuadorian community of San Lorenzo. He asserts that change (the modern) becomes a cherished ideal and that communities select and prepare certain members in order to accelerate those changes.

² An important counter argument is implied by Julia Rodríguez, *Civilizing Argentina: Science, Medicine, and the Modern State* (Chapel Hill: Duke University Press, 2006) in which she asserts that the modern- and progressive-oriented policies aimed at the "socially undesirable" opened the way to antidemocratic and authoritarian governments that came later in the twentieth century. See also Mercedes Prieto, "A Liberalism of Fear: Imagining Indigenous Subjects in Postcolonial Ecuador, 1895-1950 (Ph.D. Diss., University of Florida, 2003), who also discusses the construction of indigenous subjects in light of modernizing theories and strongly claims that this construction helped shape the Indian as a subject to be feared in later periods.

keep plague at bay and this implies that, in the end, it is human agency that has been left out of the bigger modernist picture of disease eradication and health policy.³

THE CASE OF VICENTE MAPUSO

On February 14, 1919, Vicente Mapuso was pulled off a train by station police officers as he traveled from the coastal city of Guayaquil up to the highland town of Alausí, just south of Quito, in the Andean nation of Ecuador. There would normally have been nothing particularly special about this train ride except that Mapuso happened to be traveling on the nine year old railroad system that had been built to inaugurate and symbolize Ecuador's drive to enter the family of civilized countries of the twentieth century. What this young man did in order to be pulled off by the officers had nothing to do with not paying his fare or any crime that he might have committed on that fateful train ride. Rather, the officers had noticed that Mapuso was ill and seemed to be experiencing some discomfort.⁴

Given the time in Ecuadorian history during which Mapuso commuted between coast and highland, the officers' fears more than likely centered on the

³ See Pablo A. Suarez, *Organización sanitaria del Ecuador: Espíritu de la ley actual: Presupuesto en vigencia y presupuesto en proyecto para imprimir a servicio toda la amplitud y eficacia que prescribe la ley* (Quito: Talleres Tipográficos Nacionales, 1926) who asserts that governmental arms of nations are uniquely responsible for imposing and implementing the ideals of hygienic and sanitary modernization.

⁴ In a telegram addressed to the National Commissary of Alausí, Luis Antonio Pallares of the Offices of the Police of Pichincha Province reported the death of Vicente Mapuso who was travelling from Guayaquil already infected with plague. Pallares to Comisario Nacional de Alausí, 15 February 1919. Archivos de la Subdirección de Salud, Quito (ASSQ). The Archives of the ASSQ are housed at the Eduardo Estrella National Museum for the History of Medicine in Quito. It is important to note that the museum has not classified the material in any way other than chronologically. Thus, there are no box or file numbers to be included in citation. This work is hoped to be conducted in the near future now that the Museum has a much more permanent and more modern place to call home on the grounds of the Hospital Eugenio Espejo in Quito.

possibility that Mapuso might have demonstrated specific symptoms. Among the symptoms of which the officers would have been suspicious are high fever, profuse sweating, swollen glands, and/or black pus-filled sacs in various sensitive areas of his body. The possibility of any or all of these symptoms was enough to frighten the public officials who might have believed it safer to err on the side of caution. The officers escorted him off the train and detained him until approximately 7:30 the next morning. Any further investigation the following morning was thwarted, however, when upon approaching Mapuso's holding cell the officers found that he was dead.

What happened to Mapuso physically and how the officers reacted are only part of a larger story that brings to the shores and highland areas of Ecuador the specter of a scourge commonly thought of as belonging to a distant time and place. This is the story of plague, the same plague that killed millions of Europeans in the fourteenth century, an episode in history often referred to as the Black Plague. It is, too, a story about the ways by which a small and newly developing South American nation attempted to combat the spread of that disease and its causative agents that have been the harbingers of death in so many history books, medical journals, stories, and novels.

This is also a story of Ecuador's national history, for when bubonic plague was first observed in 1908 in the very same Andean town of Alausí to which Mapuso was traveling, the event coincided with the culmination of the great railway project, begun in 1873 and completed in 1908. The railway exemplified and announced the country's sweeping attempts at liberalization and modernization. This modernizing spirit dominated the latter half of the nineteenth century and ended when the Great

Depression of the 1930s marked the end of Latin America's era of progress and reform which it had enjoyed since the 1850s.⁵ In 1908 resources and personnel had to be mobilized in order to prevent plague from entering Quito, the capital city located approximately 180 miles from Alausí, and infecting the population. Simultaneously, Ecuador was still facing the convulsions resulting from the new liberal government's coming to power in 1895 and the consequences of the civil war of 1896 that consolidated those same liberals in power.

The period between 1895 and 1930 was not an easy time for a rather newly independent nation whose resources were limited and whose administrative and medical personnel were ill-prepared for the challenges involved in a public health campaign aimed at combating plague and requiring the teaching of new habits and new customs to the general population. Rodents had to be captured and autopsied; fleas had to be collected and classified; Ecuadorians – and especially those of the highland areas – had to be taught to take care of sanitation; and the new bacteriology had to be brought to small indigenous villages (*caseríos*) that had little or no experience, or, for that matter, interest in dealing with American- or European-style doctors and with western-style, non-autochthonous bureaucracy and medicine. The Ecuadorian government had to rely on the assistance of important foreign experts and some foreign institutional funds, while addressing a population seemingly resistant to the state's perceived interference in its way of life. It would not be an easy task for authorities to rid the area of *Yersinia pestis*, the bacillus that causes bubonic plague. However, they did what they could and by 1930 Guayaquil,

⁵ Patricio Márquez and Daniel J. Joly, "A Historical Overview of the Ministries of Public Health and the Medical Programs of the Social Security Systems in Latin America," *Journal of Public Health Policy* 7:3 (1986): 385-6.

the country's major port city, had eradicated the disease much to the acclaim of news magazines, newspapers, and international organizations around the globe.

The Ecuadorian plague epidemic of 1908-1930 was part of the greater global plague pandemic of 1895. For the first time, the world saw a disease and its death grip travel across continents and vast oceans to infect parts of the globe that had never presumably been witness to plague. The global pandemic itself endured for a little over half a century ending in 1950 after great effort on the part of governments and medical bureaucracies across the globe. Yet, the Ecuadorian case of plague is uniquely important to Ecuador's history as the disease was viewed by the country's intellectual and social architects as representative of more than a medical, social, and political problem; it was viewed as an obstacle to the health and civility of the nation and its nationals.⁶

As a medical problem, Ecuadorian political and medical authorities saw plague (as it is more simply known) as a menace to the general well being of the country's population. The disease's impact on people's health was obvious: death to many. But, the disease also signified a problem in the way that medical authorities reached out to the infected – or those in danger of becoming infected – who lived in remote areas of the nation's territory or who had no experience with or access to western-style or more modern medical practitioners. Exacerbating the problem was the unavailability or inaccessibility of medicines like Haffkine or Yersin serum that

⁶ These ideas can be seen in the work of such Ecuadorian intellectuals as Pablo Arturo Suárez (who will play a prominent role in later chapters), Juan Montalvo, Archbishop González Suárez, Jacinto Jijón y Caamaño, and the educated elite (the "pensadores") of the Sociedad Jurídico-Literaria and Quito's Universidad Central who, in the nineteenth century, focused on issues particular to Ecuador framed by evolutionary perspectives with positivist as well as spiritualist tones. For more detailed information see anthropologist Mercedes Prieto, "A Liberalism of Fear: Imagining Indigenous Subjects in Post-Colonial Ecuador, 1895-1950 (Ph.D. diss., University of Florida, 2003) in which the author discusses these and other epistemological issues in Ecuadorian intellectual history.

would help combat plague infection. How was the government to get enough serum out to rural areas? Who was going to administer it? Would people readily accept vaccination and would they change any of their habits and customs in order to prevent further infection?

As a social problem, the plague epidemic was symbolic because of what it meant to the country's progress and struggle to modernize its political and social infrastructure. Plague's social dimension was magnified by a certain backwardness that many political and medical thinkers believed was tied to Ecuador's highland peoples as they held fast to their traditions (which many believed helped propagate plague infection) and their living conditions (which served as reservoirs for the microscopic harbingers of death). Government and medical officials tried to find ways by which to make combating plague relevant to the lives of those most likely to become infected. This necessitated imposing, successfully or not, new laws that redefined and restricted how people lived, the numbers of residents in homes, and the animals with which they could cohabitate.

Politically, plague had profound meanings for Ecuador's administrative powers and the ways by which those powers would care for the people's needs. In order to more effectively carry out the process of plague eradication, Ecuadorian heads of state and governmental branches had created various medico-political institutions to oversee both the eradication of plague and the anti-plague campaign that was supposed to make that eradication possible. National, regional, and municipal boards of health were created and the political apparatus made the effort to bring both the laboratory and the lessons learned therein to the focal and reservoir

points of plague on the coast. In addition, Ecuador saw its first public health law drafted and ratified under the auspices of Bolivar J. Lloyd, the American public health expert who served as Ecuador's very first minister of health. Other laws and decrees followed this first one until plague was eventually eradicated in 1930. Finally, officials constructed lazarettos – isolation or quarantine hospitals for people with infectious diseases – built to house people both willing and reluctant to follow the new norms imposed by municipal and regional authorities.⁷

Initially, the process of eradicating plague from Ecuador was not an easy task. Besides having very little experience with plague, Ecuadorian officials attempted to utilize and replicate European and Asian models of eradication to explain plague in Ecuador. This, however, was ineffective as these models could only explain part of what was transpiring in the Andean nation. Ecuador possessed its own reality and it was discovered that something other than rats was transmitting plague even in places, though rare, where rats could not exist either because of climate or altitude.

In many ways it can be said that the architects of Ecuador's plague control were visionaries. These visionaries had their ideas of what Ecuador was supposed to become at the turn of the twentieth century and they had around them other countries like Argentina and Brazil that were attempting to do the same in their own optimistic and often race-infused fashions. The scientists, doctors, and politicians that were involved in eradicating plague from the Ecuadorian territory envisioned a transformation of their society and their environment through the application of

⁷ Rather important in inspiring these measures are Carlos A. Miño's *La peste bubónica en el Ecuador: Factores etiológicos, formas clínicas y erradicación* (Quito: Imprenta Nacional, 1933) and the reports of Clifford R. Eskey (Surgeon of the United States Public Health Service).

science and technology. This transformation was allied to ambitious visions of regional and national destiny that were being redefined at the turn of the twentieth century during Ecuador's more prosperous, if short-lived, cacao-driven period. The visionaries imagined what they believed Ecuador could be and maintained that a variety of customs, traditions, and contemporary living conditions among the country's highland dwellers were incongruous with that vision.

This dissertation, therefore, is ultimately the story about some ambitions fulfilled and others frustrated by environmental and social conditions as well as by human folly. It is about the persistence of customs and traditions among a population that was — after time — both receptive to medicine that worked and to the goals of modernity and hygiene. It is a story enhanced by the heroic acts and frustrating moments of public health officials, physicians, bacteriologists, and others who had within their purviews the responsibilities of sanitizing a nation whether it was ready for it or not. It is also, finally, a story confounded by the special circumstances of Ecuador's geography, politics, and epidemiological uniqueness as it relates to plague, plague potential, and the way that the disease was approached.

This work is thus a basic outline of the history of plague control in Ecuador. But, in a larger sense, it is a story of the desire for progress, modernity, and acceptance on the part of the Ecuadorian state into the world of civilized nations. It is this desire for progress and self-definition on the part of Ecuadorian officials that framed Ecuador's plague epidemic and that motivated the efforts to control, or eradicate, the disease. It is this desire for membership into the global community

that pushed it toward a more active pursuit of hygiene and, in the long run, membership into some of the world's most important public health organizations.

RESEARCH QUESTIONS, ARGUMENTS AND SOURCES

There are certain questions that serve as both guides and as focal points for this research. The following are the most basic questions I ask: First, what caused plague in Ecuador to become the problem that it did? Second, what caused plague to decline to negligible levels by 1930? To answer these deceptively simple questions requires more than matter-of-fact answers. Answering them requires an investigation of a complex set of interrelated biological, environmental, social, political, and cultural factors over the course of the forty or so years during which plague threatened and impacted on Ecuador's general well being.

Placing the problematic of disease control (that is, how public health experts and social architects viewed and confronted plague) in the foreground can further refine these two questions. Doing so leads me to ask deeper and more sensitive questions such as: What were the key political and social motives of plague control in Ecuador? How was plague control carried out? How and why did plague control succeed, or fail, especially in light of the failure to completely eradicate all forms of plague in other parts of the world? How does the case of Ecuador's fight against plague compare with that of other parts of the globe?

In response to these questions, I specifically propose that Ecuador's campaign against plague was mutually and reciprocally connected to Ecuador's modernizing drive of the late nineteenth century. In other words, modernization led

to the eradication of plague in Ecuador and the methods used toward the disease's eradication were, in turn, ways by which to modernize the people lying in the periphery of nationhood: Indians who were viewed as "exiles of the national civilization"⁸ and yet could be taught to be open to the "finery of civilization."⁹ Subsumed within this overarching theme are several smaller yet equally important themes that I believe contribute to the understanding of plague's presence in and impact on Ecuadorian national history.

First, it is my belief that state-led plague control was primarily and initially motivated by concerns over regional development, state formation, and national integration. The Ecuadorian plague epidemic coincided with the national executive and legislative entities' attempts to geographically and ideologically integrate the nation and to finally connect the coastal area with the highland. Plague could not be left alone to become an obstacle to this integration and, therefore, attempts were made to extend the government's legal and authoritative arms into regions long disconnected from the centers of power in Guayaquil and Quito.

Second, plague control was also motivated by a concern over the influence of indigenous customs that seemed backward to many. In this light, modernization was the mechanism by which the Ecuadorian government was forced to deal with what it considered the "backward" customs of its highland people and the nation's lack of progress, for, as historian Edward J. Williams wrote in 1973,

[I]ike all peoples, [members of Ecuador's intellectual elite] have yearned for 'modernization' or 'progress' or 'civilization' or whatever other terms have defined the advancement of man from poverty,

⁸ Prieto, 77.

⁹ Ibid, 90.

ignorance, and weakness to wealth, sophistication and strength. In contemporary parlance, they have sought such developmental goals as cultural secularization, national integration and more rational use of scarce resources.¹⁰

Additionally, the goal of modernization justified the government's exertion of authority over the indigenous and their habits in an effort to bring them more fully into the newly envisioned interpretation of Ecuadorian society, an interpretation that included viewing the nation as a clean and hygienically-oriented one. It is this view of hygiene – as the “material religion”¹¹ – that would bring Ecuador into the global market and do so as a member of one of the hemisphere's most important public health organizations, the Pan American Sanitary Bureau. Connected with this modernization was the technology that brought to the forefront an awareness of the relative epidemiological isolation that had for so long protected the people of the Ecuadorian highlands from tropical and other diseases for which they had very little, if any, immunity.

Third, the cases of plague that were witnessed in Ecuador forced the government apparatus to deal with the reality of the daily lives of its citizens. National, regional, and municipal authorities now had the power to inspect the homes and environments of all Ecuadorians. The masses and public service entities had to be taught to clean and disinfect effectively. Public health officials had to deal with varieties of plague specific to the Ecuadorian highlands and mostly unknown to the world outside its boundaries. New standards of hygiene and

¹⁰ Edward J. Williams, “Secularization, Integration and Rationalization: Some Perspectives from Latin American Thought,” *Journal of Latin American Studies* 5:2 (1973): 199.

¹¹ Here I refer to the words of Guillermo Rawson, professor of public health at the University of Buenos Aires, who headed the Department of Public Health. For more information on Rawson, see Julia Rodríguez's *Civilizing Argentina: Science, Medicine, and the Modern State* (Chapel Hill: The University of North Carolina Press, 2006).

construction were decreed and inspected by some of the most powerful institutions of medical bureaucracy. Public health campaigns instructed people to avoid harboring the carriers of plague either in their kitchens (as was mostly the case in the highlands) or between the walls of their dwellings (as was the case on the coast), or both. Newspapers published presidential decrees on health as well as advertisements about special plague-fighting elixirs and homes that were “plague proof.” In sum, the Ecuadorian case of plague involved modernization-via-hygiene, a process that was both time-consuming and that possessed no guarantees. Yet, it was successful enough a process to help the country redefine itself and be redefined, in turn, by the international public health community as a clean and hygienically guided nation.¹²

Answering the questions presented in this work clearly is not an easy task. I have had to rely on relatively scant material found almost exclusively in the archives of the Museo Nacional “Eduardo Estrella” de la Historia de la Medicina and the Archivos de la Subdirección de Salud in Quito (ASSQ). Almost all of this information and data is found in the forms of telegraphs, telegrams, memoranda, and letters between and among medical and public health experts. The exchange of information was also significant between and among regional and national bureaucrats charged with the care of Ecuadorian citizens and institutions.

¹² The political and economic advantages of being classified a clean port-of-call become quite significant when Ecuador attempted to fully enter the world economy. “Cleanliness” and sanitation were essential characteristics that had to be demonstrated by Ecuadorian maritime authorities and documented by international organizations like the Pan American Sanitary Bureau and the United States Public health Service. The involvement of such organizations and their cooperation with Ecuadorian public health authorities will be discussed more fully in Chapter 5.

In addition to these particular primary sources, I have also relied on the reports of foreign, mainly American public health experts such as Clifford R. Eskey and John D. Long who worked in Ecuador with the country's public health experts in the eradication of plague. Without their input and direct help it is seriously doubtful that Ecuador could have fully eradicated plague on its own. Much of their work was focused on rat control and the scientific investigation of the flea vectors found on a variety of species (rodent, canine, feline, and human) that harbored them. Their work merited special honors and tribute from the highest levels of the Ecuadorian political machine.

Finally, of great help has also been Quito's primary newspaper, *El Comercio*, which of course kept the Ecuadorian citizenry alert as to the movement of plague and the efforts endeavored in the attempt to control or eradicate it. Fortunately, the newspaper's archives have been digitized and the most relevant articles of the time being studied herein have been incorporated into this study.

HYGIENIC MODERNIZATION AS A DRIVING FORCE

Throughout this dissertation I imply that the move toward federal or national intervention to control the spread of plague reflected two ideological perspectives. First, the liberal ideology of modernization that President Eloy Alfaro and his successors represented was one that possessed as its main goals Ecuador's modernization, secularization, and incorporation into the world economy. Second, as the political and cultural focus of Ecuadorian national identity (at least through the eyes of Quito's educated elite, the *pensadores*), the capital city had to be protected

from plague if the nation was going to become, to use the rhetoric of the time, a member of that global community of “civilized or cultured nations.” Thus, the anti-plague movement (and the positivist ideology that informed it) had as its foci at least four essential goals or themes that will be reiterated throughout the work:

preparation (keeping an eye on plague’s movement prior to it coming to Ecuador’s coast), reconnaissance (determining the nation’s susceptibility to plague), the application of anti-plague measures (the national attempt to eradicate plague and its non-human vectors systematically), and the modernization of highland people’s habits and customs (viewed as obstacles to the global incorporation sought by Ecuador’s ruling and predominantly white elite).

Subsumed into these four major themes I include a number of smaller themes or ideas that assist in defining the impact that the anti-plague campaign of the former half of the twentieth century had on Ecuador and on the way that Ecuadorians viewed themselves. As a country bordered by the Pacific Ocean (and, thus, possessing a major port), Ecuador’s attempt to eradicate plague was politically, economically, and socially motivated as its state of hygiene or cleanliness reflected its perceived degree of “civility” and attractiveness. If, as President Isidro Ayala had said, Ecuador was to attract tourists and economic investment, then it had to make sure that its major port of call (Guayaquil) was clean and, eventually, classified as a *Class A* port city by the Pan American Sanitary Bureau and its statutes of 1929. Yet, the drive to develop, as historian David S. Parker asserts for most of the nineteenth century, “to emulate *paises cultos* (cultured nations), to ‘improve’ the race, and to

‘civilize’ the people dominated official thinking and drove public [and nation-building] policy for generations.”¹³

As background, throughout the nineteenth century, nation-building movements were indeed vehicles for “national” unification, and nations themselves were viewed as the proper phase in “human evolution or progress.” In Latin America, “progress” was all too often measured by comparisons with (and emulations of) the powerful English, French, and American economies. This meant, as professor of Latin American literature Fernando Unzueta writes,

that Latin America’s own “other” – its indigenous or black populations, and the “noncivilized” hinterlands – were mostly excluded from the models of the nation that were produced through the writings of the intellectual elite.¹⁴

The anti-plague campaign that was the product of Ecuador’s effort to modernize, then, also transformed the way(s) in which Ecuadorians saw their own physical or geographical (perhaps even their “imagined”) landscape. The railroad, as a case in point, unified the coast and highland and this was a noteworthy technological feat for a small and geographically difficult country as was Ecuador. More importantly, however, the railroad and its concomitant effects changed the way that people saw the terrain (which they were now able to travel and perhaps even conquer). It also changed the way that *costeños* and *serranos* viewed each other. More direct (and speedy) exchange of products, ideas, commodities, and people was also a result of the new railroad and its unifying symbolism. Most importantly,

¹³ David S. Parker, “Civilizing the City of Kings: Hygiene and Housing in Lima, Peru,” in *Cities of Hope: People, Protests, and Progress in Urbanizing Latin America, 1870-1930*, ed. Ronn Pineo and James A. Baer (Boulder, CO: Westview Press, 1998), 157.

¹⁴ Fernando Unzueta, “Scenes of Reading: Imagining Nations/Romancing History in Spanish America,” in *Beyond Imagined Communities: Reading and Writing the Nation in Nineteenth-Century Latin America*, ed. Sara Castro-Klarén and John Charles Chasteen (Baltimore and London: The Johns Hopkins University Press, 2003), 128.

for our discussion here, however, the spread of bacteria and disease potential also formed part of that exchange, following the principle of unintended consequences.

One of the major manifestations of Ecuador's modernization, therefore, was the control and the eradication of disease and disease potential. Consequently, the central and immediate focus of the anti-plague campaign was Guayaquil and its environs not only because of its potential for disease, but also for the area's economic importance. The political apparatus viewed the area as the undisputed catalyst for Ecuador's late nineteenth-century economic growth and thus often overshadowed Quito's prominence as the economic symbol of national identity well into the twentieth century. This shift, as discussed in chapter two, occurred as highland landholding influence was co-opted by the new wealth of coastal cacao farmers during Ecuador's period of progressivism (1884-1895) and during the country's "chocolate prosperity."

Despite its economic successes, though, Guayaquil was rife with diseases typical of the world's tropical regions. Its climate and terrain were ideal for the persistence of malaria, yellow fever, cholera, dengue fever, and a myriad of other intestinal and respiratory ailments. Plague's arrival and spread throughout the Ecuadorian territory, then, carried significant weight, and the country's experience with the third plague pandemic (as this bout with plague was to be known) was an important one as it occurred when the Ecuadorian political apparatus was striving to join the world economy. Plague became a symbol for Ecuador's regional differences (costa vs. sierra) and, ultimately, its backwardness as compared or contrasted to other countries in the region of Latin America. As such, the movement to rid the

region of plague was also an effort to modernize the Indian population, often seen as being an obstacle to the order and progress sought by countries throughout all of Latin America. Thus, it is my belief, that a certain breed of eugenics must have informed the ways that plague was combated and the ways in which public health policies were established.

I argue that during the Ecuadorian plague epidemic, the ideology and policy of plague control consisted of a conflation of two major ways of thinking. First is an outward-looking approach or perspective. The Ecuadorian liberalism of the turn of the twentieth century saw as its main goal the connecting of Ecuador and its exports to the global community, thus seeking to vanquish the provincialism or regionalism that often helped isolate Ecuador even inside its own borders. The railroad, as A. Kim Clark asserts time and again, was perhaps the predominant instrument by which this occurred as it connected Ecuador's two main regions to each other and to the "outside" world.¹⁵

The second approach is much more "internal." It consisted of an inward-looking (perhaps one-sided) nationalism that sought to unify the people of Ecuador ideologically as a modern and civilized nation. The goal of social hygienists like Pablo A. Suárez, for example, and the intellectual elite members of the Sociedad Jurídico-Literaria, therefore, was to make of Ecuador a unified nation with the same habits and customs that would lead to clean living and a healthy population. The ideology of modernization infused much of the political apparatus' strategies and policies, and the anti-plague campaign was no exception. The campaign was

¹⁵ A. Kim Clark, *The Redemptive Work: Railway and Nation in Ecuador, 1895-1930* (Wilmington: Scholarly Resources, 1998).

charged with the ideals and goals of modernization in a way that it utilized hygiene as the instrument by which Ecuador's highland peoples (that is, Indians) would be incorporated into the life of the nation-state. Both of these approaches contributed, then, to the ways by which Ecuador (and, in turn, the Ecuadorian population) would see itself as a modern, clean, and "civilized" nation.

My characterization of plague eradication in Ecuador as a product of ideological convergence between, on the one hand, liberal progressivism and the "civilizing mission" and, on the other, the inclusion of the marginalized Indian into the life of the nation necessitates a discussion of a new ethno-nationalism which would help define Ecuador and Ecuadorians for the rest of the twentieth century. This ethno-nationalism was very different from that of Europe or even the United States, yet was informed by a variety of eugenics – the "science (based on heredity) of improving a particular race or, at least, preserving the "purity" of particular groups – that was the basis of much Latin American racial thinking and ideology, something that geographer Eric D. Carter discusses in some detail in his dissertation on malaria control in Argentina during the first half of the twentieth century.¹⁶

Latin American Eugenics: A Brief Overview

According to historian Thomas Glick, the field of eugenics is a socially constructed application of genetics."¹⁷ It was (is?) a field, then, that attempted to apply the ideas and constructs of social Darwinism to the

¹⁶ Eric D. Carter, "Disease, Science, and Regional Development: Malaria Control in Northwestern Argentina, 1890-1950" (Ph.D. diss., University of Wisconsin-Madison, 2005).

¹⁷ Thomas Glick, "Science in Twentieth Century Latin America," in *Ideas and Ideologies in Twentieth Century Latin America*, edited by Leslie Bethell (Cambridge: Cambridge University Press, 1996).

preservation of the predominance and 'racial purity' of whites [...] in countries where miscegenation was in evidence, and to encourage the immigration of socially favourable [sic] groups in predominantly European countries.¹⁸

In Europe, this eugenics had its scientific roots in Mendelian genetics informed as it was by a harsh selectionism inherited from social Darwinism's principles of "survival of the fittest." Sterilization was consequently utilized quite often as the instrument of eugenic policy and one does not have to look far beyond the case of Nazi Germany (and other fascist countries) to see the extents to which this type of eugenics went. Fortunately, it was these same extremist examples of eugenic racial and eliminationist policies that helped discredit the scientific pretentiousness with which European-style eugenics is often equated.

In North America (i.e., the United States), as Carter points out, eugenics was utilized to condone racial discrimination well into the twentieth century. It was used to promote, for example, state-sponsored social engineering via laws against miscegenation and promoted the use of sterilization of undesirables so that they could not reproduce. Historian Martin S. Pernick, in support of this view, writes that for many American eugenicists (and here he focuses on Dr. Harry J. Haiselden), "race, class, and social order were key factors in distinguishing the fit from the defective."¹⁹ In the case of the United States' presence in Puerto Rico, as historian Laura Briggs asserts, eugenics was the basis for demonizing Puerto Rican women

¹⁸ Ibid, 299.

¹⁹ Martin S. Pernick, *The Black Stork: Eugenics and the Death of "Defective Babies" in American Medicine and Motion Pictures since 1915* (New York and Oxford: Oxford University Press, 1996): 58.

who “refused to be bothered with birth control techniques” rather than take precautions against overpopulation and its accompanying poverty.”²⁰

Latin American eugenics, generally speaking, though, was quite different from these two types and, consequently, took on a different significance for Latin American ideologues and policy makers throughout the twentieth century. Latin American eugenics and the perception of race and racial purity were different in two pivotal ways. First and foremost, they were based less on universal racial categories and more on the idea of “improving” the various national races of the region. Second, they looked beyond the realm of reproduction controls to scientific hygiene and public health as a means of improving the race. One well-researched exception to this is the case of Argentina, as historian Julia Rodríguez points out, where national science offered proposals for sterilization and racial purging programs akin to those taking place throughout Europe and North America.²¹

Thus, eugenics throughout Latin America was not necessarily selectionist. Instead, as mentioned above, it was based on the neo-Lamarckian (and not the Mendelian or biological) idea that evolution was the result not of blind material forces but of changes brought about by will and by choice. The idea was that the changes made now in the environment of the living would be, first, translated into racial improvements and, second, consequently transmitted to future generations. Cleanliness, personal and public hygiene, and the elimination of disease-causing

²⁰ Laura Briggs, *Reproducing Empire: Race, Sex, Science, and U.S. Imperialism in Puerto Rico* (Berkeley: University of California Press, 2002): 116.

²¹ Julia Rodríguez, *Civilizing Argentina: Science, Medicine, and the Modern State* (Chapel Hill: The University of North Carolina Press, 2006), 244.

habits would all help in improving the race from the Latin American eugenicist perspective. Leys Stepan points out that

[a] Lamarckian style of evolution seemed a gentler, more harmonious and human way of perfecting nature than one based on Darwin's brutish struggle. To a neo-Lamarckian, natural selection might result in a weeding out of the unfit variations, but the inheritance of acquired characters was responsible for the origin of the fittest.²²

For many Latin American doctors and public health experts, therefore, their eugenics stood for something different from that in the United States or in Germany. No matter what it was called (scientific hygiene, public hygiene, sanitationism, social medicine, etc), it was always linked to the sanitary movement and its relation to racial health. In other words, for public health officials, the struggles against epidemic disease, endemic poverty, and national backwardness were, quite simply, inseparable.

Structurally and scientifically, in the 1920s, the neo-Lamarckian outlook on eugenics was broadly congruent with the sanitation sciences, which had only recently established themselves at the center of programs of improvement. This ideological role for sanitation derived in part from the very potency of racist and climatic explanations of degeneration in European science, explanations that haunted Latin American intellectuals. Thus, in Latin America (and Ecuador was no exception), public hygiene was viewed as a way of rescuing the country from racial and climatic degeneracy. For too long, the peoples of the tropics and sub-tropics were dubbed as "ignorant," "lazy," and "degenerate" by northern European scientists and theorists who were both white and elitist.

²² Nancy Leys Stepan, *"The Hour of Eugenics:" Race, Gender, and Nation in Latin America* (Ithaca and London: Cornell University Press, 1991), 74.

Given this racialized context, we can understand the enthusiasm of many Latin American physicians and public health experts for the new bacteriological and microbiological sciences when they were introduced in the late nineteenth and in the early twentieth century. These sciences were seen as offering practical solutions to epidemic disease as well as rebuttals to the thesis of the inevitability of Latin American degeneration and racial ill health. The belief that Latin Americans were degenerate contributed to the rather wide repertoire of sanitation policies adopted throughout Latin America. These included the tearing (burning) down and rebuilding of towns and cities (as we will see with the case of the Ecuadorian indigenous town of Huigra); the cleaning and clearing of streets, sewers, etc, and the sanitizing of the poor by compulsory vaccination; the reporting of unkempt homes; the provision of cleaning materials; and the forming of commissions charged with overseeing the new public health policies.

The public health aspect of neo-Lamarckian eugenics in Latin America, then, was pro-natalist rather than Malthusian. Instead of medicalizing birth control, for example, the Latin American version medicalized and promoted pregnancy and birth, and attempts to sterilize “undesirables” or the socially unfit were relatively muted throughout the region. Part of this silence on sterilization and other birth control methods proposed in other regions, obviously, was due to the Roman Catholic proclivities of many intellectuals throughout the region (spiritual positivists). In December 1930, for instance, Pope Pius XI had published his encyclical *Casti connubii* which excoriated and rejected the use of eugenics believing that

[those] who act in this way are at fault in losing sight of the fact that the family is more sacred than the State and that men are

begotten not for the earth and for time, but for Heaven and eternity.²³

Thus, in light of this type of eugenics and the Catholic Church's emphasis on procreation and the family, such social conditions as alcoholism, criminality, tuberculosis, and others were viewed as responsive to public health measures. The improvements that those measures produced, it was believed, would be passed on to succeeding generations.

Historian Carlos Aguirre, for example, discusses the incorporation of eugenics in his published work on criminality and criminals in twentieth-century Lima.²⁴ According to Aguirre, Lima intellectuals saw a medicalization of crime and the adoption of the tenets of the science of race improvement during the 1910s and into the 1920s. Peruvian authors did, in fact, embrace the notion that scientific engineering of marriage and reproduction patterns would allow a racial or national community to improve its stock by eliminating unfit individuals. But, Peruvian eugenicists did not see these interventions as purely biological, and quite often – as mentioned above – eugenics simply entailed the attempt to improve the living and working conditions of the population.

²³ Pius XI, *Casti Connubii*, Encyclical on Christian Marriage, Vatican web site, www.vatican.va/hf_p-xi_enc31121930_cast-connubii_en.html.

²⁴ See Carlos Aguirre, *The Criminals of Lima and their Worlds: The Prison Experience, 1850-1935* (Durham and London: Duke University Press, 2005) for an interesting discussion on positivist criminology and some of the effects that the eugenics movement had on Peruvian criminologists and other intellectuals.

Eugenics in Ecuador

Unlike countries like Argentina, Brazil, or even Peru, eugenics has never played a major role in Ecuador. Indeed, rather than having a strong eugenicist policy-making history, the history of Ecuador is flavored with slight nuances of *indigenismo*, a way of viewing the indigenous population from a rather paternalistic perspective. I use the word “slight” because in a country that is comprised of a significant number of Indians, *indigenismo*, too has played a rather insignificant role in Ecuador. Perhaps a brief discussion is warranted.

According to ecuadorianist historian Marc Becker, *indigenismo* can be seen historically as a collection of paternalistic impulses which saw indigenous peoples as *passive receivers* of outsiders’ actions.²⁵ Many of these actions took on humanitarian or altruistic facades throughout its popularity, but have always been constructed by a dominant culture, particularly that of elite intellectual mestizos who used indigenous issues to advance their own political agendas. Thus, *indigenismo* and its way of perceiving the indigenous became a tool of the dominant culture to incorporate indigenous people into their concept of a unified nation-state. Therefore, in speaking of an “Indian Problem,” for example, *indigenistas* looked for ways by which to incorporate indigenous societies into mainstream national culture. Consequently, the inquiry about the Indian or indigenous race became one of the objects of attention of the emerging disciplines of sociology and archaeology, both framed by evolutionary perspectives with positivist as well as spiritualist tones.²⁶

²⁵ Marc Becker, “Indigenismo and Indian Movements in Twentieth-Century Ecuador” (paper presented at the annual meeting of the Latin American Studies Association, Sept. 28-30, 1995).

²⁶ Mercedes Prieto, “A Liberation of Fear,” 39.

Ecuador is an especially difficult place about which to discuss the concept of *indigenismo*. Although a large percentage of its population, at the turn of the twentieth century, was of indigenous stock (or some admixture of it), *indigenismo* in Ecuador took on a more literary (rather than political) tone as exemplified by the work of Jorge Icaza, whose novel *Huasipungo* focuses on the persecution and oppression which poor highland peasants (*huasipungueros*) faced at the hands of large landholders and the repression which they faced when they rose up in defense of their small plots of land. Indeed, writes Becker, all indigenista literature, like indigenistas in general,

portrays Indians as primitive and ignorant people who are unable to improve their position in life without outside assistance. They are victims who need outsiders to protect them. The solution to improve their situation, when one is offered, is that through education they might be *elevated and assimilated* into the dominant culture.²⁷

Although very little has been written about *indigenismo* in Ecuador, there are at least two sources of information on which we can rely for the time frame discussed in this dissertation. José de la Cuadra, for example, in 1937 had taken to describing the rural coastal peoples (called *montuvios* in Ecuador) believing that outside intervention on the part of the Ecuadorian government and sympathetic whites was necessary if the *montuvios* were to improve their situation (rife with poverty and illness as it was).²⁸

In 1933, a non-Ecuadorian took on the task of discussing the Ecuadorian Indian. Moisés Sáenz's work portrayed only two of the many indigenous ethnic groups (or nations) to be found in Ecuador, yet he spoke in relatively positive terms

²⁷ Becker, "Indigenismo and Indian Movements."

²⁸ José de la Cuadra, *El montuvio ecuatoriano* (Buenos Aires: Ediciones Imám, 1937).

of them. In contrast to what others had believed about the Andean indigenous populations, the Mexican author had portrayed Otavaleños and Lojanos as “perfectly capable of entering national life, and a very valuable element for the nation.”²⁹ Yet, he proposed for them a blend of legislative, educational, religious, and economic reforms to improve the situation of Indians across Ecuadorian society.

The Otavaleños of which Sáenz wrote were, in many ways, considered more than Indians in Ecuador. Throughout the twentieth century they symbolized what all Native Americans could become if the process of civilizing them was allowed to take its “natural” course.³⁰ It was a debate that was present during Ecuador’s progressive era in which intellectual and political debate involved many of the images and concepts of “indianness,” “mestizaje,” “nation,” and “Ecuadorian-ness.” Ultimately, though, as is often the case with these types of debates, it was a monologue of the white and mestizo elites who held no stock in the real improvement of the lives of the Indians. Thus, the Ecuadorian politician and journalist Leonidas Pallares Arteta, at the turn of the century, described the Otavaleños’ behavior and generally “clean” attitude as hard workers and respectful of order can be regarded as a good example of the effectiveness of liberal ideology and laissez-faire economics.³¹

²⁹ Moisés Sáenz, *Sobre el indio ecuatoriano y su incorporación al medio nacional* (Mexico City: Publicaciones de la Secretaría de Educación Pública, 1933).

³⁰ See Blanca Muratorio’s discussion on Ecuadorian intellectuals’ portrayal of Ecuadorian Indians and Ecuadorian-ness in her “Images of Indians in the Construction of Ecuadorian Identity” in *Latin American Popular Culture: An Introduction*, edited by William H. Beezley and Linda A. Curcio-Nagy (U.S.A.: Scholarly Resources, 2000).

³¹ Muratorio, 112.

BRIEF REVIEW OF RELEVANT LITERATURE

Besides being a work on the history of a particular country, this dissertation is also a work on the history of medicine in which the history of bubonic plague plays a significant role. The literature on plague and public health is part of a very broad and extensive literature covering the social history of medicine. Great watersheds have been made in the social history of both American and Western European medicine, but of particular importance to this study is the extensive knowledge that exists covering the third plague pandemic, that of 1895, which begins in Asia and travels westward and across continents and oceans. A quick bibliographical review of the history of this pandemic focuses on such cities as Hong Kong, Calcutta, San Francisco, Honolulu, Sydney, and Cape Town. It is certain, however, that the 1895 pandemic did reach the Pacific coast of South America and was a direct result of technology, modern shipbuilding, and the need for labor that characterized the turn of the twentieth century in the western hemisphere.

Historians who have dealt with bubonic plague in modern times are many and they have approached the topic from a variety of perspectives. These historians, however, have primarily and quite effectively focused on either the creation and imposition of public health regulations in times of epidemic crises or on public reaction to outside agencies or medical experts who have come to “civilize or cleanse” the infected populations. Of particular importance to this kind of history of medicine are such authors as Mark Harrison,³² Alice Conklin,³³ and James C.

³² Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine, 1859-1914* (Cambridge: Cambridge University Press, 1994).

³³ Alice Conklin, *A Mission to Civilize: The Republican Idea of Empire in France and West Africa, 1895-1930*. (Stanford: Stanford University Press, 1997).

Mohr.³⁴ The fact that these two perspectives (i.e., that of public health regulation and that of public reaction) go hand-in-hand has allowed for some significant and important contributions to the history of medicine on a broad level and, more specifically, in the history of public health.

Broadly speaking, studies of the three major plague pandemics (the Justinian Pandemic of the sixth century, the infamous Black Plague of the fourteenth century, and the Third Pandemic of the turn of the twentieth century) have emphasized, among other factors, the epidemics' economic and religious implications. These implications range from the tendency to blame members of other cultures, ethnicities, or races to the blaming of followers of other faiths and religions. Additionally, studies have evaluated the way that general populations have reacted to epidemic crises and to the efforts put forth by governmental authorities to eradicate the sources of infection. In the study of more recent plague epidemics, great emphasis has been placed on the impact of the bacteriological revolution. The impact of this scientific and intellectual revolution on social, political, and economic policy has been evaluated via the analysis of the use of quarantine and fire, vaccination campaigns, public health policy that emphasized education and instruction, and the medicalization of government bureaucracy in order to facilitate disease source eradication.

Focusing on post-independence Latin America, though, the history of medicine has only recently begun to grow. Nancy Leys Stepan³⁵ first started writing

³⁴ James C. Mohr, *Plague and Fire: Battling Black Death and the 1900 Burning of Honolulu's Chinatown*. (Oxford: Oxford University Press, 2005).

³⁵ Nancy Leys Stepan, *Beginnings of Brazilian Science: Oswaldo Cruz, Medical Research and Policy, 1890-1920* (New York: Science History Publications, 1976).

about Brazilian tropical medicine when she focused on the work of Oswaldo Cruz, the Brazilian doctor who gained world acclaim for his scientific and medical achievements. Other authors have focused on vaccination revolts, the interpretation of tuberculosis, and the relationship between the state and various diseases.³⁶ More recently, other works have focused on Peru's cholera epidemic of the 1990s³⁷ and the yellow fever epidemic of the early 1900s³⁸ that seemed to affect almost every seaport in Latin America (though it is Rio de Janeiro that has received the most attention) with an overarching emphasis on the struggle for order and progress that was a direct result, for example, of Comtean positivism and Neo-Lamarckian ideologies as well as other modernizing philosophical perspectives that came to be identified with the twentieth century and with nation-building in Latin America.³⁹

The history of medicine in Ecuador, as part of the broader history of medicine in and of Latin America in English, is lacking a substantial historiography. Very little has been written on Ecuador's medical or epidemiological history, and even less on its brief but important encounter with bubonic plague during the early twentieth century. The only significant discussion of Ecuador's epidemiological past in English is found – at the time of this writing -- in such works as Linda Newson's *Life and*

³⁶ Diego Armus provides an excellent resource on the history of disease in Latin America in his edited work *Disease in the History of Latin America: From Malaria to AIDS* (Durham: Duke University Press, 2003). In it the reader will find a variety of interpretations and a rather broad approach to the study of both physical and psychological infirmities. Of particular note is the importance attributed to the various Latin American states in the interpretation of those diseases and the application of state-sponsored cures.

³⁷ Here the prominent historian is Marcos Cueto who discusses the Cholera epidemic of the 1990s in his book, *The Return of Epidemics: Health and Society in Peru during the Twentieth Century* (Burlington, VT: Aldershot, 2001).

³⁸ See Jeffrey Needell, "The Revolta contra vacina of 1904: The Revolt against "Modernization" in Belle-Époque Rio de Janeiro," *Hispanic American Historical Review* 67:2 (1987): 233-269.

³⁹ An obviously excellent source of information regarding the ideologies of Latin America is Leslie Bethell's edited work *Ideas and Ideologies in Twentieth Century Latin America* (Cambridge: Cambridge University Press, 1996).

*Death in Early Colonial Ecuador*⁴⁰ and Suzanne Austin Alchon's *Native Society and Disease in Colonial Ecuador*,⁴¹ both of whom – as their titles suggest – focus on the pre-national period. Ecuador's medical historiography does not, however, begin with its national era, but requires further research if historians are to form some connection between the country's historical and modern medical traditions. Newson's and Alchon's research, for example, has shown that the native Andeans indeed dealt with various epidemics before and during colonization ("dancing sickness" and small pox, for example) in their own ways that included bathing, sweating, purging, and herbal preparations though unfortunately to very little avail. In later colonial times – during and after the much written about demographic collapse – officials largely abandoned the practice of isolating the sick during the seventeenth century because of the difficulties involved in controlling the movement of people throughout their jurisdictions, thus dooming any real control of infectious disease. Furthermore, Alchon provides information on a variety of epidemics that affected the Andean region, including the area we know as Ecuador today and the approximate number of lives that those epidemics claimed.⁴²

In Spanish, some of the major works on Ecuadorian epidemiology, or plague specifically, include Plutarco Naranjo's *Capítulos de historia de la medicina en el Ecuador*, Eduardo Estrella's *Medicina y estructura socio-económica*, and Carlos A. Miño's *Historia de la peste bubónica en el Ecuador: factores etiológicos, formas*

⁴⁰ Linda Newson, *Life and Death in Early Colonial Ecuador* (Norman: University of Oklahoma Press, 1995).

⁴¹ Suzanne Austin Alchon, *Native Society and Disease in Colonial Ecuador* (Cambridge: Cambridge University Press, 1991).

⁴² Of special interest is her assertion that some of the diseases described by pre-colonial narratives seem to be all too similar to a form of bubonic plague. Thus, she raises the question that plague might not be uniquely European in origin.

climáticas y erradicación.⁴³ What other sources can be culled from the field of the history of

Table 1.1
Epidemics in the north-central highlands of Ecuador, 1524-91

Date	Disease	Mortality
1524-1528	Smallpox	1/3 to 1/2 died; "more than 200,000 persons died"
1531-1533	Measles	25% -30% died
1546	Pneumonic plague or typhus	"innumerable people died"; possibly 20% died
1558-1559	Smallpox, measles, and influenza	15%-20% died
1585-1591	Smallpox, measles, typhus, and influenza	Approximately half the native population perished

Source: Adapted from Alchon, *A Pest in the Land*, 76. Used with permission of the University of New Mexico Press.

medicine regarding Ecuador can be taken and extrapolated from the political, anthropological, and sociological discussions of the small country's diversity. Thus, any study of Ecuador's epidemiological history necessitates comparison and contrast with other Andean and Latin American countries and with the work of historians (as well as anthropologists and sociologists) who have studied regions and cities outside of Latin America.⁴⁴

Finally, most studies of bubonic plague have focused on pre-modern societies. It is usually the case, as in Myron Echenberg's study of colonial

⁴³ Plutarco Naranjo, *Capítulos de historia de la medicina en el Ecuador* (Cuenca: Colegio de Médicos del Azuay, 1981); Eduardo Estrella, *Medicina y estructura socio-económica* (Quito: Edit. Belen, 1980); Carlos A. Miño, *Historia de la peste en el Ecuador: factores etiológicos, formas climáticas y erradicación* (Quito: Impr. Nacional, 1933).

⁴⁴ Richard Evans, *Death in Hamburg: Society and Politics in the Cholera Years* (New York: Penguin Books, 2005) would be an excellent point of departure for this kind of comparison although the resources and circumstances of Germany were so very different from those of Ecuador.

Senegal,⁴⁵ that the colonial metropolis saw its role as one requiring the hygienic or sanitary modernizing of the colonized area or people. In the case of Ecuador, as a case in contrast, the process of modernization was already well underway as it was throughout most of Latin America. Modern methods were used to instruct the populace on cleanliness and avoidance of infection; the pamphlet literature found focused on the modern theories regarding order and progress as they applied to both cities and infrastructure. It was even recognized that the major project of Ecuadorian modernization – the idolized *ferrocarril*, or railway – was the means by which progress was to be brought to the highlands and that it would serve in combating the same plague that it inconveniently transported to the previously isolated highlands via intense supervision and painstaking disinfection processes adopted by Ecuadorian and railway officials and representatives.

On the nature of plague in Ecuador, however, we must rely primarily on either scant primary sources to be found in Quito archives or in the few reports of such medical and scientific experts as Atilio Machiavello, Clifford Rush Eskey, and John D. Long who worked with plague cases during the third and fourth decades of the twentieth century. The paucity of original material regarding Ecuador's encounter and confrontation with plague has made it challenging to effectively apply the overarching themes so easily discovered in the works focusing on plague in better researched areas, such as that of nationalism or even of modernization. There is, however, just enough material to ferret out some ideas that do indeed shed light on

⁴⁵ Myron Echenberg, *Black Death, White Medicine: Bubonic Plague and the Politics of Public Health in Colonial Senegal, 1914-1945*. (Portsmouth, N.H.: Heinemann, 2002).

the history of medicine in Latin America and the uniqueness and particularity of that history in less researched countries like Ecuador.

CHAPTER OUTLINE

The story of plague in Ecuador and the country's efforts to combat it begins in chapter 2. Although varieties of plague have arguably existed in Ecuador long before the early Spanish colonial period, it is not until the end of the nineteenth century's modernizing zeitgeist when the disease became a social problem and a matter of governmental or political intervention. Plague became, in Ecuador, a symbol of the coastal area's underdevelopment and the reputation of the port city of Guayaquil as the "pesthole of the Pacific." This sobriquet was assigned by a variety of foreign diplomats who were hesitant to accept any assignment there and by independent travelers who have documented the fetid nature of their encounters with Guayaquil. Thus, the persistence of plague and the possibility of plague vectors arriving in the highlands in and on the bodies, clothing, and sputum of migrants and other travelers were of paramount importance as the nation attempted to negotiate its place within the global economy. Therefore, in this second chapter I very plainly attempt to discuss the world into which plague was transported and how the nation's geography, society and economic history made it possible. The chapter predominantly portrays a country that is and has been significantly marked by its geographic and environmental realities and a nation that was eventually united by a growing and modernizing economy.

In chapter 3, I narrate the effort or scramble to understand plague and all of its manifestations during the initial years of the Ecuadorian plague epidemic. I discuss the attempt to discern plague's danger to Ecuador at the beginning of the global pandemic and the nation's initial attempts at preventing plague from crossing the country's borders or approaching its southernmost coast until its definitive arrival in 1903 by sea and its initial climb toward the highlands in 1908. Despite some initial attempts to place blame on non-Ecuadorians (Chinese, Turks, and Peruvians, for example), the national government's goal focused on trying to find out what exactly caused plague in this part of the western hemisphere and the determination of how easily plague could impact the nation's cultural and political capital, the highland city of Quito. Underlying these efforts was the state's desire to join the larger family of civilized nations that were the product of modernity's "celebration of the processes of industrial capitalism and nation building as the natural development of an increasingly secular and industrialized world."⁴⁶

Chapter 4 examines the development of the state's and medical bureaucracy's models of plague in the environment as these institutions attempted to place the reality of plague within an Ecuadorian context that did not quite fit either the European or Asian models until then studied. By the time control work began in earnest in 1916, the goal of plague control was clear: regional development. Thus, intervention necessitated the exploration and surveying of infected areas on the southern coast (Guayaquil) and in the Andean highlands. These comprehensive surveys identified plague hazards and reservoirs and brought into question a variety of traditional customs and habits held by highlanders, specifically indigenous

⁴⁶ Overmyer-Velazquez, 7.

peoples, who were thought to be the often uncouth propagators of inter-human (or pneumonic) plague infection. Work began in the sanitation and establishment of clinics and lazarettos; and the anti-plague campaign soon was frustrated by varying degrees of opposition, fiscal frustrations, and a distorted perception or model of plague in the landscape. State-led attempts to build an approach to plague control reflected the new century's microbiological knowledge and were the basis of much of the public health apparatus' thinking on domestic and public hygiene. This thinking was particularly applied through the work of sanitation delegates and the *inspectores ad honorem* who came to personify the search for possible foci of infection and transmission of plague potential.

Chapter 5 uncovers the dénouement of the anti-plague campaign during which bubonic plague declined throughout the 1920s and 1930s. I discuss the idea that its demise in 1930 ultimately hinged on the convergence of three factors that included: first, the effective organization that Drs. Carlos A. Miño, Pablo A. Suárez and others had established throughout the infected areas and those areas in danger of infection; second, the technological innovation and discovery of effective ways of collecting, killing, and examining both rodents and fleas; and, third, the public health research, programs and laws recommended by such important public health emissaries as Clifford R. Eskey and John D. Long, both of the United States and each representing a separate (foreign) public health entity.

Finally, in chapter 6, I focus on the process of plague eradication in Ecuador: what worked as well as what did not. I discuss the importance that the anti-plague campaign had on the Ecuadorian social, political, and public health landscape and

how this all came together to help Ecuador find its social and economic niche in the modern global community of the twentieth century. I summarize the findings of the dissertation's theses and I return to an engagement with key concepts in the broader scholarly literature of the history of medicine in Latin America. Here my specific focus is on control strategies and the attempt to modernize traditions and customs via the ideas prevalent in the twentieth century. I reflect on the nature of scientific medicine in Ecuadorian politics and nation building while also attempting to discuss the significance of Ecuador's confrontation with plague within the context of its own history. Ultimately, I illustrate that Ecuador's anti-plague efforts were demonstrative of two major theses. First, the successes (or failures) that accompanied Ecuador's state-led health measures were very much based on the agency assumed by various private and communal entities. Second, modernization's success in Ecuador was shaped not only by formally disciplined and Eurocentric institutions, but also by the most basic of historical factors, human beings.

Chapter Two

Time and Place of Disease

At the dawn of the twentieth century, it could easily be said that there were several Ecuadors, each with its own identity and each with its own culture separated by distance, climate, and roads that could barely be traveled without great difficulty for most of the year. Furthermore, each of these Ecuadors was very much isolated from the others due to a combination of factors that gave each region its own reality. Consequently, when plague appeared in Ecuador for the first time during the twentieth century, as part of the worldwide pandemic of 1895, it did so not as a result of a simple eruption of plague within a specific reservoir of infected rodents. Rather, plague's appearance during the first decade of the century in this far flung area of the western slopes of the Andes was facilitated by a number of geographical, economic, and socio-cultural realities that converged in Ecuador's attempts to modernize its infrastructure and its population.

The example of plague in Ecuador is part of, first, a larger history and historiography of medicine that covers a broad range of epidemic crises, as well as the reaction to and the policies made in the face of those crises by governments, medical experts, and general populations. Second, the example of plague in Ecuador is a case study in support for the importance of epidemics in the histories of areas normally kept in the periphery of Latin American studies. Thus, in this chapter we will take a look at the reactions and policies that were "created" by the crisis. We will also discuss the role of the history of epidemics and the particular case of

Ecuador within that history so that, in the end, we can unravel a more complete study of the Ecuadorian plague epidemic.

THE IMPORTANCE OF STUDYING EPIDEMICS

History of medicine must possess its own concepts, but it is not unique from other types of history as it also involves the analysis of multiple cultural and social factors conditioning a specific aspect of medicine. Whether studying an epidemic threat, a medical disaster, or a pandemic as serious as the Black Death or influenza, historians of medicine often realize that medical realities reflect underlying and less obvious characteristics of society. Even a casual review of the literature in the history of medicine will bring to light such issues as social inequalities, attitudes toward minorities and the subaltern, urban and bureaucratic planning strategies, and local and medical traditions.

The history of medicine reveals the technological and scientific states of a society or a nation and, more importantly, it unearths a society's ideas and approach(es) to disease in light of its generalized view of itself as a community or nation. The case of Ecuador is no exception to this rule, and the case of plague unearths truths about Ecuadorian culture and reality that have been affected by plague's arrival and which, in turn, have impacted on the way that plague was confronted by Ecuador's various institutions and communities. Many of these notions arise easily out of an anthropological study of Ecuador's myriad cultures and

societies, but they can also be seen in the way that medical scientists and bureaucrats wrote about the habits and customs of Andean highland populations.¹

It is helpful to look at epidemics from a variety of perspectives. Geography, economics, and culture are normally useful points of departure for studying how a specific disease came to appear at a certain moment in history. Time and again, historians have framed the diseases they have studied within the context of these three factors, and it is equally beneficial to do that with plague in twentieth century Ecuador. After all, the only real way to study plague in an area of the world formerly isolated from coastal and transoceanic diseases is to study how the intermingling of geography and economics affected the cultural, political, and societal customs, habits, and mores of the people impacted. As historian Sheldon Watts has suggested,

[v]ery often, ordinary people found that policies put in force during an epidemic – the quick burial of corpses in lime in mass graves, confiscation of the property of the dead, closure of markets, establishment of quarantines – posed far greater threats to their world of lived experience and expectation than the disease itself.²

In the case of Ecuador, understanding how geography, economics, and culture come together to make the study of plague in the Andes possible is paramount. My aim in this chapter, therefore, is to understand the country's geographical, political, and economic dynamics before, during, and after plague reached its shores and to understand how a geographically isolated and divided

¹ Some obvious and not-so-obvious sources include Daniel W. Glade's "The Guinea Pig in Andean Folk Culture" in *Geographical Review* 57:2 (1967): 213-224), Lois F. Parks and Gustave A. Nuernberger's "The Sanitation of Guayaquil," *The Hispanic American Historical Review* 23:2 (1943): 197-221), and Atilio Machiavello's "Epidemiology of Plague in Ecuador," *American Journal of Public Health and the Nation's Health* 33:7 (1943): 897-911.

² Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism* (New Haven and London: Yale University Press, 1997), xv, for a brief discussion of the importance of studying epidemics.

country came to be connected via conquest of the country's terrain. Key to this is understanding how this connection was only possible by virtue of the government's acceptance of the models of modernization so prevalent throughout Latin America at the end of the nineteenth century as the means by which to create or build the nation. The economic framework under which Ecuador was working at the moment when plague arrived at the country's doorstep is ultimately also what made Ecuador susceptible to the invasion of an enemy so illusory and unconquerable in centuries past.

Unlike what transpired in many countries of Asia and Africa, however, the plague epidemic of the twentieth century did not strike hard in Latin America, or in Ecuador specifically.³ Despite the lower number of plague infections and deaths, though, plague was able to instill incomparable fear and dread in the minds of people even remotely familiar with plague history and among the rank and file of the bureaucratic and administrative political apparatus that was in the midst of development and growth. What followed plague's 1903 arrival in coastal Ecuador was an administrative attempt, largely successful if time-consuming and rather fitful in nature, to bring new standards of hygiene and cleanliness to the masses before the onset of the bacteriological revolution of the 1950s. Ecuadorian medical and administrative personnel were granted new degrees of authority and autonomy and

³ Some worthwhile material sources on the 1895 pandemic includes such works as I. J. Catanach, "Plague and the Indian Village, 1896-1914," in *Rural India: Land, Power and Society under British Rule*, edited by Peter Robb (London: Curzon Press, 1983); A. K. Chalmer, *Report on Certain Cases of Plague Occurring in Glasgow in 1900* (Glasgow: Corporation of Glasgow, 1901); Rajnarayan Chandavarkar, "Plague Panic and Epidemic Politics in India, 1896-1914," in *Epidemics and Ideas: Essays on the Historical Perceptions of Pestilence*, edited by Paul Slack and Terrance Ranger (Cambridge: Cambridge University Press, 1992), and Philip A. Kalisch, "The Black Death in Chinatown: Plague and Politics in San Francisco, 1900-1904" in *Arizona and the West* 14 (1972): 113-136.

their more expansive duties included not only overcoming regional and geographic differences, but also transcending the economic and political needs of a developing people and nation.⁴

It is incredibly important to understand Ecuadorian's varied and difficult geography, as it has, in so many ways, been the one consistent factor that has helped define both Ecuador and Ecuadorians. Authors like historian Ronn Pineo have made use of geography in understanding Ecuador in discussing the nation's foreign relations, racial composition, interregional transportation, and national customs, but these discussions only cover the outer shell of Ecuadorian reality (or realities).⁵ Others, such as geographer Sarah Radcliffe and sociologist Sallie Westwood have also utilized geographic concepts marrying them to notions of race, state, and nation in the attempt to understand Ecuador's experience with nation building.⁶ Still, non-academics have addressed Ecuador's geography in interesting ways. Travel writer and mountaineer Rob Rachowiecki, for example, utilizes Ecuador's terrain in order to discuss a general "fascination with the northern Andes," but, – more importantly – uses the country's geography as a backdrop to his

⁴ Key sources of information are the reports of bureaucratic entities created specifically for surveying and monitoring the potential for plague infection. Two of these entities were the government-sponsored Supreme Council of Health and Hygiene and the Anti-plague League whose main responsibilities entailed reporting to the national government the possibility and probability of plague entering the capital environs. Both of these entities are discussed in more detail in Chapter 3.

⁵ See Ronn Pineo, *Ecuador and the United States: Useful Strangers* (Athens and London: The University of Georgia Press, 2007) for a brief but interesting discussion on the impact of geography on Ecuadorians and in the understanding of Ecuadorian-ness.

⁶ See Sarah Radcliffe and Sallie Westwood, *Remaking the Nation: Place, Identity and Politics in Latin America* (London and New York: Routledge, 1996).

historical discussion of La Condamine's equatorial survey expeditions, a major source of contemporary Ecuadorian national pride.⁷

Additionally, we will come to understand — via our discussion of the nation's geography and of the nature and history of plague — how something as small as the rat flea and something even smaller and invisible to the naked eye, the plague bacillus, have been able to impact the way that turn-of-the-century governmental and medical authorities worked toward sanitizing the country's major cities and ports, provided medical oversight of the newly constructed railway system, prevented plague from entering the cultural center of the country, Quito, and oriented a mostly highland population toward new methods of cleanliness and maintenance of good health.

ECUADORIAN GEOGRAPHY AND SOCIETY: A HISTORICAL PERSPECTIVE

When plague arrived on the shores of Ecuador, it encountered a geographically small country lying in the northwest corner of the South American continent, bordered to the north by Colombia, to the east and south by Peru, and to the west by the Pacific Ocean (see Fig. 2.1). The disease arrived at a country today recognized for its rather diverse climate, its seemingly infinite flora, and its wide variety of fauna that are found nowhere else in the world. In discussing Ecuadorian history, it is important to consider the country's rich geography in defining the various regions and populations within the country. Geography has also deeply influenced Ecuador's relationships with its continental and international neighbors and its

⁷ Rob Rachowiecki, "Mountaineering on the Equator: A Historical Perspective" in Carlos de la Torre and Steve Striffler, eds., *The Ecuador Reader: History, Culture, Politics* (Durham and London: Duke University Press, 2008).

oftentimes overwhelming political instability. Much of this instability has resulted from the country's internal regional rivalries along with its economic, social, and political realities. In short, Ecuador and Ecuadorians are as much defined by the country's geographical realities as by any other factor. In 1903, plague arrived into the midst of this confluence of factors and was in great part also shaped by those same factors.

Fig. 2.1:
Map of Ecuador.



Source: Adopted from www.geographicguide.net/_america-/ecuador.htm. Accessed on 13 March 2009 at 10:55 a.m.

Like most countries in Latin America, Ecuador possesses a rich history, a history that is framed by the country's pre-Inca, pre-Hispanic, colonial, and national periods. Now independent for a little under two hundred years, Ecuador's culture has been defined primarily by two major cities: Quito in the highlands and Guayaquil on the coast. Of the two, Quito is the more profitable tourist destination and is situated at over 2,800 meters (a little more than 9,200 feet) above sea level and is surrounded by high mountains and volcanoes which, in recent decades, have seen their fair share of geological activity. Quito is a city known for its colonial center and was named a World Heritage site by UNESCO in 1978 for its colonial cobbled streets, its plethora of gold- and art-filled churches, and the convergence of a variety of cultures that contribute to the hubbub of daily life in the city's center. Now the capital of the country, Quito, was once the seat of a Spanish colonial *audiencia* that depended heavily on church tithes. This fact is clearly seen in the way that politics historically favored church prerogatives and an agrarian status quo that was strongly influenced by Ecuador's colonial heritage.⁸

Guayaquil, on the other hand, is the modern progressive city of Ecuador and is today quite different in almost every way from what it was at the turn of the twentieth century when it was known as the "Pesthole of the Pacific" and ideal for the arrival and spread of plague and other tropical diseases. Situated on the Guayas River and estuary, it is home to the country's financial powers and is the engine that runs Ecuador's import and export trade. As anthropologist O. Hugo Benavides writes, "it is the city's characteristics as a port – seafaring flux, urban

⁸ An excellent reference is Kris Lane, *Quito 1599: City and Colony in Transition* (Albuquerque, NM: University of New Mexico Press, 2002) in which the author discusses Quito's trajectory from being an Incan kingdom to being one of the Spanish Empire's trading posts for the Andean region.

chaos – and a romantic colonial vision of rural harmony that has fed Guayaquil's evolution as Ecuador's economic capital."⁹ It is a city whose inhabitants are proud of its liberal characteristics and proclivities, its openness to new ideas, its skyscrapers and modern buildings, and its particular cultural expressions of art and literature. On almost every level, Guayaquil is Quito's rival and has often competed for equal attention, cultural acknowledgment, and governmental representation with the national capital. In his book, Benavides discusses Guayaquil's unique role in Ecuadorian history and how Guayaquilean identity has been molded by the events that helped define and build the nation at the turn of the twentieth century.

Understanding Ecuador's geography is not essential solely because of its diversity, though; its importance lies in the fact that it has contributed to the deep regional and cultural fissures which have defined the very nature of Ecuadorian politics and culture and which center around the country's two main cities. It is a country comprised of twenty-two provinces, separated into four regions under the umbrella of a federal republic, and divided along both geographical and climatic lines. On the mainland, from west to east, Ecuador has its coastal or littoral region (Costa), the Andean mountain chain (Sierra) that forms the country's backbone, and the Amazon basin (Oriente), which is comprised of dense jungle, intermittent communities of people, and the tributaries of the Amazon River. Approximately 600 miles west off the mainland in the Pacific Ocean lies the nation's twenty-second province: the Galapagos islands, made famous by Charles Darwin and inhabited mostly by scientists, small fishing and tourism-based communities, various species

⁹ Benavides, O. Hugo, *The Politics of Sentiment: Imagining and Remembering Guayaquil*. (Austin: University of Texas Press, 2006), 53.

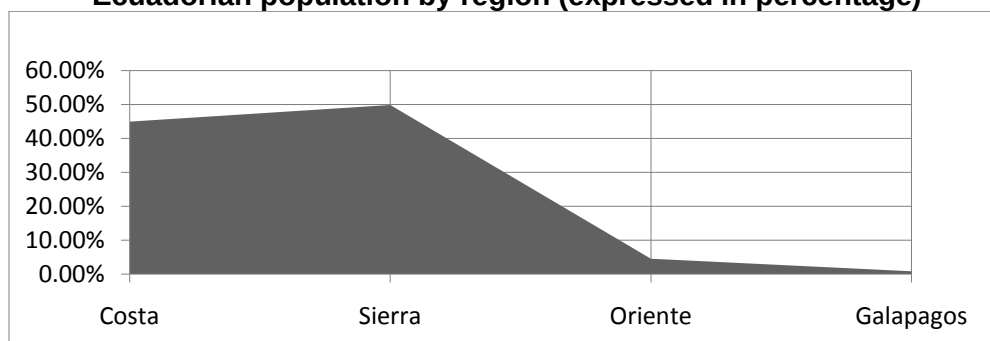
of seal, blue footed boobies, and the great Galapagos tortoises that give the archipelago its name.

The two towering Andean mountain cordilleras running through Ecuador from north to south are comprised of approximately thirty volcanoes – thus, the name “Valley of the Volcanoes” – and it is Mount Chimborazo, reaching an altitude of 20,577 feet, that seems to reign majestically over this portion of the mountain range that runs from Northern Colombia down the spine of Chile to the southern-most tip of the continent. Between the two chains of the Andes that make up this range lie a dozen or so fertile basins varying in elevation and serving as the heart of the Ecuadorian sierra. This combination of basin and mountain contribute to an eternal springtime climate that is excellent for the production of a wide variety of grains, fruits, and vegetables. The variations in altitude and climate, however, also provide ideal centers for disease vectors such as fleas and rodents that are taken into consideration later in this study.

In the same way that the country is split down its spine by the Andean mountain chain, there is another line – albeit imaginary – that divides Ecuador into North and South: the equator, passing just north of Quito, and from which the country derives its name. Thus, Ecuador is the Republic of the Equator, divided into quadrants by the Andes (flowing North-South) and the equatorial line whose coastal-highland communication had, until the latter half of the nineteenth century, been conducted via horse and mule trains over trails which for many months of the year were tortuous and impassable.

The current population of the nation stands at a little less than 14 million where numbers for the Costa have recently been a good deal larger than that of the Sierra.¹⁰ Ecuador's 2001 national census, for example, indicates that approximately 44.9 percent of the Ecuadorian population lived in the Sierra as compared to the 49.8 percent who lived on the Costa attracted by the fact that the coast (and, especially the port city of Guayaquil) has become the nation's indubitable industrial and commercial powerhouse. The remainder of Ecuador's population lives in the much less populated areas of the Oriente and the Galapagos (or insular) regions where 4.5 percent live in the former and 0.8 percent in the latter, this last group of Ecuadorians being referred to as *colonos*. According to the same census, men represent a small majority of the population across the national territory in each of the four regions for the exception of the Sierra where women represent 51.7 percent of the population.

Table. 2.1:
Ecuadorian population by region (expressed in percentage)



¹⁰ Adapted from the website of the Ecuadorian *Instituto Nacional de Estadística y Censos* (<http://www.inec.gov.ec/web/guest/inicio>), accessed on March 13, 2009 at 12:48 p.m.

In eras prior to the twentieth century, however, the population of the region that would become Ecuador before the Spanish conquest has been estimated, according to geographer Linda A. Newson, at approximately 1.6 million.¹¹ Of these, 51.2 percent is said to have lived in the Sierra, 34.1 percent on the coast, and the remaining 14.7 percent in the Oriente. Of these three regions, the one containing the densest population was the Sierra and it was comprised of polities that were socially stratified and that sometimes joined to form confederated populations that could number in the tens of thousands. These statistics vary slightly from what historian Susan A. Alchon claims for the pre-contact population for the highlands. Alchon holds that the population hovered at about 1,080,000 and that by the eve of the conquest in 1534 it had been reduced to between 375,000 and 570,000 indigenous souls.¹²

In colonial times, Old World epidemics, losses in population numbers due to conflicts between indigenous and Spanish colonizers, the loss of expedition members to jungle and highland diseases, and the demands on Indian production, labor, and land all affected the demographic trends that characterized this region of the Viceroyalty of New Granada, which was comprised of what would – after their respective attainments of independence – become Colombia, Venezuela, and Ecuador.¹³ From an imperial perspective, however, Ecuador was economic

¹¹ See Linda A. Newson's *Life and Death in Early Colonial Ecuador* (Norman and London: University of Oklahoma Press, 1995) for a much more detailed discussion of population and depopulation statistics for Ecuador prior to and during the period of Spanish colonization.

¹² Suzanne Austin Alchon, *Native Society and Disease in Colonial Ecuador* (Cambridge; Cambridge University Press, 1991).

¹³ An excellent point of departure for this discussion is Suzanne Austin Alchon, *A Pest in the Land: New World Epidemics in a Global Perspective* (Albuquerque: University of New Mexico Press, 2003) in which she discusses the decline of the native American population (and the Andean area in

backwater as is evidenced by the fact that no great fortunes were ever made as in other more populated segments of the Spanish American empire: a reality that was reflected, for example, in the delayed foundation and slow growth of towns in the Sierra where mining was not intensive for lack of the mineral ores that were in contrast discovered and worked in Mexico and Peru.¹⁴

During the colonial period indigenous people constituted the bulk of the population in rural zones, but the cities of the highlands (i.e., Quito, Riobamba, Cuenca, and Ambato) came to be home to the white population and an ever-growing number of mestizos, people defined as a mix of white European and indigenous races. These racial patterns within the Sierra persist even today, although overall the region now holds a slightly smaller population than does the coast, a fact attributable to the substantial industrial growth and beautification programs that the coast has seen in recent decades.¹⁵

Unlike the Sierra, the Coast – hot, wet, and tropical – lacks zones ideal for temperate agriculture and food production. The fact is that such factors as climate variations, distance from the coast, and the Humboldt and El Niño currents have resulted in considerable differences in vegetation cover and animal life in the coastal region. In contrast to the dry, desolate coast to the south, the coastal plain of Ecuador is ecologically diverse and it is possible to pass from tropical rain forest in the north to desert conditions in the south. During the colonial and early national

particular) by comparing its experiences with diseases and infections with those of other global populations.

¹⁴ See Alberto Acosta, *Breve historia económica del Ecuador* (Quito: Corporación Editorial Nacional, 2006) for a complete discussion of Ecuador's economic history from colonial times to its dollarization of its economy in 2000.

¹⁵ See Pineo, *Ecuador and the United States*, for a brief but interesting discussion of these population trends.

periods the coastal region was primarily thinly populated, especially in comparison to the highlands, but it was not uncommon for New World epidemics, for example, to affect the peoples of the coastal regions as discussed in the writings of such chroniclers as Felipe Guamán Poma de Ayala¹⁶ or Garcilaso de la Vega.¹⁷ In much of their writings, both Poma de Ayala and de la Vega have described pre-colonial health and disease as characterized by devastating epidemics, famines, and wars.

It was only in the late nineteenth century that the coastal population of Ecuador began to grow rapidly as cacao production and export soared, attracting large numbers of indigenous and other rural migrants to travel down from the highlands in search of work. The growth witnessed by Guayaquil and its surrounding areas resulted in the city's population increasing from 26,000 in 1877 to 120,000 by 1925.¹⁸ Many people were drawn from the impoverished and increasingly crowded highlands to the port city by the hope of finding a better socioeconomic situation. Most did not find it, however, since the city's development pattern did not create a sufficient number of employment opportunities for the various waves of migrants.

Additionally, in contrast to other regions of Latin America, where African slaves comprised a significant percentage of workers, Ecuador had only imported about 8,000 slaves total and those actually performed very little of the agricultural

¹⁶ Guamán Poma de Ayala, *Primer nueva crónica i buen gobierno* in the edited work of John V. Murra, Rolena Adorno and Jorge L. Urioste. (Madrid: Historia 16, 1987).

¹⁷ See José Nicolás de Azara y Perera, ed., *Obras de Garcilaso de la Vega* (Barcelona: Jordi, Roca y Gaspar, 1804).

¹⁸ Ronn Pineo, "Misery and Death in the Pear of the Pacific: Health Care in Guayaquil, Ecuador, 1870-1925," *The Hispanic American Historical Review* 70:4 (1990): 611.

labor.¹⁹ Instead, African slaves (who worked predominantly in Quito) were utilized principally in *talleres*, or workshops, that focused on the production of textiles, lace, and cloths for export. It was only after Ecuador abolished slavery and freed all black Ecuadorians by 1852 that Afro-Ecuadorians (presently representing 5 to 10 percent of the total population) were increasingly attracted to the northern coastal province of Esmeraldas where the majority of present-day Afro-Ecuadorians live.²⁰

As opposed to the highlands and the coast, where economic processes were increasingly coordinated in the nineteenth century, the Ecuadorian Amazon was significantly less developed and connected. Early in the colonial period, during its gold boom from 1540 to 1580, this region had been more closely tied to the highland core area. By the end of the sixteenth century, however, the combination of indigenous attacks on Spanish settlements and a colonial policy that defined the Audiencia of Quito as one geared primarily toward textile and agricultural production led to the abandonment of efforts to colonize the Amazonian region.

The young republic's early nineteenth century marginality (from the perspective of the world economy) and lack of national integration were nonetheless experienced by the Amazon region's indigenous peoples as an era of demographic recovery and some recuperation of territory. Around 1850 the economy was diversified with broader economic processes through the search for rubber, with the

¹⁹ An important source of information regarding the presence and utilization of African slaves in Ecuador is Manuel Lucena Salmoral, *Sangre sobre piel negra: la esclavitud quiteña en el contexto del reformismo borbónico* (Quito: Ediciones Abya-Yala, 1994).

²⁰ The topic of Afro-Ecuadorians is an interesting one that has attracted much scholarship in recent times. The works of Norman E. Whitten, Jr., an anthropologist, for example, have been indispensable in understanding Afro-Ecuadorian standards of living, cultural and political tendencies, and social involvement in greater Ecuadorian society. Recommended are the works *Black Frontiersmen: Afro-Hispanic Culture of Ecuador and Colombia* (U.S.A.: Waveland Press, Inc, 1974) and *Los Negros de San Lorenzo: Clase, Parentesco y Poder en el Pueblo Ecuatoriano* (Quito: Centro Cultural Afroecuatoriano, 1997).

first areas exploited being those closest to Peru. It is no surprise, therefore, that this connection to Peru was a major reason for why the southern Amazon basin became a point of contention between the two countries for most of the twentieth century despite numerous attempts to come to international accord.²¹

Whereas each zone has a distinct racial and cultural composition, Ecuador's sense of regionalism has also been rooted in the different relations of production that developed over its history. In the Sierra, especially the central and northern regions, labor was almost always in great supply, and the indigenous people suffered under generally coerced labor arrangements (called *huasipungos*) until well into the twentieth century.²² On the coast, labor was relatively scarce, at least until the late nineteenth century, and was generally not coerced. Likewise, the two regions showed different market orientations: in the Sierra, chiefly for local consumption; on the coast, principally for the international market. In the case of Quito, exports were directed primarily to the country's northern neighbor, Colombia. In the case of Guayaquil, exports were directed mainly to Peru and, from there, to Europe and the United States. Thus, the country's major regions operated according to separate economic rhythms whose lack of integration culminated in 1859 when four governments (those of Quito, Guayaquil, Cuenca [in the southern highlands], and

²¹ A good source of information, though a bit outdated, is David H. Zook, Jr., *Zarumilla-Marañon: The Ecuador-Peru Dispute* (New York: Bookman Associates, INC, 1964) which not only introduces the reader to the war of 1859-1860, but also discusses the various treaties and conferences that involved the arbitration of external organizations and governments such as Spain, the United States, Brazil, and the Vatican.

²² It was not until the 1970s that Ecuadorian agrarian reform did away with *huasipungaje*, the principle of coerced labor in Ecuador. An excellent work of fiction that discusses the nature and problems of *huasipungaje* in Ecuador is the novelist Jorge Icaza's *Huasipungo*, which has been translated into numerous languages including English in which it is entitled *The Villagers* (translated by Bernard M. Dulsey, London and Amsterdam: Feffer & Simons, Inc, 1964).

Loja) all claimed to rule the national territory.²³ This lack of national integration proved to be an obstacle to any attempts at Ecuadorian unification and internal connectedness and quite arguably encouraged Peru to occupy several of Ecuador's southern zones and blockade the principal port of Guayaquil.²⁴

The advent of the twentieth century, however, brought with it a dynamic and conflict-laden period when the Liberal Revolution of 1895, spearheaded by General Eloy Alfaro thrust Ecuador into the modern age and into the world market.²⁵ This was accomplished by engendering in the highlands particularly a spirit of movement, of progress, and of connection – all characteristics that to some degree or another were already present in Guayaquil connected as it was to the international market thanks to the profitable production and export of cacao which will be discussed momentarily.

By 1900 the impetus to enter the world market was favored by the growth of the country's four major exports: cacao (making up about 70 percent of those exports), tagua (about 10.5 percent), rubber (7 percent), and coffee (another 5 to 6

²³ Both Alberto Acosta, *Breve Historia Económica del Ecuador* (Quito: Corporación Editora Nacional, 2006) and Enrique Ayala Mora, *Historia de la revolución liberal ecuatoriana* (Quito: Corporación Editora Nacional and Taller de Estudios Históricos, 1995) discuss in some detail the events that led to what Ayala Mora refers to as a “crisis de disolución” spurred on by the disastrous negotiations regarding the external debt and the intention of leasing the Galapagos Islands to foreigners under the leadership of General Francisco Robles.

²⁴ It is interesting to note that Guayaquil had originally been part of the Viceroyalty of Peru prior to the Latin American independence movements. Circumstances brought the port city under the control of Ecuador and it was some time before Guayaquileans felt as part of Ecuador and not of Peru. For more information on this matter see Jorge Salvador Lara, *Breve historia contemporánea del Ecuador* (Mexico: Fondo de Cultura Económica, 1995).

²⁵ See Lois J. Roberts, *The Lebanese in Ecuador: A History of Emerging Leadership* (Boulder, CO: Westview Press, 2000) for a discussion on how the liberal politics of the second half of the nineteenth century allowed Ecuador to attract international markets and to join the world economy.

percent).²⁶ The coast was also the center of import trade and the fabulous profits of tropical export agriculture allowed for luxury consumption in Guayaquil and its surrounding area so much so that it helped form the backbone of a growing economy. These profits were also a draw for the many Asians and Middle Easterners who would migrate to Ecuador in search of work and wealth and thus also impact on the racial makeup of the Ecuadorian nation throughout the twentieth century. As historian Lois J. Roberts writes,

when the early immigrants stepped off the boat in Guayaquil, jobless men roamed the streets...[hoping] for jobs on the cacao plantations where they could double the wages they [could receive] in the highlands [or back home].... Some did service work or competed for a day's work at the docks. Underemployed vendors lined the streets.²⁷

Unlike the coast, however, the highlands underwent processes of disarticulation, deurbanization, and depopulation during the decades immediately after the country gained independence from Spain in 1830. This means that between 1830 and 1870, the highlands saw a return to production for local markets in each of the region's thirteen Andean basins, along with a general disarticulation of transportation routes and regional economies. This deurbanization was also caused by a series of catastrophes in the late eighteenth and early nineteenth centuries that included serious epidemics of measles (1785-86, for example) and smallpox (1816), volcanic eruptions, and major earthquakes such as the one in 1798 that virtually destroyed the highland city of Riobamba.

The latter half of the nineteenth century, however, was not just a period of catastrophe and confusion. It was also a period of significant change which had

²⁶ See Alberto Acosta, *Breve historia económica* for a concise economic history of Ecuador spanning from the colonial era to the end of the 20th century.

²⁷ Roberts, *The Lebanese in Ecuador*, 45.

begun with the presidency of Gabriel García Moreno (1861-1865 and 1869-1875) who – although staunchly Catholic and known for ratifying the country's now extinct Catholic Constitution of 1869²⁸ – proposed an essentially liberal project which would help modernize the state while forging an internal market by connecting the various regions of the country through an ambitious road and railway construction program.²⁹ The dictator's proposed changes also included reforms in education (such as the development of a technological elite via the establishment of the *Escuela Politécnica Nacional*), the reformation of policing and prison policies (like the building of the Panopticon, a state-of-the-art prison), and his use or cunning manipulation of the Church, instead of the military, to further his goals of modernization. Although García Moreno's presidential legacy might very well be overshadowed by his preoccupation with religion, he has often been written into the history books as someone who contributed more to the economic and cultural well being of Ecuador than any other president of the nineteenth century. As historian Hubert Herring has pointed out, García Moreno established the country's first treasury, helped Ecuador gain credit abroad, introduced a uniform currency, spurred foreign trade, attracted foreign investment (although not without some trepidation), and improved agricultural methods.³⁰

²⁸ The Catholic Constitution required that all Ecuadorians be Catholic in order to be considered citizens of the Republic. Additionally, García Moreno "dedicated" the country to the Sacred Heart of Jesus as well as entered into a concordat with the Vatican.

²⁹ See A. Kim Clark, *The Redemptive Work: Railway and Nation in Ecuador, 1895-1930* (Wilmington, DE: Scholarly Resources, Inc, 1998) for a wonderful discussion of the project that focused on connecting highland and coast for the first time via the railway that was initiated by Gabriel García Moreno and completed in 1908 by General Eloy Alfaro.

³⁰ See Hubert Herring, *A History of Latin America from the Beginnings to the Present* (New York: Alfred A. Knopf, 1968) for a brief and perhaps outdated discussion of Ecuador's history.

As stated above, key to García Moreno's overarching and most extensive modernizing project was a railway that would connect Quito with the coast, and that would provide the country with a more direct outlet for its northern-based exports. The underlying philosophy of the railway was that of national integration and, this integration in turn, was the very constituting act of Ecuador's drive to modernity. As Prieto writes,

national integration bestows a sense of "oneness" upon all who live within the legally defined domain of the state; it subordinates limited and parochial allegiances. It centers the entire population's efforts on the whole of the nation, rather than on its separate parts.³¹

Hence, by October 1873, the first two locomotives had arrived in the country, but it was not until May 1874 when railway traffic was officially inaugurated in the short extension between Yaguachi and Milagro. By 1875, the rail line was forty-five kilometers long. In general, though, this and all other railroads had a more basic purpose: to revolutionize the way that countries did business and the way they connected to the outside world. Historians Oscar Zanetti and Alejandro García, for instance, assert that

[t]he railroad, more than a great invention, was the result of a prolonged effort of collective creation with a revolutionary process of scientific and technological development. This revolution led [sic] the productive and financing systems of capitalism to an industrial phase. The railroad, a modern solution to overland transportation, went through different phases of development before attaining its final form during the third decade of the nineteenth century [soon after which it arrived in Ecuador].³²

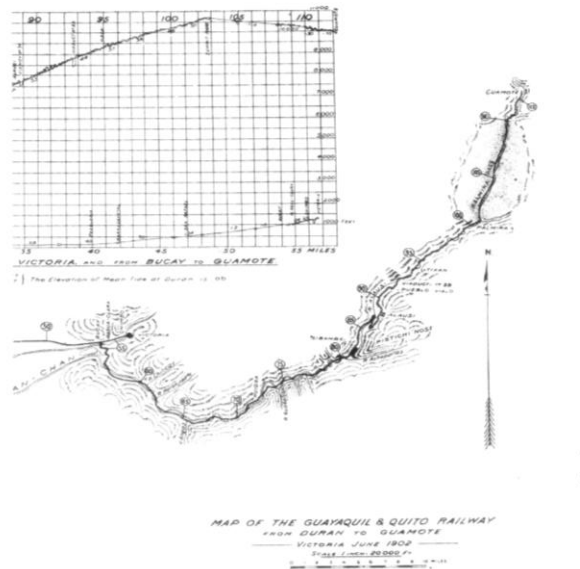
³¹ Prieto, 205.

³² Oscar Zanetti and Alejandro García, *Sugar and Railroads: A Cuban History, 1837-1959*, translated by Franklin W. Knight and Mary Todd. (Chapel Hill and London: The University of North Carolina Press, 1987).

What makes Ecuador's railway project important (although relatively small in comparison to that in other countries at the time) is that by the early 20th century, construction of the Guayaquil-Quito railway had facilitated the formation of a labor market on the coast based upon the reality that jobs focusing on construction of the railway offered higher wages than highland agriculture. This consequently impacted Ecuador's economic and commercial development. An immediate result – and something that will be discussed in the next chapter in more detail – was the migration of coastal and highland laborers who not only carried with them their cultures and values, but also brought with them some undesirable effects, the plague bacillus being but one.

Thus, from a geographic and political perspective, the world just described briefly is the world into which plague was introduced. Geographically, prior to the age of modernization, Ecuador had been a divided country with difficult communication between and among regions. It was a country simultaneously protected and isolated epidemiologically by natural and cultural barriers and enhanced perhaps by established values, customs, and mores that were strengthened by that very same isolation. Plague arrived, however, at a crossroad in Ecuadorian history when politics and economics made more facile the movement of people and cargo between and among regions. This movement of people allowed for an increased exchange in ideas and habits as well as necessary (and not so necessary) merchandise. These demographic changes obviously also enabled commuters to bring their health problems (diseases, infections, and the bacteria or viruses that cause them) to new parts of the national territory.

Fig. 2.2:
The route of the Quito-Guayaquil Railway



Source: Adopted from F. W. Bennett, "Guayaquil and Quito Railway," *Bulletin of the American Geographical Society* 35:4 (1903): n.p. Reprinted with permission of the American Geographical Society.

Politically, plague arrived at Ecuador's shores and Andean foothills at a time when the nation's intellectual elites, the *pensadores* of Quito's Universidad Central or of the Sociedad Jurídico-Literaria, were imagining or constructing the Ecuadorian nation. These *pensadores* were infused with the emergent ideas of modernity and positivism and they defended the rational, objective, analytical, and Eurocentric patterns of thought that came with modernism. It was also a time in which the country and its citizens were still contemplating its relatively new independence and all that that portended for the nascent country's new role as a member of the global community. Bureaucrats and politicians had their leadership skills and abilities tested as this new epidemiological challenger forced the government to focus on its efforts to reach out to all members of the Ecuadorian nation.

Perhaps it was indeed fortuitous that plague arrived in Ecuador when it did. Could Ecuador have dealt with the scourge had the disease arrived earlier in the country's history? Could Ecuador have mustered the ability and the talent to confront the specter of death? In the end, could Ecuador have reached out to the many poor and indigenous who might not have possessed the wherewithal to deal with plague and its impact? Part of the answer to these questions is, of course, no. But the more profound answers are found in Ecuador's economic or financial realities as they developed under the auspices of a liberal and progressive state that took on as its goal the challenging of traditional (read "barbaric") and the introduction of the modern (read "civilized").

ECUADOR'S TURN-OF-THE-CENTURY ECONOMY

Ecuador's economic policy since the second half of the nineteenth century can only be described as something erratic, liberal, and free trade oriented. The young country's experience with the world market had not, at the beginning, been anything substantial as it had no specific controls and no plan for development on the national level. The latter half of the nineteenth century, though, was an era of institutional and financial modernization in which commercial and savings banks (cajas de ahorro) were created. The Bank of Ecuador (Banco del Ecuador), for example, which was the country's most influential bank, became the springboard for the same financial and commercial modernizing project that was proposed by García Moreno and furthered by his successors under the aegis of progress and order; a progress that was, as E. Bradford Burns discusses, based on the example of

capitalism provided by countries like England, France, and the United States who maintained trading relationships with Ecuador at the height of the latter's cacao-driven economy.³³

Under García Moreno greater national economic and administrative cohesion and integration was the result of his promotion of many public works and the creation of various modes of communication that brought to commerce, agriculture, and the artisan/handicraft world a new sense of dynamism.³⁴ Ecuadorian historian Jorge Salvador Lara extols the administration of García Moreno as one of great accomplishment and, perhaps too enthusiastically, Salvador Lara writes that García Moreno's administration helped push Ecuador into the twentieth century.³⁵ Among the feats that the historian praises in his book are the establishment of popular suffrage, García Moreno's refocusing on cultural and technological advancements, his initiation of inter-regional connections via railway construction, his introduction of the Eucalyptus tree in the highlands, and his stress on educating the indigenous. García Moreno's was an era of profound and relevant change amidst a period of repressive tactics on the part of the government which were sustained by an ideology that was both centralist and theocratic. This civilizing mission of García Moreno, as historian Brooke Larson refers to it, was not wholly unlike the processes of thinking what was spreading throughout Latin America during the age of

³³ E. Bradford Burns, *The Poverty of Progress: Latin America in the Nineteenth Century* (Berkeley: University of California Press, 1980), 9.

³⁴ Acosta, *Breve historia económica*, 43.

³⁵ See Jorge Salvador Lara, *Breve historia contemporánea del Ecuador*, 385ff for an interesting discussion of García Moreno's accomplishments and "methods of disciplining" Ecuadorian society.

progressivism and post-Enlightenment ideas.³⁶ It just happened to take on a uniquely religious tone.

Generally speaking, the great strides that the Ecuadorian economy took at the turn of the twentieth century (during what Hubert Herring has referred to as the country's *chocolate prosperity*³⁷) would have been impossible and unthinkable without the nation's exports of cacao. Exports had begun to grow significantly in the 1860s and finally reached \$5,000,000 by the time 1866 rolled around. Other products that contributed to this important growth were tagua, coffee, hides, and rubber, but it was cacao and the transoceanic demand for chocolate that changed the way Ecuador saw itself economically and as a player – albeit a minor one – in the international world market.

The world demand for cacao and other tropical products was made possible partially because of population growth in Europe and North America. This greater demand was satisfied by Ecuador because of the country's naturally conducive chocolate-growing conditions and the availability of native manual labor that made possible the production of these fruits and other products in the highland areas. It was both the richness of Ecuadorian soil and the quality of chocolate produced that guaranteed for the country an important position on an international level. However, the endeavor to maintain this position ironically limited the effort and money that would or could go into the building up of other aspects of Ecuadorian society and its economy.

³⁶ See Brooke Larson, *Trials of Nation Making: Liberalism, Race, and Ethnicity in the Andes, 1810-1910* (Cambridge: Cambridge University Press, 2004).

³⁷ See Herbert Herring, *A History of Latin America* for a brief description of this moment of prosperity in Ecuadorian history.

After the 1895 Liberal Revolution led by General Alfaro – and with “conservative” García Moreno out of the way – the country continued on its path to modernization but without any semblance of the dictator’s conservative or theocratic ideology. The new government’s focus on anti-clericalism and laicism, free market economies, and progressivism all helped to bring down the landholding ideological hegemony that had already lost economic clout in the Sierra. The consolidation of state power had helped stop the fractioning of the national economy and permitted a freer flow of the means of production with the aim of facilitating economic growth and the advantages that came with incorporation into the world market.

Simultaneously, technological advances such as transoceanic transport by steamship and the invention of the telegraph had opened up new opportunities and connections for Ecuador at the turn of the twentieth century. Distances were shortened, news was more readily available, and communication between and across the country’s previously isolated regions became symbolic of the progress that the new century implied and toward which Ecuador continued to strive. This progress was best symbolized by what the city was envisioned to be and in the way that cities took on a more pivotal role in the national economy. Additionally, the influence of the urban elite that was developing on the coast (thanks to, among other things, the chocolate boom) ended the disruptive and often corrupt domination of the old rural caudillos. This move toward progress was essential for a country that was isolated from the world (i.e., the United States and Europe) because of its geographical position on the Pacific Ocean and divided because of its difficult and imposing terrain.

In short, it was cacao that was the engine of economic recuperation and a more profound integration in the world market. Chocolate was the engine that made possible the improvement of the various processes of production, the investment in machinery, the transformation of the social classes, and the realization of regional and national articulation. Yet, the profitability of cacao was only enhanced by the liberal embrace of progressivism (especially during the era between 1884 and 1895) that finally took hold of government power and that contributed to some of the country's most significant periods of growth between 1908 and 1914, just before the First World War broke out.

Profit, export, population, and ideology had come together at the turn of the twentieth century to allow Ecuador to experience incredible growth even if it was short-lived. In 1900, for example, Ecuador's Gross Domestic Product had grown 2 percent, an incredible feat for such a small country when compared to the limited growth of the larger economies of other Latin American countries. For example, countries like Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela had only registered a growth of 1.9 percent for the same period. Even the United States only grew by 2 percent, the more advanced countries of Europe by only an average of 1.2 percent, and the Asian countries of Korea, Taiwan, and Thailand by 0.5 percent.³⁸

Thus, by the dawn of the century, Ecuador was beginning to form a national unified identity that was a direct result of the advantages of modernization, of incorporation into the world market, and the consumption of goods, both luxurious

³⁸ This information is adopted from Acosta, *Breve historia económica*, 62, where he cites the work of André A. Hofman's "Ecuador: desarrollo económico en el siglo 20 (un análisis cuantitativo)," in *Cuestiones Económicas*, No. 21 (Quito: Banco Central del Ecuador, 1994).

and not, that was made feasible by the profits of cacao primarily and other products peripherally. By 1900, Ecuadorian society was well under way to becoming modernized from a bureaucratic and financial perspective. To use the words of historian Frank MacDonald Spindler, “the country’s colonial heritage began to dissipate as the nation moved forcibly into the modern era.”³⁹ At this point, Ecuador saw itself ready to enter the twentieth century full force and become a member of the world market economy that would hopefully, in turn, contribute to its growth and progress.

The *New York Times*, however, reported that a specific disease had reached Ecuador’s main port on June 11, 1908 from Peru. The central government in Quito was thrown into a wrench that forced it to face and acknowledge the capital city’s own vulnerability in the face of a scourge that was thought to exist solely in a very distant time and space. Panic and resolve both traveled throughout the country as elites and peasants, officials and private citizens, were made aware of the various strategies that required adoption if the cultural and administrative focus of the country was to avoid a menace that had the reputation of killing millions at a time. Little did bureaucrats and public officials expect that the very instruments of their progress (steamships, factories, machinery, imported grains, and a growing migrant population) would also become the instruments of fear and dread as can only be created by a blight that had no obvious cause or cure: the bubonic plague. Who was to believe that the very methods of modernization that would help Ecuador join the

³⁹ See Frank MacDonald Spindler, *Nineteenth Century Ecuador: A Historical Introduction* (Fairfax, VA: George Mason University Press, 1987), 159.

modern community of nations would also be the instruments that would threaten the country's economic and social well being?

PLAGUE ECOLOGY: THE ABBREVIATED VERSION

Very few diseases conjure up fear and dread quite like bubonic plague and, as Myron Echenberg writes,

[the very term] 'bubonic plague evokes horror in the collective memories of Europe and the Islamic world. Alone among infectious diseases, this affliction is synonymous with the generic word 'plague:' that is, large-scale calamity.⁴⁰

Yet, plague is one of those diseases – perhaps because of its infrequency in the United States (and throughout the western hemisphere) – that is little understood. As historian and epidemiologist Max J. Miller asserts, “[f]or the suddenness of its attack, the frightfulness of its manifestations, and the multitude of its deaths it has had few equals.”⁴¹ When asked about it, people are prone to think about the great black death of the medieval age: a disease epidemic that killed an incredibly high number of people and decimated towns and villages that lay in its path. Even less do people realize that the Black Death was only the second of three major epidemics of plague in recorded history. The first of the three, the “Plague of Justinian,” occurred in 542 CE and arguably brought the Roman Empire to its demise. Perhaps

⁴⁰ See Myron Echenberg's article “Pestis redux: the initial years of the third bubonic plague pandemic, 1894-1901” in *Journal of World History* 13:2 (2002): 429ff.

⁴¹ Max J. Miller. “Plague: History and Epidemiology,” *Canadian Journal of Comparative Medicine*, 4:7 (1940): 183.

it was not until William Rosen's work that this first recorded epidemic received the most recent serious and popular consideration.⁴²

The second pandemic, the Black Death with which all school children seem to be familiar, on the other hand, has received excellent coverage in the historiography of plague and in the history of medicine. It reached Europe from Central Asia in 1347 and took with it, in its first four years alone, approximately 20 million European lives, or almost a third of the planet's population while pyres had to be kept burning night and day in order to consume the number of corpses left during its reign of terror. This second pandemic did not come to a close until at least 1500, sealing off the Middle Ages for good from what we now call Modern Europe.

The focus of this dissertation, however, is the most recent – and third – plague epidemic/pandemic to hit between 1894 and 1950. It is an epidemic that should still be fresh in the global collective memory, but which receives very little attention when compared to the medieval Black Death. This lack of attention might be pardonable when one considers that until its sprawl across the globe, most medical and public health experts had believed that the state and methods of public health in Europe were advanced and progressive enough to keep the continent safe from plague. Rising out of the Himalayan borderlands between China and India around 1855, and travelling eastward, the plague pandemic took on new meaning and importance as it was the first time that the disease travelled across the globe as a result of modernization and technological advancements that were meant to make

⁴² William Rosen, *Justinian's Flea: Plague, Empire, and the Birth of Europe*. New York: Penguin Group, 2007.

international communication and commerce easier and faster.⁴³ The 1900 pandemic began in 1894 in Central Asia as a result of changes in women's fashions which made marmot fur more valuable. Thus, Manchurian hunters took to hunting the rodent ignorant of the fact that *Yersinia pestis* was widespread among marmots. The hunters contracted plague and, by 1900 (the year of the Rat, coincidentally) these hunters had begun to transport the disease and its vectors to other parts of the continent and on to the rest of the globe.⁴⁴

Within a few years of its eruption, plague was encountered on every continent and in such major cities as Honolulu, San Francisco, Lima, Buenos Aires, Rio de Janeiro, and Glasgow and, by the time it was brought under control in the 1930s, it had killed tens of millions of people worldwide.⁴⁵ The medieval scourge that was thought to have been the symbol of all that was evil and backward of the medieval age became, in the modern age, a reminder of humanity's fragility as a species and as a community of nations; and a description of its impact reads like something out of a horror movie.

Briefly explained, the illness that is associated with plague usually begins with a sudden wave of high fever, headache, chills, and nausea. In many instances, these early symptoms taper off, thus providing its victims with a false sense of security. Since most of the symptoms return even more forcefully within two days,

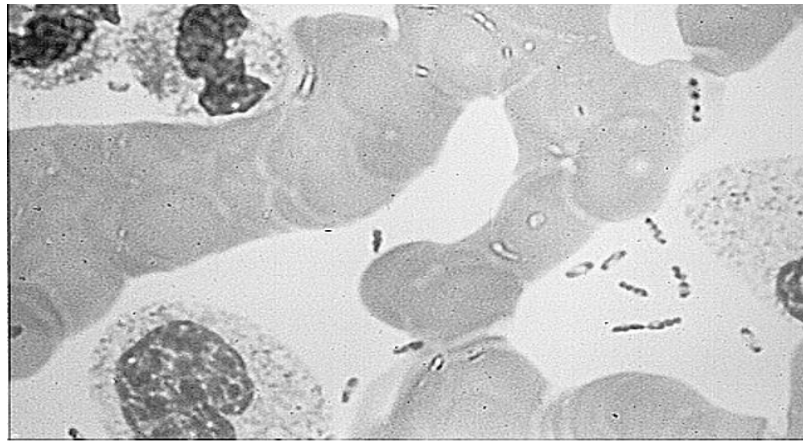
⁴³ A significant discussion of the third pandemic's Asian (Chinese) origins is provided by Carol Benedict in her *Bubonic Plague in Nineteenth-Century China* (Stanford, CA: Stanford University Press, 1996).

⁴⁴ E. Fuller Torrey and Robert H. Yolken, *Beasts of the Earth: Animals, Humans, and Disease* (New Brunswick: Rutgers University Press, 2005), 64.

⁴⁵ Once again, I recommend another work by Myron Echenberg. His *Plague Ports: The Global Urban Impact of Bubonic Plague, 1894-1901* (New York and London: New York University Press, 2007) is an excellent work that introduces the reader to the intensity of the third pandemic and the efforts to deal with it.

this sense of security is short-lived. As their fevers soar to life-threatening levels, victims often experience a crushing combination of overall body pain and almost complete loss of energy that prostrates the victim or makes him writhe in pain in a fetal position. Other symptoms that accompany plague infection – but are not

Fig 2.3:
***Yersinia pestis* under the microscope**



Source:[http://www.istanbulsaglik.gov.tr/w/sb/bh/bildirimi_zorunlu_hastaliklar/resim/-veba\(yersinia_pestis\)_etken.jpg](http://www.istanbulsaglik.gov.tr/w/sb/bh/bildirimi_zorunlu_hastaliklar/resim/-veba(yersinia_pestis)_etken.jpg)

Always present – are diarrhea, vomiting, lethargy, and mental stupor. Insomnia, speech disorders, delirium, a racing pulse, liver and spleen discomfort, seizures, ruptured blood vessels, and open sores on the skin have also been documented as accompanying symptoms.⁴⁶ Toward the end of the disease cycle, the victim often experiences a sort of toxic shock and this almost inevitably leads to certain sudden

⁴⁶ See James N. Parker and Philip M. Parker, *Bubonic Plague: A Medical Dictionary, Bibliography, and Annotated Research Guide to Internet References*, which serves as an excellent resource for all things related to plague infection. The manual provides information regarding plague studies, dissertations that have focused on plague, physician and patient resources, and a glossary/dictionary of bubonic plague that will help even the casual reader learn about the disease.

death, yet some victims hang on to life for up to five days that are filled with horrifying and excruciating pain.

The body's leucocytes (white infection-fighting blood cells) attack the first microscopic intruders after the victim is bitten by, most typically, *Xenopsylla cheopis*, the common rat flea, which uses its maxillary laciniae (pincers) as the means by which to obtain its next blood meal and in which reside the plague bacilli which do not treat the flea any more kindly. The bacteria, however, develop antigens and they numerically mushroom at incredible rates inside these cells. As a result, *Y. pestis* bacteria inflame tissue in the lymph nodes, liver, and spleen as they overrun the victim's lymphatic systems and circulate in the blood. Within six days of infection, if they make it that long, most human beings develop a grossly swollen and excruciatingly painful lymph node, called a bubo (from which this particular variety of plague receives its name), which is a sign of the body's effort to combat the bacteria. Finally, once the bacteria reach astronomical numbers, the immune system is defeated, and major organ failure leads to death of the host within a week after the appearance of the bubo if no antibiotic treatment is administered.⁴⁷

Though it is common to think of bubonic plague as one disease with overwhelmingly devastating impact, the truth of the matter is that it presents itself in various forms that are attributable to the disease's complications and to other infections that are caused by *Yersinia pestis*. Among these we can include bubonic plague itself as described herein, but also common are *Primary septicemic plague* and *Primary pneumonic plague*. The former enters the blood stream quickly and

⁴⁷ See Echenberg, "Pestis redux," for a discussion.

causes sudden death before the physical symptoms even have time to appear. The latter, a disease that begins with bubonic plague, is complicated by a severe case of pneumonia and is highly contagious as it is spread among human beings through coughing and sneezing.

Pestis minor is yet another form of bubonic plague though it is a relatively milder form. Persons who fall ill to this form usually experience a febrile (feverish) illness that affects the lymph nodes, referred to as a lymphadenopathy. The lymph nodes usually drain on their own and patients can recover without any serious therapy and, unlike the cases of bubonic, septicemic, and pneumonic plague, it is believed that patients with the *pestis minor* form of the disease are more likely to have some pre-existing immunity to the effects of *Yersinia pestis* and can escape the serious symptoms of full-blown plague infection.⁴⁸

In the etiology of plague, however, there are two other types that possess their own special characteristics and, most importantly for this study, are more commonly found in Ecuador than in almost any other part of the globe. These two types – *Vesicular plague* (viruela pestosa) and *Tonsillar plague* (angina pestosa) – are among the most common forms of plague in Ecuador's mountainous regions, yet can also be found along the coast. In the first of these two special (and rare) types, the vesicular variety, the disease begins much like bubonic plague proper, with the formation of pox-like eruptions that appear as if they are going to turn into buboes. Yet, the mortality rate connected to this form is much higher than that of ordinary

⁴⁸ See James N. Parker and Philip M. Parker, *Bubonic Plague: A Medical Dictionary, Bibliography, and Annotated Research Guide to Internet References* for a compendium of sources regarding plague, its manifestations, its treatments, and the varieties of sources that can be utilized in the study of the disease.

plague and this is especially true if there are, on the average, more than fifty small eruptions to be found on the victim's body.⁴⁹

The second type of Ecuadorian plague is the tonsillar variety, or *angina pestosa*, that primarily affects, as the name implies, the glands in and around the throat. This form occurs as a severe or violent form of tonsillitis or pharyngitis and is usually accompanied by a secondary infection of the cervical glands, the glands located in and near the groin area. The very little literature that focuses on the history of this form of plague in Ecuador indicates that it is a result of an infection of the mouth by the pestis bacteria and has been attributed to the habit among highland indigenous (the most susceptible group) of killing lice, fleas, and bed bugs (*chinchas*) with their teeth.⁵⁰ This variety is of extreme importance to this study, because it is the form of plague most attributed to the highland areas and the one most addressed by public health experts of the time.

In thinking about plague, it is common to equate the disease (quite correctly) with rats and dirt. Generally speaking, though, humans only come into contact with infected rats and their infected fleas when they encroach on an area where plague is enzootic (i.e., the term used to describe a disease that regularly affects animals in a particular area or in a particular season of the year) or when infected animals move into or are brought into areas of human settlement. Because people play an important role in the long distance movement of infected fleas, plague tends to

⁴⁹ See Carlos A. Miño's *La peste bubónica en el Ecuador* for a brief description of this form of plague written by one of the chief medical officers who dealt with the Ecuadorian plague epidemic.

⁵⁰ This view is supported by Clifford R. Eskey, the American surgeon of the United States Public Health Service, in his published reports on the eradication of plague in Ecuador. For this discussion see his "Chief Etiological Factors of Plague in Ecuador and the Anti-plague Campaign," *Public Health Reports* 45:36 (1930): 2077-2114.

spread along transportation routes. This was made much more possible during the third pandemic by the technological and maritime improvements in travel that brought an organism out of Asia and across the globe to so many previously protected people because of their geographical or climatological isolation and, as we shall see, played a keenly essential role in the way that plague was spread in and throughout Ecuador.

Fig 2.4:
Vector of death, the rat flea (*Xenopsylla cheopis*)



Source: http://www.afpmb.org/pubs/Field_Guide/Images/originals/Fig.%20216.jpg
Scholars and scientists who have searched for bubonic plague's

Epidemiologists tend to start their investigations of disease origins in the present and go backwards as discussed by Echenberg. Given that of all the players in the plague cycle – bacterium, flea, rat, and human – *Yersinia pestis* is by far the most recent in evolutionary terms, it seems certain, according to historians of bubonic plague such as Carol Benedict and Myron Echenberg, that it evolved in one of three possible locations.⁵¹ Among these possibilities are the Himalayan foothills

⁵¹ See Carol Benedict *Bubonic Plague in Nineteenth Century China* and Myron Echenberg's "Pestis redux" for more detailed discussions about the origins of plague.

of Asia, the Eurasian steppe that stretches westward from China, and Africa's great lakes. Although much is known regarding plague's symptomatology and the circumstances that surround plague, there is still some uncertainty surrounding the initial outbreaks of this pandemic at the turn of the twentieth century.

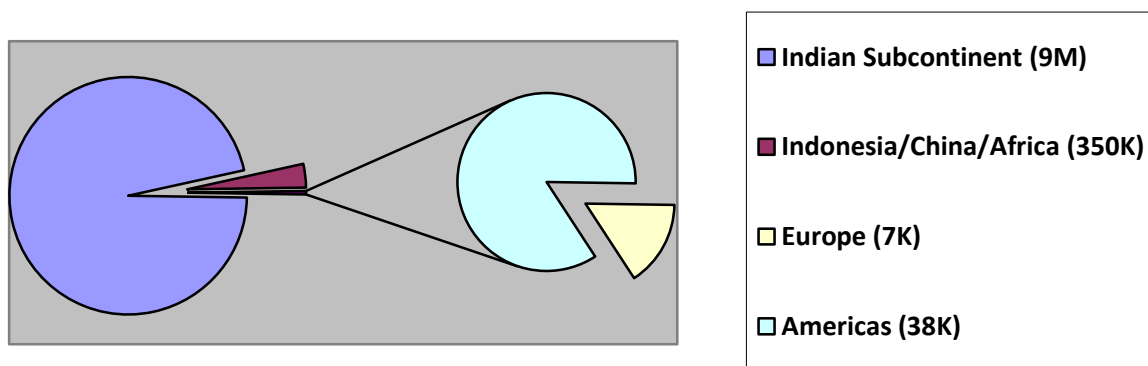
Among the things that make the pandemic of 1895 different from its two predecessors is what Echenberg refers to as its lopsided nature. Its case rate peaked around 1901, fell off dramatically throughout the first World War, grew sharply again in the early 1920s, and then dropped off precipitously until 1950 when it seems to have virtually disappeared as a major human disease. The pattern it followed was different than in the other plague pandemics, and modern scientists were unsure as to how to treat this disease or if it was even the same disease altogether. Historian James C. Mohr has also discussed the distinctiveness of the 1895 pandemic in its terribly high death rate and in the "presence in most victims of badly swollen and exquisitely painful lymph glands, most commonly along the inner thighs and under the armpits."⁵²

Secondly, simply put, bubonic plague at the turn of the twentieth century could no longer be considered a disease that affected mostly white Europeans as it did in the fourteenth century. Europe was no longer its focal point. Of the 9.6 million officially recorded deaths from plague over 90 percent, or close to 9 million, occurred on the Indian subcontinent alone. Indonesia and China each suffered roughly 150,000 deaths and the same statistics apply for all of Africa. Across the oceans,

⁵² See James C. Mohr, *Plague and Fire*, 8.

Europe had altogether slightly more than 7,000 deaths and, finally, 38,000 deaths were attributed to plague in the Americas, mostly occurring in South America.

Table 2.1
Global distribution of plague deaths, 1895-1950



Although *Yersinia pestis* is described as a “simple” organism, its history and epidemiology are exceedingly complex. Bubonic plague is a zoonosis, a shared infection of wild rodents and other small ruminants (i.e., rodents), on the one hand, and humans on the other. Zoonoses, or “cross-over” diseases, include many of the most important human diseases globally. Thus, approximately 80 percent of all human diseases are a result of our connection or proximity to animals (especially those that we have domesticated). A sampling would include such diseases as dengue fever, cholera, Chagas disease, rabies, and such more common illnesses as rhinovirus (the common cold), in particular, that is thought to have been passed to humans from horses.

Bubonic plague can cross over to humans as a result of particular ecological changes which can affect the ecosystem of one or more of four categories of living species involved: (1) the bacillus itself, (2) the wild rodent hosts, (3) the fleas which the rodents harbor in their fur, and (4) humans as prospective alternative recipients of flea bites. Small sylvatic (i.e., wild) mammals, which include at least 230 species of wild rodents worldwide, serve as the enzootic reservoir species: a population in which *Yersinia pestis* is permanently present because these species can survive and reproduce while infected.

Among those rodents which have been historically subject to bubonic plague epizootics (a large die-off) are the common “black” or “brown” rats (*Rattus rattus*, *Rattus norvegicus*, and *Rattus alexandrinus*), sometimes called “commensal” rodents because they have found food sources by living in very close proximity to humans. All three species are highly susceptible to *Yersinia pestis* and have been transported by modern navigation throughout the world. Thus, the infamous subway rats of New York City or the rats of San Francisco Bay are those that have traditionally borne the killer of millions as they stowed away in grain sacks on steam ships that travelled the earth’s great oceans.

Several species of flea have been found to infest the fur of both wild and commensal rodents, and to be capable of transmitting the plague bacillus to their hosts with varying degrees of effectiveness. *Xenopsylla cheopis*, however, is the most typical and dangerous of the flea vectors of plague (see Fig. 2.5). It does not flourish when the weather is hot, or when the humidity drops below 70 percent. Thus, plague is a seasonal illness, with risk rising in slightly cooler, more humid

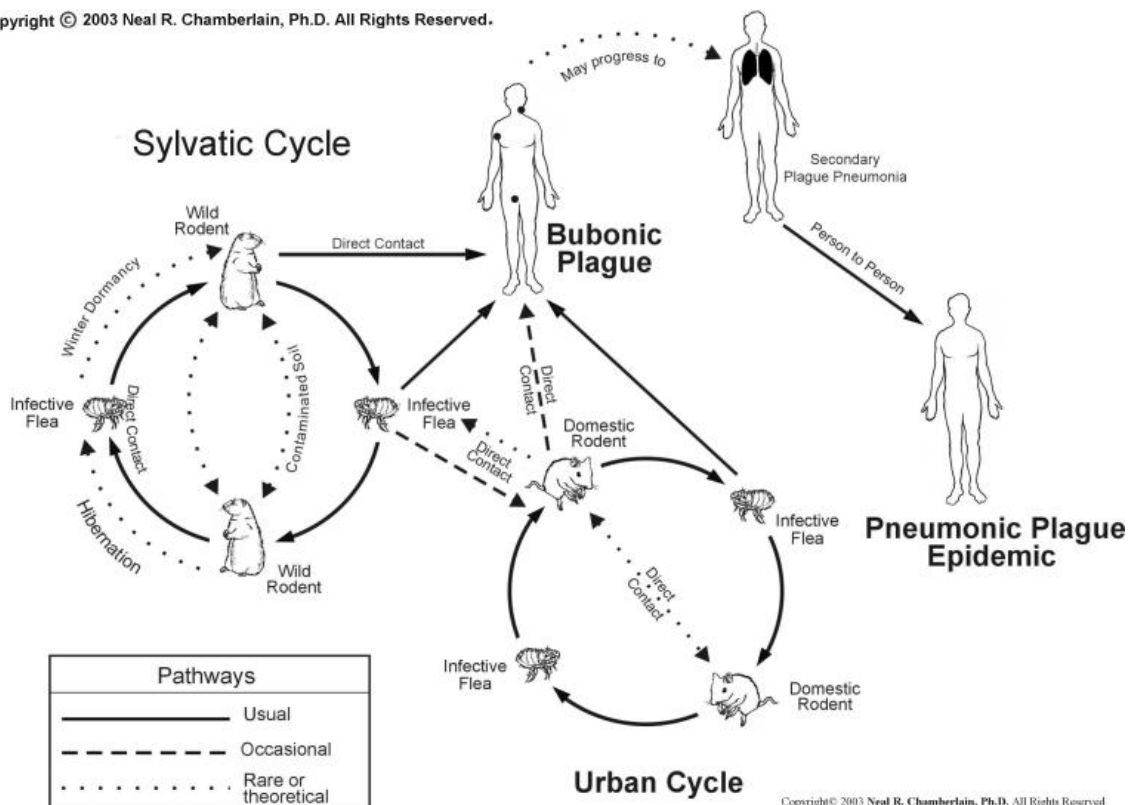
months of the year, and diminishing in hot, dry periods, and disappearing completely in cold seasons when the mercury drops below 15 degrees Celsius (or, 59 degrees Fahrenheit).

Ultimately, plague infections in humans are also largely accidental events since humans are not a critical link in the life cycle of the plague bacillus. It is, surprisingly, not so easy for human beings to “catch” bubonic plague for in order to do so, three conditions must be met. The first of these conditions is the presence of a reservoir of fleas infected with *Y. pestis* that is living within a population of rodents nonsusceptible to the disease. The second condition is that the nonsusceptible rodents must come into contact somehow with commensal rodents, which as a result become infected. Finally, these vulnerable new hosts must live in close enough proximity to human beings that when they die in large numbers, the fleas migrate to human beings in search of a new host. Thus, human outbreaks of plague are sporadic in incidence and often confined to household units whose shelters contain infected fleas.

The most characteristic initial symptom of plague infection is the early appearance of buboes, usually distributed in the groin, the armpit, or the cervical lymph nodes. Occasionally, *Y. pestis* will invade the lungs and produce pulmonary or pneumonic plague. More rarely, the bacteria may infest the bloodstream to such an extent that the lymph nodes are overwhelmed before they swell, producing a particularly lethal variety known as septicemic plague. Cases of bubonic plague

Fig. 2.5:
Cycles of transmission of the most typical forms of plague

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Source: www.unbc.ca/nlui/wildlife_disease_bc/plague_cycles.gif. Accessed on 06 February 2009 at 12:45 p.m.

may vary in intensity from a sub-clinically mild indisposition to violent death.

Variables include the type of flea vector, the location and effectiveness of the flea's bite, the number of bacilli present and, more controversially, the condition of the patient's immune system.⁵³

Immediate diagnosis of bubonic plague through observation is not easy despite the characteristic appearance of large buboes within roughly four days of

⁵³ See James N. Parker and Philip M. Parker's *Bubonic Plague: A 3-in-1 Medical Reference* for some good information on symptomatology, causes, etc.

infection. Buboes can vary in size (e.g., the size of an egg, an orange, or even a grapefruit) and are excruciatingly painful. Sometimes, hemorrhagic sepsis can occur, blackening large areas of the surface of the body and producing the repulsive appearance that gave the second plague pandemic the label “Black Death.”

Fig 2.6:
Some of the symptoms of bubonic plague



Source: <http://www.dynamicscience.com.au/tester/solutions/war/biological/bubonic.jpg>
Accessed on 11 August 2009 at 9:41 p.m.

Human vulnerability to *Y. pestis* is also variable. People living in conditions of poverty, overcrowding, and malnutrition are at greater risk than others, both because their immune systems are undermined by their circumstances and because their adverse living conditions promote the presence of rodents and fleas. However, occupations are also a factor. Dockworkers, grain handlers, and bakers are more exposed to commensal rodents that feed on grain supplies. A gendered factor places women at more risk than men since they traditionally spend more time in dwellings in which infected rodents and fleas might be present. In rural areas, farmers, hunters, and trappers may all be at risk from sylvatic plague.

Putting the etiology of plague aside, the third pandemic is interesting because it coincided with vast improvements in the fields of medicine, bacteriology, and immunology. The third pandemic was accompanied by great strides in science and,

perhaps for this same reason, it is also fortuitous that it struck when it did. When Ecuador fell victim to the third pandemic, the country found itself embroiled in the attempt to contain and control the spread of plague and it found itself using whatever knowledge came out of the efforts of medical experts across the globe in the race to understanding and controlling plague.

THE THIRD PANDEMIC: A HISTORICAL SYNOPSIS

At the dawn of the twentieth century public expectations of a breakthrough in the control of plague were high. New scientific advances that were identified with the new times were immediately applied to plague after its reappearance in Hong Kong where Alexandre Yersin (the French-Swiss bacteriologist) beat Shibasaburo Kitasato (of Japan) in isolating the plague bacillus.⁵⁴ What developed was a race to not only find out what it was that caused plague specifically, but to also find out what situations were required for a plague epidemic to break out. Eventually, Yersin was able to isolate the plague bacillus, but he was also the first to promote the idea that rats were a major factor in the transmission of the disease. Journalist Edward Marriott discusses the competitive nature of the scientists' relationship and writes that

[...] In Hong Kong, at the start of a global meltdown known today as the third plague pandemic, the competition narrowed to two scientists: the renowned Japanese bacteriologist Professor Shibasaburo Kitasato and his French counterpart, Dr. Alexandre Yersin. For Yersin, whose passion for research had been manifest in his childhood, Hong Kong was a crucible, his defining moment. For Kitasato, confident of victory,

⁵⁴ Highly recommended is Edward Marriott, *Plague: A Story of Science, Rivalry, and the Scourge that Won't Go Away* (New York: Henry Holt and Company, 2002) for a detailed discussion of the race against time to find the cause of plague and the competition that arose between Yersin and Kitasato.

1894 would prove to be an equal crux, though for utterly different reasons.⁵⁵

Miller also confirms that Yersin received credit, but stipulates that “Kitasato’s description preceded that of Yersin by a few days, but as his first description was incomplete, credit for the discovery has been given to Yersin by some workers, mainly French.”⁵⁶

Fig. 2.7:
Important personalities of the 1895 plague pandemic



Sources: <http://sfrang.com/selides/mm1/html/images/Yersin.jpg>; <http://blog.ifrance.com/clb-vh/blogimage.php?t=0&i=539919>; http://www.asnom.org/image/423_peste/simond.jpg; <http://www.pasteur.fr/infosci/archives/im/haf.jpg>. All accessed on 11 August 2009 at 9:43 p.m.

By the time plague was finding its way across the Pacific Ocean and around the world by steamship, bacteriologists Paul-Louis Simond and Waldemar Haffkine, while working in Bombay, India in 1897, confirmed that rats were indeed a key factor and thus granted the work of Yersin an increased degree of credibility. In 1898, Simond finally put forward the theory that fleas were the vector of *Y. pestis* although it took a decade or more before a scientific consensus emerged.

⁵⁵ Marriott, *Plague*, 2.

⁵⁶ Miller, “Plague: History and Epidemiology:” 186.

The discovery of the cause(s) of plague would probably not have happened had plague not started to spread its deadly tentacles across the globe. The fact that the disease was killing people on every inhabited continent impelled the global community to put its best minds to work on the matter. Even Brazil's federal government, in 1900, named its Paris-trained microbiologist Oswaldo Cruz as the authority who would apply public health measures throughout Rio de Janeiro, and subsequently to "pioneer in the development of Brazilian national science and public health."⁵⁷ In the case of Ecuador, this duty fell to the likes of physicians Carlos A. Miño and Pablo A. Suárez, public health administrators and social hygienists in Quito and Guayaquil, respectively.

Thus, throughout its trajectory, plague had reached in the first fifteen years of the most recent epidemic, a large enough slab of the globe that would rival any transportation company in the world. At its genesis, the plague pandemic broke out in south-central China some time before 1870 and by the late 1870s it had decimated most of the provincial villages of south-central China. By the early 1890s, it began appearing along trade routes that led down river valleys toward the coast when it struck the bustling commercial city of Canton in 1893. Here it raced quickly down the heavily travelled Pearl River corridor until it arrived at Hong Kong in 1894.⁵⁸

Plague left Hong Kong in 1894 and by 1896 had reached India, Turkey, and Russia. By 1898 it reached the African islands of Madagascar and Mauritius. Arabia, Persia, Portugal, South Africa, Egypt, the Ivory Coast, Portuguese Africa,

⁵⁷ See Echenberg's "Pestis redux:" 7.

⁵⁸ Once again Carol Benedict, *Bubonic Plague in Nineteenth Century China* is a wealth of information on plague's trajectory. Also important is the already cited work of John C. Mohr, *Plague and Fire*.

Argentina, Brazil, Paraguay, and Hawaii were all hit in 1899. In 1900, the United States was faced with plague when it made landfall with Chinese immigrants in the city of San Francisco.⁵⁹ By 1903, plague started travelling north and south along the American continent's western coast until it hit Lima in 1903 and Seattle in 1907. Finally, in 1908 it "officially" arrived in Guayaquil, Ecuador. It was already bad enough that Guayaquil had been considered the pest hole of the Pacific, but Ecuador now had to face, in addition to its struggle to modernize and to join the world economy, a menace that carried with it the collective memories of fear, dread, and despair.

In 1908, Ecuador was hit with the reality that if it did not do anything, the interior of the country – its cultural and political center – would be affected and what could be worse than having a plague epidemic attack a highland population that was relatively protected from the disease due to altitude and isolation? Quito would have to act early and decisively, and the threat of plague made sure that the nation's bureaucracy and governmental administration would act swiftly. What complicated matters was that the Ecuadorian case of plague involved a set of uncharacteristic traits that not only distinguished it from other cases from a medical perspective, but that also possessed cultural and sociological implications that needed to be addressed if plague was to be kept at bay and prevented from affecting the highland capital. It is these uncharacteristic traits that are addressed in the next two chapters and which will become the focus of the country's efforts to transform a society which

⁵⁹ See Nayan Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown* (Berkeley: University of California Press, 2001) for an excellent description of public health authorities and their involvement in the depiction of and care for Chinese immigrants at the turn of the 20th century.

the *pensadores* believed was being held back by the customs and habits of rural highlanders and indigenous communities.

In order to more fully comprehend the nature of plague in Ecuador, therefore, we must now turn to the characteristics of the Ecuadorian plague epidemic that made the Ecuadorian case different from all others. In this vein, we must take a look at not only the varieties of plague that actually form part of the Ecuadorian epidemiological landscape, but also the varieties of rodents and fleas that make the plague pandemic of 1895 and the disease's transmission and progress throughout Ecuador particularly interesting. This was all information that was itself gathered by medical and governmental authorities and which collection actually began prior to the discovery of plague on Ecuadorian soil. Thus, in the next chapter, my focus is not so much on the nature of bubonic plague but rather on the ways by which Ecuador reconnoitered the geographic, medical, and cultural landscape in the attempt to determine plague's possible impact on the nation.

Chapter Three

Keeping a Watchful Eye on Plague (1894-1916): The First Two Phases

*"It comes to this. We are to take the responsibility of acting
as though the epidemics were plague."
-Albert Camus¹*

THE SCRAMBLE TO UNDERSTAND PLAGUE

The advent of the twentieth century for Ecuador was anything but peaceful. The repercussions of the revolutions that saw the end of the previous century were still being felt at the beginning of what was to be the country's entrance into the "civilized" world, to use the rhetoric of the time. The chaos in which most people lived politically produced a sense of insecurity and distrust in government and in its representatives, both the ousted conservatives and the newly placed liberals, despite the many modernizing endeavors that helped redefine Ecuadorian society and culture for the new century.²

Guayaquil, the nation's commercial hub, had its own particular concerns. As the country's major port, the city's leaders were busy with ensuring its growth and progress as was typical in most large Latin American cities of the time. Streets were being widened, gas-powered street lamps were being replaced with electric ones, and homes were being modified so that residents could enjoy the amenities of modernity. But, things would take a turn when word reached Guayaquil (and Quito) of the presence of plague in the highland town of Alausí, which lay just at the foothills of the Andes and was one of the major stops on the recently inaugurated

¹ Albert Camus, *The Plague*. Translated by Stuart Gilbert. (New York: Vintage Books, 1972), 49.

² See Enrique Ayala Mora, *Historia de la Revolución Liberal Ecuatoriana* (Quito: Corporación Editora Nacional, 2002) for a detailed discussion on this portion of Ecuadorian history.

railway that connected the coast with the nation's interior and, more importantly, with the nation's political and cultural capital.

Plague's expansion out of the coastal region and its encroachment on the highlands in Ecuador was not viewed as a simple inconvenience of migration or modernization. The threat it posed was powerfully symbolic as much as it was real. In the littoral region of the nation, plague's arrival and presence in Guayaquil meant, of course, that the nation was vulnerable and susceptible to the scourge. It would be exponentially difficult now to rid Guayaquil (and, more generally, Ecuador itself) of the reputation attributed to it as a hotbed of tropical diseases, rodent and insect infestations, and the filth that was associated with poorly maintained port cities.

Table 3.1, as an illustration, demonstrates some of the major reasons for why Guayaquil was already considered such a dangerously unhealthy city even prior to the arrival of plague. A quick overview of the data easily shows why state representatives often considered the state of Guayaquil's ill health a serious obstacle to the modernization of the country's social and economic status. There is a myriad of sources, for example, that allude to the city's ill health and its reputation for keeping visitors away.³ Diplomats were not exempt either for, as in a poem penned by an anonymous writer, even American state representatives fled Guayaquil for fear of their lives. In the poem, the American Consul General George Sawyer had fled Guayaquil only to leave his Vice Consul General Robert B. Jones behind. The lines read:

³ Ronn Pineo, "Misery and Death in the Pearl of the Pacific: Health Care in Guayaquil, Ecuador, 1870-1925," *Hispanic American Historical Review* 70:4 (1990): 609.

Said Mr. S. to Mrs. S.,
“My dear I think that we
Can never live as we should live,
In this ‘ere town of G.”

Said Mr. S. to Mrs. S.,
“I think we’d better flee,
If our lives we would preserve,
From this ‘ere town of G.”

The fever it is getting worse,
So tells me Mr. J.,
Then let us pack up all our traps,
And gently skip away.”

“The steamer still is in the port,
And no one knows us here;
We are the men behind the guns,
So come along my dear.”

The captain’s launch it took them off
From this sad town of G;
But Brother J. remains behind,
And draws the saler-ee.⁴

In light of the danger caused by the tropical swamplands of Guayaquil and its surroundings, plague’s presence portended an unequivocal obstacle to the nation’s pursuit of progress and cultural unification in two ways. This was equally true for the capital city. First, plague endangered a relatively isolated community (the highlands) from the ravages of tropical disease and, second, it cast a shadow over any attempts at societal, cultural, and even ideological modernization. In the effort to find ways of dealing with the appearance and spread of plague, Ecuadorian officials — bureaucrats, politicians, and public health experts — set themselves on a course to initiate a sort of reconnaissance of the physical and cultural landscape. Adjoined to this survey of the landscape, Ecuadorian public health officials, social hygienists,

⁴ Frederic Webster Goding, *A Brief History of the American Consulate General at Guayaquil, Ecuador* (Livermore Falls, ME: The Advertisers Press, 1920).

and medical experts also began their own bacteriological and epidemiological research that was undertaken by such important personalities in the fight against plague as physicians Carlos A. Miño, Pablo A. Suárez, Luis Felipe Cornejo Gómez, and Ramon Flores Ontaneda. These men – the ones most directly involved in the fight against plague – studied the origins and the etiology of plague in order to best understand the nation's true vulnerability and susceptibility to the global pandemic now threatening, and they attempted to approach the problem in as practical and scientific manner as possible.

Table 3.1
Leading causes of death in Guayaquil, selected years, 1889-1925

YEAR	RESPIRATORY DISEASES	DIGESTIVE DISEASES	YELLOW FEVER	PLAGUE	MALARIA	TYPHOID FEVER	CHOLERA & MEASLES	SMALLPOX
1889	700	507	72		104	16	145	
1890	571	282	72				29	437
1891	414	246	142					122
1892	486	187	145					1
1893	415	148	65				20	289
1897	504	258			13		12	13
1898	429	352	382		2		10	3
1903	680	346	382		260	7		8
1904	527	374	190		175	6	6	9
1905	572	469	175		83	0	6	85
1908	439		109	332	322	32	40	85
1909	786	400	255	398	219	15	40	3
1910			160	311	194	40	17	
1911	312	540	221	260	171	37	61	
1912	782	641	403	236	512	242	135	
1913	697	595	232	339	312	91	76	
1914	669	1,001	29	179	263	97	52	
1915	815	995	18	117	475	209	88	1
1916	801	689	166	345	358	94	89	4
1917	1,056	831	79	161	424	81	47	14
1919	1,212	800	99	23	529	102	50	
1920	1,471	777		59	532	136	255	5
1922	1,087	815		19	331	147	19	
1924	1,421	1,117		45	317	85	82	1
1925	1,561	1,387		55	356	162	18	

Source: Adapted from Ronn F. Pineo's Social and Economic Reform in Ecuador: Life and Work in Guayaquil (Gainesville: University Press of Florida, 1996), 130-132. Reprinted with permission of the University Press of Florida. Missing data represents either the lack of data for that disease in that particular year or the lack of cases.

PHASE I: PREPARATION

For all Ecuador's relatively delayed approach to modernization and its difficulty with accessing or transmitting communication across regions, neither Quito nor Guayaquilean society lacked access to world news. Word did get in that plague had arrived in an increasing number of cities around the world and that the disease had made its appearance in cities that had never before experienced it first hand. Fear grew among authorities and the general populace that Ecuador might be visited by plague as a fledgling member of the world market. In fact, this fear had so motivated the Ecuadorian government that on October 5, 1899, as plague began to spread globally, the executive government created for the first time in Guayaquil a Board of Maritime and Urban Health.⁵

This Board of Maritime and Urban Health was created not only to deal with the possibility of plague invading the nation's major commercial city, but it was also given full authority along the nation's entire Pacific coast. This specially created commission was comprised of those who were perceived as best able at the time to deal with (and understand) the possibility of plague invasion: a total of twelve members that included a superintendant, the university's deans of medicine and jurisprudence, various physicians who dealt with public sanitation and markets, the port's captain, and various university faculty members. Their specific charge was to study the history of the disease and to study how it could best be avoided and/or treated if and when it arrived in Ecuador.

⁵ See Juan José Samaniego, *Cronología médica ecuatoriana* (Quito: Editorial de la Casa de la Cultura Ecuatoriana, 1957) for a brief discussion.

Thus, despite immediate efforts on the part of the Ecuadorian government to deal with the appearance of plague later in 1908 in the Andean highlands, Ecuador's preparations against plague actually began a decade before the report of plague in Alausí ever reached the eyes and ears of government officials. Ecuadorian officials had received wind of the eruption of plague in China and the matter was not taken lightly despite the distance between the two countries. Because Ecuador had been receiving a growing number of Chinese and Middle Eastern immigrants each year, by the turn of the century Chinese immigration was viewed as a potential danger to the health and welfare of the Ecuadorian homeland.⁶ In fact, Chinese and Syrian immigrants had frequently become successful shopkeepers in Ecuador and, as was the case in many other parts of South America, this controversially earned them the bitter enmity of the locals. To offer an example, Chinese and Syrian merchants could not join the Chamber of Commerce or expect admission into the prestigious Club de la Union. Even as late as 1920, as Pineo discusses, the promotion of commerce (and immigration) in Ecuador was open to anyone save the Chinese, and the historian cites a particular volume of that year that had pronounced that "all the territory of Ecuador offers a broad field to all the races (with the exception of the Mongolic [sic])."⁷

In response to the fears produced by the threat of an "Asian pestilence," in September of 1903 (and again in October), representatives of the national government passed a law that effectively banned all Chinese immigration to Ecuador

⁶ An incredibly good fount of information regarding Middle Eastern and Lebanese migration specifically is Lois J. Roberts, *The Lebanese in Ecuador: A History of Emerging Leadership* (Boulder, CO: Westview Press, 2000).

⁷ See Ronn F. Pineo, *Social and Economic Reform in Ecuador: Life and Work in Guayaquil* (Gainesville: University Press of Florida, 1996), 53.

as a “preventive” measure. Although government authorities indicated that this step was taken to prevent the introduction of plague into Ecuadorian territory, there is some speculation by today’s historians of Ecuador – and I agree with them – that the government had taken advantage of the situation to “go after” the Chinese businesses that had been sprouting up all over Guayaquil.⁸ That October also saw the promulgation of a legislative decree that ordered closed Ecuador’s maritime ports to all ships and cargo that were or would be scheduled to arrive from India and Portugal, two countries that had been invaded by plague and that were in constant commercial contact with the provinces of China most affected by the disease.⁹

As noted above, it was not until 1903 when Ecuador’s efforts at preventing plague took on a new and more relevant meaning. In that year, plague was reported in Peru and on May 11 a legislative decree dictated preventive measures against bubonic plague that affected business and the port economy itself. Ecuador’s governing officials ordered that measures similar to those in Europe be adopted and enforced.¹⁰ These included the disinfection of cargo and transport containers, the trapping of rodents, and the thorough cleaning and disinfection of port facilities, storage rooms, and public buildings. Additionally, the country’s ports were closed to ships and cargo that had been scheduled to arrive from Peru and Mexico (where plague had also made a recent appearance) and *sanitary cordons* were established in an attempt to keep plague out.¹¹ Stringent quarantines of incoming cargo and

⁸ Pineo, *Social and Economic Reform*, 53

⁹ Samaniego, *Cronología médica ecuatoriana*, 12 October 1899.

¹⁰ By this time, General Eloy Alfaro was head of state and, in his aim to modernize the nation, looked to the policies of Europe and the United States as models of modernization, sanitation, and public health advancements.

¹¹ Samaniego, *Cronología médica ecuatoriana*, 11 May 1903.

passenger ships were mandated and regulations were established regarding the disinfection of cargo and its detailed inspection by port authorities upon arrival. By October 15, a Supreme Council of Health and Hygiene (Consejo Supremo de Sanidad e Higiene) was established under the supervision of the governor of Pichincha (with Quito as its capital) and with authority throughout the country's entire interior.¹²

On April 21, 1904, the executive branch of the Republic itself, under Eloy Alfaro, became intricately involved in the prevention of plague. As a means of supporting the “desire to see free and prosperous the Ecuadorian nation that only yesterday was isolated from the pulse of modern life”¹³ that marked his tenure as head of state, Alfaro laid plans for an executive decree that addressed the need to prevent the invasion of plague and support the recommendations of the Supreme Board of Health (Junta Suprema de Sanidad). The Quito daily, *El Comercio*, published the President's statement:

Because of the existence of bubonic plague in Guayaquil, officially declared by the Supreme Board of Health of the province of Guayas, the territory of the interior of the Republic could very well be invaded by said disease. It is the duty of the public authorities to avoid, as much as possible, such a grave calamity....¹⁴

Two weeks later, on May 1, the Presidential office published another executive decree that authorized the Board of Health of Guayaquil to construct a building dedicated to the cleanliness and disinfection of the railway stations along the Quito-Guayaquil railway.¹⁵

¹² Samaniego, *Cronología médica ecuatoriana*, 15 October 1903.

¹³ *El Comercio*, 3:625. 25 June 1908: n.p.

¹⁴ *El Comercio*, Digitized with no volume or number, 25 March 1908: n.p.

¹⁵ Samaniego, *Cronología médica ecuatoriana*, 1 May 1904.

The measures taken by the executive branch of Ecuador's government were a reflection of and, simultaneously, a reaction to the fear, if not panic, that was percolating throughout the nation. The new preventive measures against plague signaled the urgency and necessity of precaution. This urgency was made especially pertinent by the appearance of plague in June of 1904 in the Peruvian city of Paita, just south of Guayaquil and a major trade port with which Ecuador conducted business. The urgency was furthermore flamed by the newest findings in public health, social hygiene, and medicine emerging out of Europe and the United States. The panic had been fervent enough that news of the populace's reaction had reached other parts of the globe. As an example, the *New York Times* wrote that

[news] has reached here [Ecuador] of an outbreak of bubonic plague at Paita, Peru and is causing a great panic. The Board of Health is acting energetically to prevent the introduction of plague here. The port has been closed to arrivals from infected ports and a sanitary cordon has been established at the frontier to prevent the introduction of plague by land.¹⁶

The New York daily went on to describe how ten persons had perished of plague in Paita within three hours on the previous day, and how the Ecuadorian gunboat *Cotopaxi* and three other steamboats had begun cruising the coast to prevent vessels from infected ports from approaching or disembarking at the Ecuadorian coast. Ecuadorian officials were not going to take any chances and, at the urging of national health directors such as physician Carlos A. Miño and social hygienist Pablo

¹⁶ Editorial, *New York Times*, 12 June 1904.

A. Suárez, they put aside 12,000 sucres¹⁷ (a little over \$5,800 dollars) in order to maintain the sanitary cordons mentioned by the *Times* and the carrying out of the measures proposed by Guayaquil's Board of Health.

Even as late as 1905, reports were coming out of Panama (a connection port between North America and South America) that Ecuador had kept its ports closed to ships from infected ports. In one reported case, Guayaquil's Board of Health refused to admit the British steamer *Chili*, which had arrived there the previous day from the port city of Iquique (a port city in northern Chile) on its way to Panama. Apparently, three persons had died of plague while on board the *Chili* en route from Iquique, deaths that were attributed to plague.¹⁸

Although Ecuador was actually able – either through concerted efforts or by happenstance – to postpone plague's arrival in the country for three years, the efforts and measures undertaken by the various health organizations and associations were not effective enough to make the country plague-free permanently. Plague finally did arrive in Guayaquil, a city that took travelers from other lands daily, in 1908 and it was thought to have arrived on merchant ships from Callao, Peru.¹⁹ In his official report, Dr. Clifford Rush Eskey (surgeon and epidemiologist with the United States Public Health Service), writing at the turn of 1930, supports this claim by writing that “[there] is little doubt plague was carried from Peru to Guayaquil, but the particular vessel that brought the disease is

¹⁷ In 1900, \$1 US dollar was roughly equivalent to 2.055 sucres after Ecuador placed itself on the gold standard in 1898. This information has been culled from Melvin Hoyos Galarza, *La Moneda Ecuatoriana a través de los tiempos* (Quito: Banco de Guayaquil, Editorial El Conejo, 1998).

¹⁸ As reported in Smith Ely Jelliffe, ed., “Bubonic Plague on Isthmus” in *The Medical News: A Weekly Medical Journal*, 87 (1905): 34.

¹⁹ Virgilio Parejas Borja, *Historia de la medicina en el Ecuador* (Quito: Casa de la Cultura Ecuatoriana, 1963), 446.

unknown.”²⁰ The disease swept through the city and city officials attempted to respond just as quickly but to no avail. The city’s authorities immediately began to do what it could to fight off the disease. Roofs were almost immediately torn off infected homes in the hope and belief that the rays of the sun would naturally disinfect and purify affected dwellings. Other measures included the extermination of the city’s rats and the intensive disinfection of anything leaving or entering the city. Both of these measures, however, were ineffectual. In the case of the former, the city’s rat population was simply too large. In the latter, it was simply impossible to carry out the disinfection of absolutely every hole, wall, or grain sack that could possibly harbor rats, fleas, or the deadly bacteria itself.

On February 10, 1908, Pablo A. Suárez, the General Director of Public Health in Guayaquil and a rather well-known social hygienist in his own right, suspected that plague had appeared in Guayaquil for the first time when a number of dead rats were discovered in the streets. Four days later (on the 14th), Quito’s main newspaper *El Comercio* also reported that several dead rats had appeared in the port city. This bit of news – one piece from a health official and the other from the country’s major news provider – immediately escalated a panic that had already extended from the news of bubonic plague’s presence in neighboring Peru. Immediately, meetings were conducted between both the sanitation committee and the cantonal council in the attempt to address the fears and whatever the existence of these dead rodents would or could mean for the health of the city.

Preventive and defensive measures were undertaken immediately. Medical and public health experts were sent out to the affected areas and straightaway they

²⁰ C. R. Eskey, “Chief Etiological Factors of Plague in Ecuador and the Anti plague Campaign:” 2077.

began to autopsy the dead rats that were collected. Dr. John D. Long, who would play perhaps the most significant of roles in Ecuador's collaboratively international fight against plague, included the autopsy process in his report of 1930 saying that

[all] rats delivered by the rat catchers to the laboratory that were in fit condition for autopsy, or were not used for flea studies, were examined. The method consisted in opening the rat completely after tacking it on a board, then making macroscopical [sic] examination and inoculating all suspicious rats into guinea pigs. All rats that were not considered suspicious had small pieces cut from their spleens and placed in a mortar, a small amount of salt solution was then added, and the mixture was at once inoculated into a separate guinea pig.²¹

It was fortunate, however, that after some time studying the dead rats, Dr. Luis Felipe Cornejo Gómez (a member of the sanitation committee sent out) had reported to these committees and to the municipal and national governments that there were no unfavorable findings and that plague was not the cause of the rats' demise. Although Dr. Cornejo Gómez's findings did help alleviate the immediate fear and trepidation that Guayaquil's inhabitants experienced, there were still questions regarding susceptibility of the city to a plague epidemic. After all, the panic that was witnessed was a sign in and of itself of the general belief that the city – and the country—was in danger despite all efforts to the contrary.

Though it was fortunate that no dead infected rats were found, what is important is the fear and panic that the finding of these rats incurred. The secret meeting that had been conducted on the 13th of that same February and which was being reported in the newspaper on the 14th had mandated certain measures to be undertaken and also put on reserve monies that were to be used in the case of an actual plague emergency. This was a result of Alfaro's declaration that his

²¹ John D. Long, "Antiplague Campaign in Guayaquil and Vicinity:" 2884.

government was ready to provide unconditional support to counter and combat whatever scourge might invade the national landscape despite the fact that it might empty the State's coffers.

The February 14, 1908 edition of the *El Comercio*, for example, dedicated a significant portion of the paper that day to the government's reactions to the possibility of plague.²² The daily emphasized the government's unconditional and unmitigated support for the work of public health officials and cited some of the specific actions it took in closing off ports to outsiders. These included the city's division into fifteen wards, the denial of entry to the steamships *Santa Rosa* and *Machala* without prior fumigation or disinfection, and the refusal to allow ships originating in ports south of Ecuador from entering the harbor at Guayaquil.

Alfaro even went as far as establishing, on March 21, boards of health (*juntas superiores de higiene y sanidad*) in Quito and Cuenca (the country's third major city in the southern highlands) in the attempt to blanket the entire country (for the exception of its Amazonian and insular regions) under anti-plague regulations and preventive measures that, under a different executive decree promulgated the same day, required that a special commission on public health be created and that it be spearheaded by an officially degreed or accredited national or foreign-born medical health officer.

As a result of the fervor with which municipal and national governments addressed the presence of plague on the coast, the media was doing what it could to goad people into action and, in the end, also exacerbating the panic already being

²² *El Comercio*, 4:2098, 14 February 1908.

experienced by Ecuadorians everywhere however distant they might have been from the coastal loci of plague. On March 24, for example, the *El Comercio* addressed the topic of the presence of plague with no lack of melodrama or sense of urgency by writing that

[one] of humanity's most terrible enemies, which in its most formidable course of destruction has caused at least 200 million deaths, begins now to also veil with a monstrous fury the homes and hearths of Ecuador.

The towns of this nation are threatened now and today with an impending and general extermination with the presence of the black plague.²³

Although the Quito newspaper was reporting the events surrounding plague in Guayaquil, its message was directed at the inhabitants of the capital city, Quiteños, who had expressed their own fears of plague reaching the highlands and which fears were being fired up by the *El Comercio* itself. Serving as a call to arms, the newspaper suggested that

Quito, that city of great resolutions and historic acts, cannot resign itself to silence as a sign of its impotence; nor can it be indolent in the sight of desperation, when it is too late for preventive measures. With all the intensity in its power and with all the energy of its spirit, Quitean society will surely want to come to its defense with vigor and serenity in order to prevent or attenuate the damage of such a calamity.²⁴

Back in Guayaquil itself, the governor of the province of Guayas had deputed the president of the municipal government to work diligently in defense of the city. As a result, Yersin serum was immediately ordered from Lima and a closed conference between physicians Francisco Martínez Aguirre (the governor of Guayas province) and Armando Pareja (President of Guayaquil's municipal government) was

²³ *El Comercio*, 24 March 1908.

²⁴ Ibid.

held in which the two men discussed the measures deemed necessary in case of an invasion by plague. At the meeting, Martínez Aguirre and Pareja framed a plan that also divided Guayaquil into fifteen districts or wards, each one supervised by an inspector who would provide oversight of homes and businesses that did not scrupulously follow the hygienic guidelines that had been specified in the fight against plague. These inspectors were to be subordinate to an inspector general, but were vested with sufficient enough authority to carry out their work. The overarching aim, in short, was to bring together the work of the municipality with that of the sanitary commission. This entailed, as an example, the preparation of portable tanks of antiseptic liquids so that Guayaquil's inhabitants could avail themselves of them in the cleaning and disinfecting of their dwellings. The plan was to take immediate effect and it saw some modicum of success as people were taking the threat seriously.

While all of these preparations were being made and plans were being drawn to combat plague should it invade the country's interior, bacteriological research was initiated at the Vicente Rocafuerte School, home to the country's technological and scientific elite. Here Ecuadorian physicians Ramon Flores Ontaneda and Martínez Serrano, as well as the American Bolivar Lloyd, Surgeon of the Pan American Sanitary Bureau, were placed in charge, supported by the national government and encouraged to work with alacrity as there was an economic incentive present in the fighting off of plague: Panama's own restrictions on goods arriving there from the city of Guayaquil. The *New York Times*, for example, wrote of Lloyd's involvement in Ecuador's initial efforts against plague by indicating "[a] campaign had been started

by Dr. B. J. Lloyd in 1908, when the bubonic plague made its appearance from the south.”²⁵ Apparently, there was some resistance because the article goes on to say that “[Lloyd had] failed to secure the whole-hearted cooperation of the people.”²⁶

By late March the situation had changed for the worse, for plague was discovered in the town of Huigra, at the foothills of the Andes. Huigra was one of the first major towns on the railway line connecting the coast with the highlands (see Fig. 3.1). As such, the reaction in and around Huigra was so quick and decisive, as Ecuadorian historian of medicine Virgilio Paredes Borja discusses, that the Council of Ministers resolved to destroy Huigra by burning it down to the ground.²⁷ The aim was to avoid the proliferation of plague into the nation’s interior by destroying anything that could be infected by plague and avoiding that it be carried to other areas. Despite the losses experienced by the town’s residents, the government helped organize the evacuation and resettlement of the town’s inhabitants.

Fig 3.1:
Map of Huigra



Source: “Map of Huigra,” Microsoft ® MapPoint ®. <http://encarta.msn.com>
© 1993-2004 Microsoft Corporation. All rights reserved.

²⁵ “Guayaquil has Lost Place as ‘Pest Hole’, *New York Times*, 30 August 1931: p. E8.

²⁶ Ibid.

²⁷ See Virgilio Paredes Borja, *Historia de la medicina en el Ecuador*, 448.

A few days later, on March 22, the Quito daily *El Comercio*, which by this time was one of the nation's main sources of information about plague, published a letter to the President of the municipal government of Quito that was authored by Luis N. Dillon, Jenaro Larrea, and J. G. Pérez. The three men were all described simply as *ad honorem* hygiene inspectors and their role was to provide the governmental authorities with observations (and recommendations) gained from their visits to homes and businesses throughout the capital city.²⁸ The visits themselves served as a reconnaissance of Quito's urban dwellings and other buildings so that the authorities could determine, first, the danger in which Quito found itself as regards susceptibility to plague and, second, how (and whether) the city's hygiene (or lack thereof) would be responsible for the disease's propagation should it reach the highland capital. In their letter, the inspectors discussed two varieties of observation that were made: first, general observations that were applicable to all – or almost all – homes that they visited, and, second, those observations in which they specifically cited homes that did not comply with hygienic standards as they had been stipulated.

PHASE II: RECONNAISSANCE AND PREVENTION

Surveying of the physical, medical, and cultural landscape was a key element in Ecuador's attempt at uncovering or determining plague's danger to the nation. The process of surveying fell to the various cadres of hygiene inspectors (both official and *ad honorem*) whose job was to determine the hygienic and sanitary

²⁸ *El Comercio*, 22 March 1908.

wherewithal of the population, the conditions of homes and edifices where plague and other disease vectors could be harbored, and – perhaps most importantly – to make recommendations based on the newest available bacteriological, sanitary and public health knowledge available. In short, committees such as the one comprised of Dillon, Larrea, and Pérez helped paint a portrait, so to speak, of Ecuadorian urban health standards. These committees also attempted to extrapolate those standards to a larger (national) area that was aimed at eventually incorporating the rural regions of the nation in the combating of disease via hygiene. Interestingly, if what Nancy Leys Stepan suggests about public health ideology in twentieth-century Latin America is correct, then it is safe to assume that this committee's methods were colored by a Lamarckian approach to the issue of hygiene and public health. In other words, it was one “tinged with an optimistic expectation that reforms of the social milieu would result in permanent [racial] improvement.”²⁹

In an important acknowledgment of the service that these men were to perform for the city of Quito and for the nation, Abelardo Martínez, the representative of Quito's Municipal Commission of Health, had written a congratulatory note to them. The note was published in the *El Comercio* on the morning of March 22, 1908 and reads,

I very cordially congratulate you all for the humanitarian work that you have undertaken in order to save the capital of the Republic from the invasion of this scourge, or to attenuate its unfortunate consequences as much as possible. From this moment I offer you the support of the Council toward the realization of your goals, a support that will be given by the council as will be requested and established by the Municipal Commission of Health [Comisión de Higiene Municipal]....³⁰

²⁹ Nancy Leys Stepan, *The Hour of Eugenics*, 73.

³⁰ Abelardo Martínez to “Vocales de la Comisión de Dirección General de la Liga.” *El Comercio*, 22 March 1908.

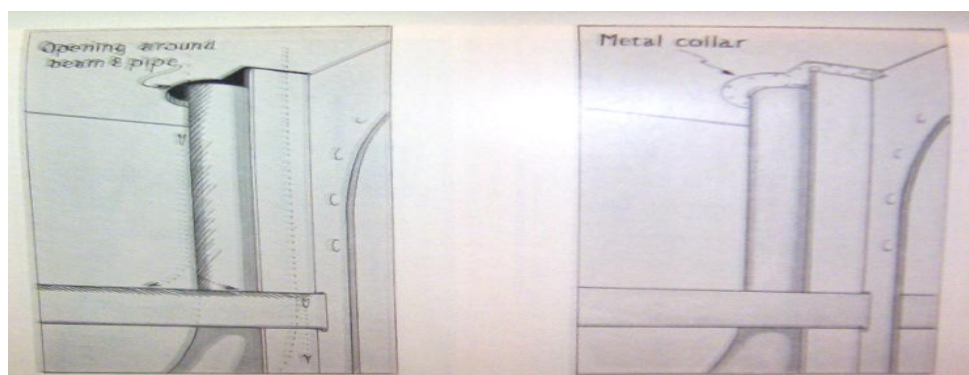
As part of the public health reconnaissance mentioned above, the hygiene *inspectors ad honorem* made observations and recommendations on two levels. General observations were applicable to virtually all sites visited. Specific observations were geared to sites – and homes particularly – that fell short of common hygienic standards as they had been stipulated by the national government via the public health boards. Among the general observations that Dillon, Larrea, and Pérez noted, for example, in Quito was that stores and rooms that were normally rented to poor people were almost all of deficient construction and very unhygienic. The rooms were described as mostly humid, dark, dank, and lacking proper ventilation.³¹ This reality contradicted the contemporary belief that homes, dwellings, and places where people gathered should be both well lit and well ventilated. In light of this, the inspectors recommended that owners be forced to whitewash these stores and lower rooms, open windows, and create ventilation holes at the top of doors to allow for the free movement of air.

Furthermore, Dillon, Larrea, and Pérez suggested a total reform in the way that kitchens were constructed. Doors and windows were to be wide enough to allow for both light and air. Chimneys were to be fashioned in such a way as to ventilate kitchens. Along with the whitewashing of kitchens, the closing and sealing off of kitchen furnaces was also deemed important as these more often than not served as reservoirs of waste, rats, and vermin of all sorts. The inspectors even included drawings and sketches based on ideas borrowed from American engineers

³¹ Inspectors' Report. 24 March 1908, ASSQ.

that clarified what they had in mind and how their suggestions could be implemented.

Fig. 3.2:
A suggested remedy for keeping rodents out of homes.



Source: Adapted from the Public Health Archives (Salud Pública) at the Museo Nacional de Medicina “Eduardo Estrella” in Quito (ASSQ).

Interestingly, the most critical portion of the report was reserved for the deplorable state of the city’s public toilets and restrooms. Dillon and his two companions commented that wastewater was all too commonly kept in a back room until it was eventually disposed of at night. This removal usually occurred rather late in the evening when the wastewater had had enough time to intensify in odor: at about 10:00 or 11:00 p.m. This made central or downtown Quito the classic city of bad odors.³²

The inspectors raised questions as to how to eliminate those small rooms that were so often the foci of infection in places that lacked running water and sewers. This, of course, was one of the biggest problems in some of the older public

³² See Eduardo Kingman Garcés, *La ciudad y los otros, Quito 1860-1940: Higienismo, ornato y policía* (FLACSO Ecuador: Universidad Rovira I Virgili, 2006) for a detailed description of Quito during the nineteenth and twentieth centuries. Of particular importance is his discussion of urban planning.

buildings throughout the capital city as well. In the end, the three inspectors stated that the municipal government itself was responsible (in keeping with the modernity's tendency toward hierarchy and belief in a utopian world of universalist values) for all the changes they recommended and that all efforts to remediate the problem were necessary. The inspectors implied a direct involvement of municipal government in the cleanliness of the city's sectors and, as will be discussed shortly, placed much of the responsibility of asserting sanitary authority on the local government itself.

The most embarrassing portion of the report for Quito's city inhabitants or private citizens might be that Dillon, Larrea, and Pérez often publicly denounced homes and owners who did not comply with standards of hygiene that by then had been widely accepted. They were fuelled by the idea that "the home in which hygiene reigned was also the abode of health and, as such, also bred order, contentment, goodness, and the sweetness of character, light, and clarity."³³ Among the unfortunate casualties of the report were, as cases in point, Merced Coronel who resided at 23 Manabí Street, Mr. Pablo Vascones, and Mrs. N. Guarderas, all of whom were cited for the unacceptable conditions in which their homes were found. The home of a Mrs. Mesas, to offer yet another example, at 32 Olmedo Street, was in such complete ruins that her home was specifically used as an object lesson to demonstrate how many homes served as havens to rodents, a veritable threat to the neighborhoods in which these homes were located.³⁴

Aside from inspecting homes for filth and vermin, the inspectors also dedicated themselves to surveying the internal workings of the edifices they entered.

³³ Eduardo Kingman Garcés, *La ciudad y los otros, Quito 1860-1940: Higienismo, ornato y policía* (FLACSO Ecuador: Universidad Rovira e Virgili, 2006), 292.

³⁴ Inspectors' Report, 24 March 1908, ASSQ.

They cited flooding and the infection of neighboring homes due to ruined sewers and pipes. They described problems with proper drainage in patios, kitchens, stores, and lower rooms. They reported sewer systems that no longer functioned or that were in such disrepair that they needed total replacing. Their suggestion was that the municipal police address problems immediately or, they

Fig. 3.3:
A typical street in late nineteenth-century Quito³⁵



Source: Adopted from James Orton, *Andes and the Amazon: or, Across the Continent in South America* (New York: Harper & Brothers, Publishers, 1870). Of special note in this drawing are the building structures themselves. Many of the openings that are observed at street level are the rooms typically rented to the indigenous or the poor as either stores or dwellings. Image is in the public domain and ruled by Fair Use policies.

believed, nothing would change. The inspectors seemed convinced that citizens would not follow through with their recommendations unless representatives of the state mandated that changes be made.

The recommendations of Dillon and his companions were taken seriously and by March 16, 1908, the Anti-plague League (Liga contra la peste) was formed by the national government. Its general directorship was comprised of physicians Manuel Jijón Larrea, Joaquin Gómez de la Torre, Enrique Pérez Muñoz, Enrique Bustamente L., and Luis Robalino Dávila. The primary aim of the League was to safeguard the capital city from infestation or to at least attenuate its impact if plague infestation were inevitable. Part of the group's job was to report on conditions that made Quito vulnerable to the presence and spread of plague. On March 24, the League filed a report regarding the neighborhood surrounding the Sucre Theater, located in the very heart of Quito. The theater was one of the main focal points for the League as it served as a symbol of the nation's patrimony and cultural contributions to the lives of Ecuadorians. Not surprisingly, there they found that the majority of homes were elegant, comfortable, and clean; the theater itself, however, was a different story.

Fig. 3.4:
The National Sucre Theater and Plaza as they appeared in 1903



SOURCE:<http://media.photobucket.com/image/teatro%20nacional%20sucre%20quitob2-sk/fachadasepia.jpg>. Accessed on March 15th, 2009 at 12:35 p.m.

The cleanliness that the League members discovered around the theater, of course, gave a positive impression of the inhabitants: educated, cultured, and possessed of habits which should have been emulated by the general population. In their report they specifically mentioned the homes and properties of Mrs. Isabel Pérez (viuda [widow] of Cárdenas), Mrs. Valentina Enríquez (v. de Yépez), Mrs. Isabel Larra de Solano, and Mrs. Benigna Dávalos (v. de Zubiria) as examples of clean living and responsible citizenship as far as sanitation was concerned. There were only two homes on Olmedo and Guayaquil streets, bordering the theater itself, that were found in complete filth. Garbage was found in every room including the bedrooms, and sanitary conditions were abysmally below standard. Interestingly, these two homes were neither specified nor their owners named.³⁶

Inside the Sucre Theater itself, however, the members of the League were surprised by the filthy nature of the building. Of special consideration were the building's patios and bathrooms. Immediately after the inspection's report there were some improvements made and, consequently, the majority of the garbage and odors had disappeared. The condition in which the theater was found, however, served as a reminder and admonition that "public buildings should be completely clean."³⁷ The inspectors considered public buildings and the national emphasis on urban modernization that they symbolized to be signs of a civilized and cultured society and could serve as a good example of what was required if Ecuador was to combat the scourge of plague and succeed in its finding its place in the global

³⁶ Inspectors' Report, 24 March 1908, ASSQ.

³⁷ Ibid.

community. While such public buildings were left filthy, there was no hope, the League maintained, for getting the private sector to follow its recommendations. For the League, the State should serve as primary exemplar.

According to the League's observations, there were toilets and urinals in substandard condition, which should have been replaced by some that were more comfortable, elegant, and appropriate for such a venue as the national theater building. They had also recommended that the walls of the patio be painted with lime and that the floors be paved in such a way as to provide proper drainage. Additionally, doors were to be replaced by windows and steel to allow in light and to permit for easier cleaning. Wallpaper was to be replaced and the paint in corridors at the entrance and in the foyer needed to be repaired immediately. It would seem that what the triumvirate described in writing about the national theater was a building in complete disrepair and one, for all intents and purposes, which should have been torn down and rebuilt.

In the plaza of the theater, the atrium was of specific concern as there was a urinal in such bad hygienic condition that they had recommended that the very Public Health officials order it removed immediately. The plaza floor itself was uneven, badly paved and could never be kept clean. Outside the theater compound, there was found the same degree of filth, and the League suggested that the horse-and-buggy owners who regularly stationed their vehicles on the street just outside should be ordered to clean up after their horses (they specifically pointed out the odors caused by the horses' urine).

In the stores that were attached to the theater and rented out to the poor or the indigenous, the League's directorate found it almost inevitable that owners and renters had guinea pigs, chickens and other domestic animals freely moving around the place worsening already unhygienic living quarters with their own urine, feces, and other things that accompany the cohabitation with animals. It is important, I believe, to keep this last point in mind as the cohabitation with animals (*cuyes*, or guinea pigs, specifically) becomes an important factor in the fight against plague throughout the highlands in our next chapter. The fact that it is mentioned here and at this point in time in Ecuador's efforts against plague illustrates that the concern over highlander habits and customs was beginning to inform and color the ways by which Ecuadorian public health experts and bureaucrats would confront plague during the next three decades.

The homes that League members visited also had problems of their own. What the League stipulated was that visits should be conducted by inspectors *ad honorem* or by municipal commissioners at least weekly since this frequency had provided for good results. In fact, in May of 1910 alone, inspectors had made a total of 742 home visits and vaccinated 4,598 persons.³⁸ These home visits consisted in the identification (and reporting) of the infirm, the inspection of living conditions (especially looking for dimly lit rooms, poor ventilation, and the presence of animals), and the disinfection and eradication of rats and various foci of contagion.

It was believed that "cultured" people would continue to demand cleanliness and that poorer people would become accustomed to cleanliness out of fear and

³⁸ As reported by Kingman Garcés, *La ciudad y los otros*, 293.

punishment and/or fines.³⁹ In fact, in the same March 24 report, the directors believed that people would learn to maintain cleanliness...

[as] they begin to comprehend that good hygiene is one of the best and greatest benefits given to us by education and that authorities zealous in the carrying out of their duties ought to demonstrate this on a very practical level.⁴⁰

The idea that people would or should learn to maintain cleanliness, or public hygiene, was practically an imitation of what had occurred throughout Argentina in the preceding decades in its emphasis on sanitation and public health. Guillermo Rawson, the first professor of the University of Buenos Aires' Department of Public Hygiene, asked, "To whom is the study of Public Hygiene relevant?" His answer,

To everyone; young and old; women and men; lawyers and physicians; the worker and the man of letters... Hygiene should be the material religion in all lands.⁴¹

On another level and in other parts of the country, steps were also being taken in the watch against the threat of plague. In the northwestern predominantly afro-Ecuadorian coastal province of Esmeraldas, for example, the governor was authorized on May 5, 1908 to divert some of its funds (S/.25,000 sucres or about \$12,100 USD) reserved for construction of the railway through the city of Coquito toward constructing a lazaretto (where the infirm could be housed), purchasing some Yersin and Haffkine serum, and tending to the overall cleanliness and public health of the province. Although we might be able to assume that the overall concern here is the coastal province's susceptibility to plague, we cannot help but wonder whether there were any plague cases here or the number of cases that there might have

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ As quoted in Julia Rodríguez, *Civilizing Argentina*, 182.

been. No documents were found that directly addressed these concerns, but historian Oswaldo Jervis Alarcon has commented that there was an inexplicable absence of plague cases in the province of Esmeraldas.⁴²

By October 1908, Ecuador saw its first Public Health Law and by November the national budget had set aside the yearly amount of S/.640,820 (over \$300,000 USD) sucres for the improvement of public health, approximately 20.3% of the Republic's annual budget for the fiscal year ending in 1909.⁴³ This was an extraordinary amount of money when we consider that it was the largest proportion of funds set aside for public health in Ecuador's administrative history, yet the act reflects the importance that Alfaro's government attributed to social medicine (medicina sanitaria y asistencial) due to the presence of plague on one hand and the value placed on this kind of social medicine, on the other, that bore great importance as countries attempted to modernize and improve the lots of their citizens.

PLAGUE MOVES INLAND

In the attempt to discern plague's possible impact on the people and territory of Ecuador, health committees, inspectors, and the Anti-Plague League (Liga Antipestosa) all attempted to diagnose the country's susceptibility to plague. It is important to note, however, that this process was not assigned top priority by national authorities until they saw Quito as a possible casualty. Guayaquil had already been considered a hotbed of tropical disease, but Quito was envisioned as

⁴² Oswaldo Jervis Alarcón, "La peste bubónica: problema de urgente resolución" in *Revista Ecuatoriana de Higiene y Medicina Tropical* 15:3 (1958).

⁴³ According to Compañía Guía; El Ecuador, Guía Comercial, Agrícola e Industrial de la República. Guayaquil, 1909.

almost pristine and protected by its altitude, its climate, and – until this moment – its isolation from the rest of the national territory surrounded as it was by the Andean mountain range. But, in April 1908 several persons succumbed to plague on the coast and the Ecuadorian government could not but finally declare that the disease had indeed invaded Ecuador.

When government officials officially declared plague's presence in Guayaquil, Dr. Ramon Flores Ontaneda, the renowned bacteriologist working out of the laboratory at the University of Guayaquil, was called back to duty and became involved in the scientific and medical work focusing on the isolation of the plague bacillus. Flores Ontaneda had already played an important role (it will be recalled) in the bacteriological research earlier in the decade. But, now he found himself canceling a trip that he had scheduled to Germany and beginning research at the Vicente Rocafuerte School, the aforementioned academic center of bacteriological research in Ecuador. His involvement this time was cut short, however, when a specimen he was preparing for use as an anti-plague vaccine accidentally infected him. Upon becoming infected he suffered the effects of plague and died on April 21, 1908 in his home city of Guayaquil. One description of Flores Ontaneda seems almost hagiographic in describing him as a martyr of Ecuadorian medicine. The *Diccionario Bibliográfico Ecuador* writes about the famed medical doctor and microbiologist that...

[he] did not rest. In the mornings he went to the lazaretto to extract pus from patients' buboes, some of whom died while he extracted the liquid so infirm were they. Many times, and out of fear that that brave man might become infected with plague, he was offered doses of Yersin serum so that he might protect himself; but, he ceded it to some

gravely ill patient because he believed himself immune after spending so much time in direct contact with plague victims.⁴⁴

Once plague was observed in Guayaquil it was not long before it began to move from place to place and between regions. Even the New York Times had announced that bubonic plague had begun to spread into the mountains and that this created a panic.⁴⁵ Additionally, the paper went on to report how academic discussions abounded regarding how to deal with the menace and that these discussions were often conducted by doctors who had no experience with the disease. Matters had gotten to such a point that even the old Municipal Building in Guayaquil was burned, as it was believed to be the focus of infection. Given plague's reputation, though, it should not be surprising to learn that officials often attempted to deny its existence or even shift blame for the problem onto other towns. Pineo, for instance, writes that

[in] 1910...the police chief stressed that many plague victims came into [Guayaquil] from the surrounding rural districts. While no doubt true, this obscured the fact that the miserable sanitary conditions of Guayaquil and the generally dirty living circumstances of the poor helped bubonic plague to develop and spread within the city. In 1919, officials declared that...plague no longer was a health concern in Guayaquil. This claim was simply not true, as 59 people in 1920 would have gladly attested, had they been alive to do so.⁴⁶

Throughout the next five or six years, plague traveled throughout Ecuador reaching Babahoyo, the capital city of the province of Los Rios, by train in the southern region by 1909. By 1911 the disease was encountered in the province of El Oro and by 1913 it arrived in the province of Manabí where two cities (Manta and Bahía de

⁴⁴ Adapted from <http://www.diccionariobiograficoecuador.com/tomos/tomo5/f2.htm>. Accessed on March 15th, 2009 at 5:05 p.m.

⁴⁵ "Guayaquil Has Lost Place as 'Pest Hole'" in *New York Times*, 30 August 1931: p. E8.

⁴⁶ Pineo, "Misery and Death in the Pearl of the Pacific:" 619.

Caráquez) were hit. At this time the Board of Health (Dirección de Sanidad), under the directorship of physician Luis Becerra, established and intensified the fight against plague in the affected zones while Quito's Municipal Board of Hygiene (Dirección de Higiene Municipal de Quito) established other preventive measures.

By 1913, the Ecuadorian plague epidemic had deeply affected the country. Cases were appearing sporadically with neither rhyme nor reason, and the government attempted to establish a sanitary campaign in 1913 for which it reserved the total of S/.200,000 sucres (a little under \$100,000 USD).⁴⁷ On the coast, specifically, Guayaquil established a vaccine service with limited success. In that same year, for example, the service was able to vaccinate 20,000 people with the Haffkine vaccine, but word soon got out that the vaccine only protected those receiving it for a few months and that 2 percent had contracted the disease even after having received the vaccine.⁴⁸ This was enough to keep many people away and to cause the public health apparatus to abandon the vaccination campaign.⁴⁹

Documents in the archives and in newspapers demonstrate that when plague was officially declared to have invaded Guayaquil, it was only done under the direction and urgent suggestion of Dr. Bolivar J. Lloyd, the Pan American Sanitary Bureau surgeon mentioned earlier who had been residing in Guayaquil at the time of plague's outbreak in Ecuador. According to the same records, the first infected persons were those who labored in the seaport and in customs areas where rats easily made their nests and where the first cases of human plague were to be found.

⁴⁷ See Paredes Borja, *Historia de la medicina* for a very brief discussion.

⁴⁸ Pineo, *Social and Economic Reform in Ecuador*, 106.

⁴⁹ This was also the case in Peru. Marcos Cueto, *The Return of Epidemics: Health and Society in Peru during the Twentieth Century* (Burlington: Ashgate, 2001).

Lloyd diagnosed plague among the dead rats found and warned quite clearly that human cases would soon appear. Such was the case and immediately following his warning, 63 cases were reported in February and 225 cases in March, the largest number ever to be reported in Guayaquil.⁵⁰ The majority of those persons infected lived and worked in and around the port's market area where an epizootic had been reported and made possible because of the location and structural conditions that made the port-market area an ideal safe place for the rodent population.

Record after record in the archives of public sanitation in Quito indicates that once plague arrived on to Ecuadorian territory it was able to move inland via land and river "on the back of commuters." In other words, it was not the rats that were the sole transporters of plague. Rather, plague traveled inland both via persons who had already been infected and were traveling to the highland areas (like our friend Vicente Mapuso) or who were carrying infected fleas on their clothing and in their bedding. After arriving in Guayaquil in 1908, for example, plague spread to the smaller cities and towns of Yaguachi, Milagro, and Huigra, all of which were major stops on the relatively new railway that connected the country's highland areas with the coast. Babahoyo, the capital of Los Rios, also saw its first cases of plague that year. By 1911, the port city of Santa Rosa, in the southern province of El Oro, saw its first cases and then plague arrived in Durán in 1912, Naranjito and Huigra again in March, Alausí in April, and Manta and Bahía de Caráquez in 1913 where plague came and went for a few years as seasons changed. In 1914, Huigra was hit again

⁵⁰ See Carlos A. Miño, *La peste bubónica en el Ecuador*, for a decent explanation of the numbers and the cases to be found. It is important to note that there are very few case studies, if any at all, mentioned in any of the more seminal works covering plague in Ecuador.

when the son of the railway station chief became infected and died from plague related complications.⁵¹ Plague hit the town of Samborondón the same year. Finally,

Table 3.2:
Cases of plague from 1908-1916, mostly on the coast

Year	Locale	Cases	Deaths
1908	Guayaquil	588	274
1909	Guayaquil	903	320
	Yaguachi	4	4
1910	Milagro	23	9
	Guayaquil	675	266
1911	Guayaquil	513	202
1912	Guayaquil	485	188
	Duran	7	1
	Milagro	8	1
1913	Guayaquil	727	304
	Huigra	12	2
	Alausí	9	3
	Duran	10	6
	Yaguachi	6	5
	Milagro	13	4
	Naranjito	1	0
	Babahoyo	1	0
1913/14	Manta and Bahía	60	17
1914	Guayaquil	409	138
	Duran	10	5
	Samborondón	4	3
	Yaguachi	1	1
	Milagro	1	1
1915	Guayaquil	327	109
	Riobamba	1	1
1916	Guayaquil	843	321
	Alausí	106	67
	Tucán	3	0
	Ambato	42	18
	Babahoyo	30	14
	Daule	9	7

Source: This information has been culled from the archives of the *Oficina Panamericana de Salud* housed at the Eduardo Estrella Museum of the History of Medicine in Quito.

⁵¹ Ibid.

In 1916 Daule was hit and in 1918 both Guamote and Posorjá (not included in the table) had their first cases. From Guamote plague was transported to the city of Riobamba where it traveled from neighborhood to neighborhood on the clothing or in the lungs (in the form of pneumonic plague) of human porters as they traveled back and forth on their daily routines. By October 1917, there had already been major concern among officials that plague could invade the highland capital city. On October 10th of the same year, for example, J.C. Dobbie, the general manager of the Quito-Guayaquil Railway, had sent Doctor Carlos A. Miño, the national director of the Board of Health, a letter in which the former had referred to the approach of plague as a consequence of sea-faring vessels and the port authority's inability to adequately prepare the vessels against rats and the infections that these carry.⁵² In that letter he stipulated that Dr. Miño could indeed place his confidence in him and that all efforts would be made to improve the company's monitoring of trunks and bags traveling on the railway:

...you may trust that we will carry out every possible action that will help prevent the approach of said plague resulting from the migration of rats in poorly sealed trunks and sacks. In this vein, we will inform all of our station chiefs and other employees who are charged with these tasks of our intention [of complete cooperation] in this matter.⁵³

In a concerted effort to control plague's incursion into the country's highland rural areas, the national public health board passed a series of anti-plague measures that emphasized isolation and vaccination, but which ultimately focused primarily on rat control.⁵⁴ Among the anti-plague measures mandated were the

⁵² J.C. Dobbie to Dr. Carlos A. Miño, 17 October 1917, ASSQ.

⁵³ Dobbie to Miño, 10 October 1917, ASSQ.

⁵⁴ Miño, *La peste bubónica en el Ecuador*.

fifteen aimed at maintaining homes and people clean. First among them was the separation and isolation of the infected. Here the goal was to minimize the risk of infecting those with whom the victims lived or those who cared for them. As such, what was recommended was the utilization of “one sole house” for the purposes of this isolation.

The measures also required vaccinations for all inhabitants of any zone infected by plague. This was to be done with either Haffkine serum or Yersin serum and, at the very beginning of the Ecuadorian epidemic much of this serum came from the city of Lima in Peru. Connected to this measure was the destruction – quite often by fire – of all clothing used by the infected or at least a disinfection of the clothing by submission in a disinfecting solution. Many towns and, especially, Indian neighborhoods (caseríos) were provided with the disinfecting materials (lime and/or creosote, for example) with which to carry out the disinfection.

General cleaning of all homes and dwellings was also required by the measures. The cleaning was to be done with a solution that included lime in order to attain the best results. Garbage was to be removed from the dwelling so as to avoid attracting rats and other vermin into the household. The removal of garbage and the cleaning of the home were geared at protecting all comestibles (victuals) from rats and mice, as these were creatures keenly attracted to the foods of human beings. Especially to be protected were grains, a main source of food for these commensal rodents.

The measures furthermore possessed a certain cultural implication in the way they addressed the basic customs of the people they were meant to protect.

Bathing with plenty of soap, the cessation of all indigenous funereal wakes, and the treating of all infirm with Yersin vaccine and serum were all recommended under the new standards and much of this caused initial resistance among the indigenous. Most of the resistance mentioned by such public health experts as Dr. Long, for example, was a reaction to the placing of poison throughout the city. In his report, the American expert writes, for instance, that

It has been stated that a few pigs, chickens, and cats have been poisoned, but there is definite proof that this is unlikely. One small child was said to have been made sick by having eaten some barium chloride, but a talk with the father failed to elicit any information that would tend to confirm this. One woman was said to have eaten one of the packages of poison with suicidal intent, but her life was saved. There has been some resistance on the part of the public to the placing of the poison, but it has been overcome in every instance.⁵⁵

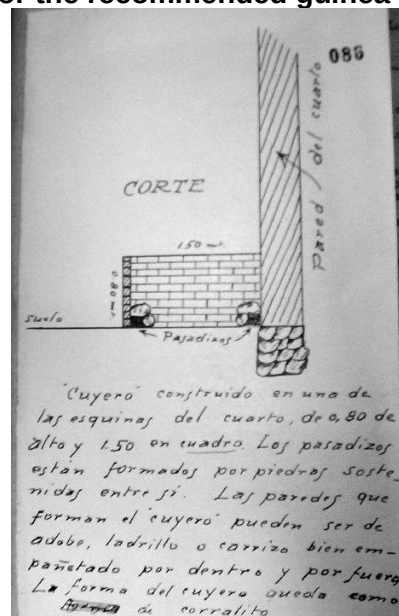
The indigenous wake, for example, was of prime importance in highland culture and, as will be discussed below, normally lasted for three days during which there was much socializing, sleeping on floors, drunkenness, and the sharing of clothing and bedspreads of the recently deceased. If the deceased had died of plague, one can easily see the importance of these wakes in the spread of the deadly bacillus.

Inside the dwellings the government had established new practices that were to be followed if plague was going to be avoided. First and foremost, indigenous people were advised to not sleep directly on the floor, as was their custom. Instead they were to consider sleeping on a hardwood platform at least 50 centimeters high above the ground. Here the objective was to diminish access that fleas and rats would have to personal and bed clothing and to the inhabitants themselves. Furthermore, within the dwelling itself highlanders tended to cohabitate with their

⁵⁵ Long, "Antiplague Campaign in Guayaquil and Vicinity." 2883.

guinea pigs (a major source of protein and possessing socio-cultural significance). Thus, rural dwellers were advised to build guinea pig hutches (*cuyeros*) outside of the home's sleeping quarters in order to prevent facile inter-species transmission of fleas and other vectors. It was further recommended that these hutches be surrounded by mesh walls so that human and guinea pig contact was kept at a minimum as guinea pigs were considered very "susceptible to plague and a very good source of contagion."

Fig. 3.5:
A design for the recommended guinea pig hutches



Source: Adopted from the ASSQ, n.d.

Also, a portion of the measures included more administrative or procedural methods that were to be used by public health inspectors. These included the quarantining of people suspected of infection and preventing them from traveling to other areas. Part of this quarantining would include vaccination certificates that

were mandated to be carried and that could not be more than ten days expired. The systematic inspection of all neighborhoods and homes in the search for ill people and cleanliness, and the organization of a team of laborers who would perform all service needed to prevent the spread of plague were all part of these new mandates.

Finally, and perhaps most importantly, rat control was to be used as the method by which to control plague in the rural areas. The capture, autopsying, and general extermination of the rat population eventually became the main focus of Ecuador's anti-plague efforts and in the modernization of indigenous habits and customs associated with plague. As such, the period between 1916 and 1939, during which plague was indeed brought under control, would witness a certain degree of creativity in the capture of the rodents and the scientific methods of investigating the more common sources of plague and its vectors. These methods were introduced in laboratories and universities, but were ideologically married to the role that the modernization of customs had in the life envisioned for the nation.

In sum, the period just described in this chapter (1894-1916) was a precursor not only to a more intensive approach to fighting plague, but to a more systematic and more thought out process. It led to a process that involved rigorous investigating, first, of the ways in which plague affected the Ecuadorian people and territory and, second, the ways in which plague could best be controlled. From 1908 to 1916 – during the epidemic's initial years – Ecuadorian health experts and social hygienists (such as Miño and Suárez) focused on a sort of geographic reconnaissance that had the aim of determining the condition of the capital city's

hygiene as well as the sanitary wherewithal of its population(s). This was done by establishing cadres of inspectors and committees whose main duty was threefold: (1) inspect the overall cleanliness of the city's buildings both private and public, (2) determine the susceptibility of Quito to plague infection, and (3) make recommendations and help establish policies that were aimed at protecting Quito from the calamity of a possible plague infestation.

These processes involved an intense effort on the part of Ecuadorian medical and public health institutions that would be witnessed through the field work of the sanitation delegates and commissioners charged with the spread of the new hygiene and with the inspection of the overall cleanliness of districts to which they were assigned. Many of them performed their function well, and yet still others were dismayed and frustrated by the folly that is the human condition during times of crisis. Thus, although the Ecuadorian effort to combat plague gained momentum during this third phase, it also saw its fair share of personal and professional frustrations that were expressed in the communiqués of the sanitation delegates.

Chapter Four

Launching the Anti-Plague Campaign: The Ecuadorian Effort, 1916-1929

*“Without personal hygiene man falls ill and dies,
without public hygiene it is the city that falls ill and dies”*
-Annals of the Universidad Central¹

Vicente Mapuso, the young man who was removed from the train at the beginning of our story, was just one of the many citizens who died as a result of Ecuador’s plague epidemic. His final hours must have been frightfully and unbearably painful as the disease consumed his body in what seemed a matter of hours on that fateful day of February 15, 1919. The events of that day must have also been weighty for the police officers who escorted Mapuso off the train for it revealed to them in no uncertain manner the menace with which law enforcement and public health officials would have to deal over the next several decades. What would develop as a result of plague’s approach and subsequent appearance in Ecuador’s highland areas was the realization that an anti-plague campaign and, most particularly, the efforts of sanitation officers would be essential elements in the fight against plague and in the struggle to build a clean, healthy, and modernized society.

In this chapter I discuss the efforts of specific Ecuadorian public health officials and institutions, especially during the second and third decades of the twentieth century. It was during this period of time when a significantly more conscious and intensive effort was made to eradicate plague on the part of Ecuadorian health and hygiene experts. Beginning in 1916 what Ecuadorian

¹ Annals de la Universidad Central, N. 13 (May-Nov 1888), Quito, pp. 186-222.

citizens witnessed was a greater zeal with which particular members of the nation's various medical and public health entities attempted to gather information and coordinate supplies. These officials sought to utilize the information in understanding and eradicating plague. Additionally, their aims encompassed the distribution of supplies throughout the country's affected areas in an anti-plague campaign that aimed at preventing the invasion of Quito by the scourge. Finally, there is also evidence that demonstrates that efforts were made by many individuals, institutions, and communities to consciously follow the new anti-plague measures, and to maintain homes and rooms clean, while the public health apparatus emphasized the major weapon traditionally utilized against plague: rat control.

The period between 1916 and 1929, then, saw public health experts concentrated on more scientific and investigative methods of understanding plague and its etiological factors. Sanitarians and social hygienists such as Dr. Miño, for instance, emphasized rat control and the collection of fleas where they were available. Attention was also diverted away from the homes of the political and intellectual elite and the economically advantaged and onto the habits and customs of particularly more marginalized populations (i.e., the "native Indian") in the attempt, seemingly, to incorporate them more fully into the life of the "modernized" nation. Eventually, special expert assistance was received from outside sources in the form of medical knowledge and investigative skills that benefitted Ecuador's anti-plague efforts.

ATTRIBUTING MEANING TO PLAGUE

Despite the fewer victims that plague claimed in Ecuador as compared, say, to India or China, to contend that the Ecuadorian-led anti-plague campaign was an easy endeavor would be a significant misstatement. The historical literature on various vaccination and anti-vaccination movements (and the debates that have surrounded them) demonstrates that it has seldom been easy for bureaucrats to convince a general population of the benefits of vaccination or, more challenging still, of changing habits leading to improved cleanliness and sanitation. In fact, anthropological, sociological, and historical studies have shown time and again that general populations have been extremely skeptical and suspicious of medical and public health authorities who were viewed as either invading or co-opting the former's cultural and religious traditions or as imposing imperial and hegemonic values on politically or economically subordinated minorities.² More often than not, great efforts were taken by all sides of the vaccination or quarantine policy debate to discredit opposing and contradicting viewpoints. As Mark Harrison has pointed out in the case of plague in British India, for instance, "official attitudes toward public health [have always been] coloured by competing philosophies of government derived partly from...political theory, and partly from the experience of administration...."³

² One need only to consider the works of such historians as Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine, 1859-1914* [Cambridge: Cambridge University Press, 1994]; Diego Armus, *Disease in the History of Modern Latin America: from Malaria to AIDS* (Durham: Duke University Press, 2003); and David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993) for discussions of state intervention and popular responses to them.

³ Harrison, *Public Health in British India*, 230.

Although the literature addressing the anti-plague campaign in Ecuador and its successes and short-comings is far from complete, there are documents located in the archives in Quito that do indeed suggest that it was equally difficult to convince urban and rural populations of the advantages of vaccination;⁴ but this difficulty was nowhere near as intense or as seemingly insurmountable as it has been shown to be in other regions of the world. If anything, the vaccination campaign was abandoned reportedly because it did not work in Ecuador. Peru, for instance, witnessed a similar problematic in that country's attempt to vaccinate its citizens. According to Cueto, the serum and vaccine promoted by authorities there were rejected not because of cultural reasons. Instead, the reality was that Haffkine's serum actually produced a fever, swellings, and other crippling reactions that lasted several days. Eventually, in 1935, Peruvian authorities ceased dispensing vaccines altogether.⁵

The Ecuadorian anti-plague campaign was fraught with difficulties, yet these difficulties generally focused on the inability and often personal frustrations of public health officials in disseminating the appropriate information and applying the new anti-plague measures uniformly throughout the country's territory. Telegrams sent between and among hygiene inspectors and delegates allude to the frequent and repeated requests by frustrated, often insufficiently trained, and poorly outfitted sanitation officials. They all too often requested supplies and assistance in the

⁴ Most of this information is to be found in the collection *Obras Sanitarias* located at Quito's Museo Nacional Eduardo Estrella de la Historia de la Medicina. The collection is simply arranged by date and there seems to be very little rhyme or reason to how it is organized. The issue of resistance to vaccination in Guayaquil, Quito, and other Ecuadorian cities is also discussed, albeit briefly, by Kingman Garcés, *La ciudad y los otros*, 296.

⁵ Cueto, *The Return of Epidemics*, 14.

forms of economic resources and personnel who were willing to travel to parts of the country that, for all intents and purposes, were disconnected from the rest of Ecuadorian society, culture, and politics. In the words of one public health worker's telegraph to the National Board of Health, some simply felt ignored. A Señor Vaca (no other names were provided) simply wrote in his telegraph the words, "I feel as if I don't exist."⁶ Vaca's words might resonate for readers of the history of medicine simply because of all the challenges that are built in to the changing of customs, on the one hand, and the carrying out of official duties on the other.

Plague's officially acknowledged arrival into the Ecuadorian highlands in 1908 jumpstarted a movement that was supported in its initial stages by the national liberal presidency of Eloy Alfaro and carried out by the office(s) of public sanitation in Quito and the nation's largest cities (i.e., Guayaquil, Cuenca, Ambato, and Riobamba) under the auspices of succeeding presidential administrations. It was clear, however, at every step of the way that the main goal for national representatives and the officers who were charged with plague control was the prevention of plague from entering the capital city and to dissipate the fear that the danger of plague caused within the city's limits. At a time when a unifying Ecuadorian national identity was in the process of being constructed via the connecting of Quito to the coast by railway and via reinforcing Quito's prominence as the nation's cultural center, plague was viewed as a menace that could destroy Ecuador's chances at admission into the larger family of the world's "civilized" or "cultured" countries (*países cultos*). Plague was also viewed as a symbol for

⁶ Letter from Vaca to "Director Sanidad," 23 April 1928, ASSQ. "Siento no tener existencia."

everything that Ecuadorian social hygienists (like Dr. Pablo A. Suárez, specifically) and politicians saw as backwards in the nation,⁷ believing that

a country whose cities are appropriately canalized and paved, and which can count on reliable sources of potable water, is a healthy country or, at least, lends itself to the fight against epidemics. A poor country that does not [in turn] make use of those services is unhygienic and finds itself exposed to the possibility of grave epidemics.⁸

Guayaquil was, of course, the point of contrast and, for that matter, the point of departure for Quito's administrative elite in this search for "civilization" and the nation's struggle for a political and economic position in the global community. For some time Guayaquil was rife with diseases that included yellow fever, malaria, cholera, typhoid fever, smallpox, measles, tuberculosis, plague and a rather wide variety of other deadly digestive and respiratory infections.

Politicians, medical experts, and public health experts (or sanitationists, to use the terminology of the time) knew that if Quito was going to be spared contagion, Guayaquil was going to have to improve its sanitation, for what the railway did for connecting coast to highland, it also did for the exchange of diseases and the microbes that caused them. Guayaquil, therefore, specifically posed extraordinary hazards to its many newcomers (migrants) from the highlands who had not acquired immunities to the plethora of afflictions present in the coastal city. To set aside progress and modernization in order to deal with the problem of plague and plague infection, however, was not an option for Ecuador's visionaries and social architects. The technological and social connections between Guayaquil and

⁷ On Ecuadorian nationalism and racial ideology in the twentieth century see A. Kim Clark, "Racial Ideologies and the Quest for National Development: Debating the Agrarian Problem in Ecuador (1930-1950)," *Journal of Latin American Studies* 30: 2 (1998): 373-393.

⁸ As quoted in Kingman Garcés, *La ciudad y los otros*, 299.

Quito, simply put, had to be the foci of plague control and this made some men of science dedicated servants of the state and of hygienic ideals; it also created martyrs of others.

PHASE III: PLAGUE CONTROL AT FULL FORCE

It was not until 1916 that Ecuadorian anti-plague campaign was undertaken most forcefully. On March 4th of that year Leopoldo Vera, a public health deputy stationed in the town of Machachi, forwarded a message that he directed to the public health administrator in Quito in which he confirmed the dangerous possibility of plague's approach of the capital city.⁹ What is significant about this communiqué, though, is his admission that if he were to be called to task in the fight against plague in Machachi his efforts would be utterly deficient.

Vera not only complained about the lack of funds at his disposal, but also briefly mentioned that because of where he was stationed, he found himself isolated from all essential resources or assistance in an environment in which the population he served received sanitary measures with suspicion and scorn. He made it clear that this scorn was not expressed solely by the general population, but also by the very public officials called to serve the town's residents. This latter group included police officers and municipal bureaucrats who refused to carry out the new sanitary measures or the consequences that should have resulted by not adhering to them.

Vera saw himself as restrained, if not helpless, in the economic fight against plague, but what aggravated the situation for him was his inability to fulfill the duty of visiting people's homes in the search for compliance to sanitary measures. In his

⁹ Telegraph from Vera to "Encargado de la Sanidad en Quito," 4 March 1916, ASSQ.

memo, he described, for instance, a personally harrowing situation occurring the previous day (March 3, 1916) in which he was carrying out his daily routine of visiting and inspecting homes as required by his position. Upon arriving at one home, he found himself being attacked by the man who lived there. After complaining to the local police, he discovered that nothing was done, that there was no follow-up, and that the attacker was neither jailed for assaulting a government official nor brought to trial as was supposed to transpire.¹⁰

Vera's case was, of course, typical of the problems inherent in the anti-plague campaign. These problems focused on some resistance on the part of the general population to the apparent invasion of the government into the private lives of its citizens. More importantly, however, Vera's case was an indication of how far officials were expected to extend themselves in realizing their duties during an era in which public sanitation was being promoted as part of the nation's civilizing mission. Ultimately, Vera's was a cry for help since he "[could] not continue [his] home visits while [his] safety was not guaranteed by national officials."¹¹

While Vera was complaining about the non-adherence to national policy and regulation, however, other sectors of the public health apparatus found hope in the work and person of physician Carlos A. Miño, the national director of public health in Quito, who played an increasingly important role in the fight against plague. Upon hearing news that the town of Alausí (plague's highland focal point as will be recalled) had seen its first case of plague, Miño immediately travelled to the town to take part in the investigation of the case and in the general fight against plague in

¹⁰ Telegraph from Vera to "Encargado de la Sanidad en Quito." 4 March 1916. ASSQ.

¹¹ Ibid.

the region. Upon his arrival, he received a telegraphed message that not only welcomed him to Alausí, but that went on to describe the poverty of the town. The author of the message, physician León Becerra (who was then residing in Guayaquil), not only expressed his confidence in the director's work and efforts, but also went on to explain how the canton in which Alausí was located was so abysmally poor that it had only been able to set aside S/.60 sucres (a little under \$30 USD) monthly toward the salary of a doctor who could oversee the canton's lazaretto and the general welfare of the local population; it was a measly amount even by early twentieth century standards.¹²

Dr. Miño's involvement in the fight against plague became more important as time went on. He dedicated himself to travelling from one infected area to another and attempted to attain as much information as he possibly could about plague and its presence and prevention in Ecuador. He visited towns and villages. He spoke with their political delegates. He visited homes and he spoke with the infirm and with the people who lived with them. He also conducted a number of interviews with health officials in the field and even communicated with medical experts outside of Ecuador who not only specialized in epidemiology and public health, but who had personal experience in dealing with plague. He knew that these experts could have also provided him with some insight as to how to deal with plague in the highlands. In one instance, Miño wrote a formal letter to Surgeon General William C. Gorgas in the United States. At the time, General Gorgas was serving as the president of the Yellow Fever Commission of the Rockefeller Foundation and had travelled

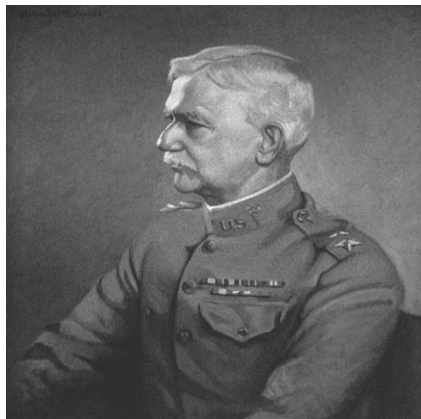
¹² Telegraph from Becerra to Miño, 5 March 1916, ASSQ.

throughout Latin America and the United States in that organization's efforts to eradicate yellow fever.¹³ In his letter, Miño's primary goal was to determine – considering Quito's special geographic circumstances – the possibility and probability of plague in the capital city. He inquired:

As a matter of universal scientific interest, and there being opposing viewpoints related to this matter, please permit me to solicit your authoritative opinion, on whether the conditions of altitude, climate, barometric pressure, solar heat of this capital might permit [the city] to be invaded by bubonic plague, or, assuming the existence of rats as carriers of the disease, plague could arrive here.¹⁴

It was not extraordinary that Dr. Miño requested this kind of advice from outside Ecuador. After all, Miño was himself a respected medical practitioner and epidemiologist who had his external contacts and who had studied in Europe and the United States. Gorgas' response to his letter, however, permitted Miño to

Fig. 4.1: William C. Gorgas



Source: Adopted from http://blue.utb.edu/ghostsoffortbrown/page_03_OldMorgue.htm. Accessed on March 16th, 2009 at 5:29 p.m.

¹³ See Marcos Cueto, ed., *Missionaries of Science: The Rockefeller Foundation and Latin America* (Bloomington and Indianapolis: Indiana University Press, 1994) for an interesting discussion on the various roles of the foundation in the region.

¹⁴ Letter from Miño to Gorgas, 28 June 1916. ASSQ.

narrow or focus his efforts on rat and flea control and on the potential impact of the railroad on the spread of plague. On June 2nd, Gorgas responded by writing that,

[in] my opinion, neither climate nor temperature, nor atmospheric pressure could have any considerably worthwhile impact [on the spread or presence of plague in Quito]...I believe [however] that wherever there are rats and fleas there could be established a plague reservoir if plague infected rats are introduced [to the area].

If in Quito there exist rats and fleas, then the city could [indeed] be infected if there are introduced infected rats from Guayaquil or from other locales along the railway that might have suffered plague infection.¹⁵

Gorgas' response was a confirmation of what Miño and other public health experts had already suspected in Ecuador. It was already known, as discussed in chapter two, that above a certain altitude rats (and the fleas they harbored) could not survive; the absence of fleas associated with *Yersinia pestis* probably helped keep Quito safe from an infestation caused by rat populations.¹⁶ This knowledge did not, though, make Miño feel any more at ease about the possibility of plague being transported in the personal articles of human beings who often commuted between highland and coast. Miño knew that, at the very heart of the problem, his country's public health administration and its officers were going to have to deal with the Guayaquil-Quito Railway without disregarding other factors that could have significant repercussions on the spread of plague in the highlands. In other words, to safeguard Quito from plague, Guayaquil (and anyone or anything going out of that port city) would practically have to be the exclusive focus of almost all anti-plague efforts.

¹⁵ Gorgas to Miño, 2 July 1916, ASSQ.

¹⁶ See Ronn Pineo and James A. Baer, "Urbanization, the Working Class, and Reform" in *Cities of Hope: People, Protests, and Progress in Urbanizing Latin America, 1870-1930* (Oxford: Westview Press, 1998), 258-274, for a brief discussion that compares a number of cities in terms of mosquito-related disease and the transmission of those diseases.

Miño obtained in his effort to understand and control the spread of plague ample support from representatives of the Guayaquil-Quito Railway Company. Station chiefs, managers, and company representatives kept in touch with Miño and updated him on their policy changes, the standards of cleanliness that the company adopted, and the process of inspection that its trains, cargo and passengers would undergo in the fight against the disease. In one case, the General Manager of the railway company, a J. C. Dobbie who was stationed in the infected and carefully watched town of Huigra, attempted to assure Miño that great efforts were being made in the support of the doctor's quest to rid Ecuador (and, expressly, the country's littoral regions) of plague and to avoid any chance that Quito be subject to an epidemic outbreak. Specifically, it was learned, as so often reported, upon questioning of employees discharging freight cars that rats were quite frequently encountered in the cars, particularly those loaded with rice and sugar from the coast towns.¹⁷ In his October 10, 1917 message to the national health director, Dobbie assured him that all steps were being taken to prevent the spread of plague and the rats that carried it via railway.¹⁸ In discussing the importance of the railway in the transmission of plague, Dr. John D. Long indicated that "on several occasions rats [had] been caught on these cars, and railroad employees [stated] that they frequently [saw] them, especially in cars loaded with rice, grain, and sugar, or other foodstuffs."¹⁹

In another instance of governmental-railway company cooperation, a railway executive residing in Quito, H. A. Navarro, wrote to F. J. White, the station manager

¹⁷ Eskey, "Chief Etiological Factors:" 2092.

¹⁸ Telegraph from Dobbie to Miño, 10 October 1917, ASSQ.

¹⁹ Long. "Antiplague Campaign in Guayaquil and Vicinity:" 2885.

at Huigra, informing the latter that the Board of Health (in its article No. 385 dated August 22, 1927) had ordered the prohibition of the transport of all unsalted or untreated meats from the coast into the highlands. Salted, or preserved, meats could indeed be transported back and forth, but its transport was only permissible as long as the meats were accompanied by a medical certificate signed by a municipal physician prior to their leaving their respective points of origin.²⁰ Thus, not only was there at least a verbal or conscious acknowledgment of Miño's (and his department's) efforts in the fight against plague among the railway's representatives, but efforts were undertaken to control and safeguard the "comings and goings" of trains and their cargo (human and otherwise) via executive-directed policy.

Much of Miño's work during these important years in the control of plague revolved around the gathering of information and the responding to requests from field officers and sanitation delegates (*delegados de sanidad*) who very often felt frustrated at not being able to carry out their duties in an effective or competent manner. Time and again, delegates from across the field requisitioned from Miño and other national public health representatives the supplies necessary for the capturing of rats, the examining of fleas, and the distributing of anti-plague serum and vaccines to those infected with plague. On July 14, 1918, for example, an anonymous public health officer of the highland city of Riobamba had sent Doctor Miño an urgent message in which he seemingly re-requisitioned the assistance of an inspector for the nearby town of Alausí, which was once more witnessing new cases

²⁰ Telegraph from Navarro to White, 25 August 1927. ASSQ.

of plague. He wrote, “I *once again* insist that you urgently send an inspector to Alausí as there have been found cases of plague in the town’s surrounding areas.”²¹

The efforts to combat plague were supported by a variety of private and public entities as well. Memoranda and telegrams demonstrate that private institutions considered anti-plague efforts important enough to invite inside their walls officials who would perform inspections rather than wait for the inspectors to schedule their own visits or simply show up. One important example of this practice of voluntary (yet obligatory) submission to inspection is the case of the *Escuela Modelo Municipal Espejo*, a municipally sponsored high school for boys located in Quito and founded only two years earlier in 1914. It was Pablo J. Gutiérrez, the school’s general supervisor, who had forwarded to Dr. Miño a telegraphed message emphasizing his compliance with the law regarding inspections and attempting to arrange an inspection date.²² Apparently, Gutiérrez had been persuaded by the urgency with which the press had written about plague’s impending spread and perhaps was motivated by the uncertainty of students’ parents regarding their sons’ protection from plague.

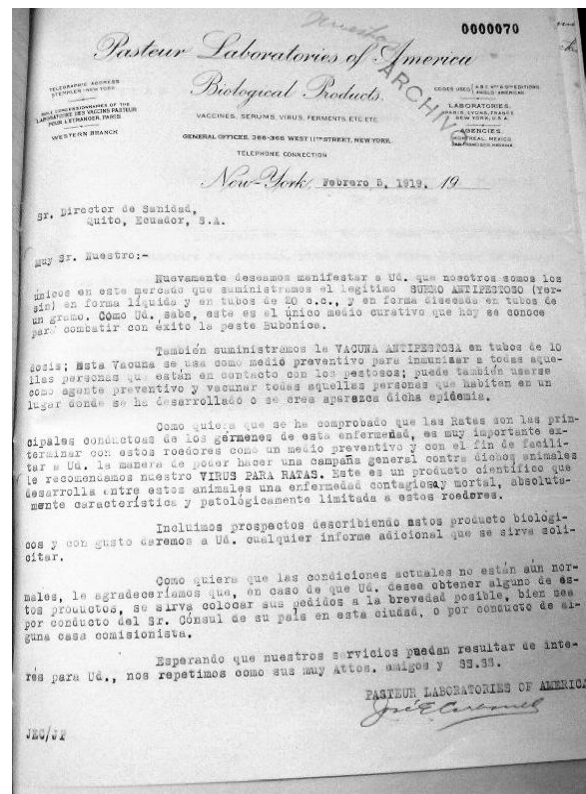
The attention that plague in Ecuador received at the time did not uniquely come from within the national territory and its political, academic, and scientific institutions either. Foreign companies, especially from the United States, consistently barraged Miño’s national public health office with advertisements, special offers, and requests for purchase orders. The biological products division of

²¹ Telegraph from “Delegado Sanidad” (in Riobamba) to “Director General Sanidad,” 14 July, 1918, ASSQ. “*Vuelvo a insistir* a usted nuevamente, el envío urgente [sic], por cuanto se han presentado casos peste en alrededores ese cantón [sic].” Emphasis mine.

²² Telegraph from Gutiérrez to Miño, 6 June 1916, ASSQ.

Pasteur Laboratories of America, headquartered in New York City, as an illustration, tried repeatedly to gain the attention of Ecuadorian medical authorities by claiming to be the only ones who could provide the “legitimate antiplague serum” in liquid form and in 20 cubic centimeter or 1-gram tubes. The laboratory’s emphasis lay in convincing the Ecuadorian public health board that what the laboratory provided was the “only curative measure in combating plague.”²³

Fig. 4.2:
Letter to Miño from *Pasteur Laboratories of America*



Source: Oficina de Salud Panamericana, ASSQ

²³ Letter from *Pasteur Laboratories of America* – *Biological Products* to Miño, 5 February, 1919. ASSQ.

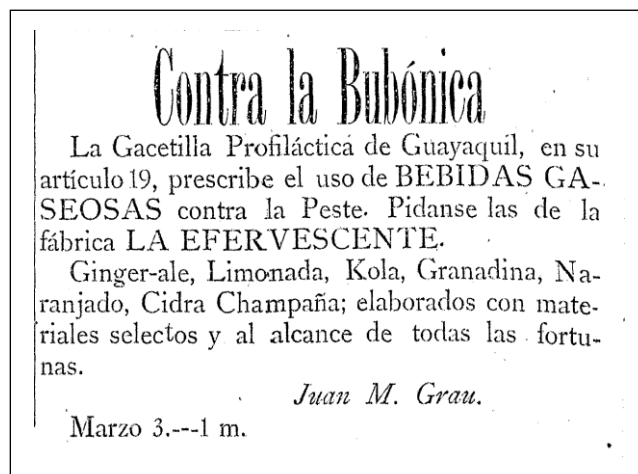
On another level, local business owners, especially in Quito, took advantage of what may appear from a presentist perspective to be local ignorance. They appear to have utilized the fear of the spread of plague as a way by which to sell their wares. In one small almost inconspicuous *El Comercio* advertisement, a carbonated soft drink company named La Efervescente suggested that the company's supply of carbonated soft drinks would be beneficial in preventing plague infection. In this case, the company claimed that the *Gacetilla Profiláctica de Guayaquil*, a small medical informational bulletin, prescribed the use of carbonated soft drinks as a way to ward off plague and implied that the company's variety of flavors (Ginger-ale, Lemonade, Cola, Grenadine, Orangeade, and Cider) were especially useful and promising as they were made of "selected ingredients and affordable for all."²⁴

These advertisements were a constant reminder of anti-plague efforts in Ecuador and they were present in edition after edition of the newspaper, quite frequently being placed in important sections of the newspaper where they were often juxtaposed to sections covering national and international news. The permanent advertisements for these kinds of remedies in the newspapers suggest that the people accepted them. Throughout Latin America, and particularly in Peru (as a comparison), people at large did not believe that plague was caused by microscopic organisms, or that it was necessarily mortal.²⁵ Quite often, as asserted above, death of a patient was frequently attributed to the application of the anti-plague serum itself.

²⁴ See Figure 4.3 (*El Comercio*. 22 March 1908).

²⁵ Cueto, *The Return of Epidemics*, 24.

Fig. 4.3:
Contra la Bubónica, La Efervescente



Source: El Comercio, 22 March 1908.

There were people in Quitean society who used the menace or fear of plague as a way by which to attract attention to their own concerns. There are plenty of examples of landowners creating advertisements in the Quito daily with the rhetoric specific to plague, or “Bubónica,” and who did not indicate anything in the advertisement other than the availability of a room to let or, in the case of the advertisement in Fig. 4.4, the selling of a house.

As the advertisement demonstrates, there is nothing special or specific about plague indicated in the announcement’s content itself. There is no mention of plague’s impending approach or its presence in the capital city. Nor is there any mention of its prevention or cure. This particular landowner simply wanted to sell

Fig. 4.4:
“Contra la Bubónica”

CONTRA LA BUBONICA
Se vende una hermosa casa, recientemente construida, toda de cal y ladrillo, aun no habitada, que tiene 20 cuartos, los que forman tres departamentos independientes, con mucha luz y ventilación. Está situada á dos cuadras de la plaza de la Independencia.
Los interesados pueden entenderse en esta imprenta.
Marzo 14 de 1908.

Source: El Comercio, 22 March 1908

his recently built beautiful lime and brick home” and used his title “plague proof” to attract attention. The title and the description, however, do indeed provide us with some clue that the seller knew that people were looking for plague proof structures. The only thing that might be tied to plague control in the advertisement is his mentioning that the home had “much light and ventilation,” two things (as was mentioned in chapter three) that the new sanitary measures recommended in the construction of new homes.

Generally speaking, zealous effort was placed in the attempt to control the movement of plague across regions and across provincial borders. It was believed that plague had to be contained on the coast where there existed better-equipped medical facilities and lazarettos for those who became infected with the deadly disease. The reality, however, was that it was difficult to control the movement of people who might have been harboring the microbe in their clothing and on their

bodies. As such, policies were adopted that required the disinfection of passengers and their belongings whenever they traveled by train. We can assume that submission to inspections and to processes of disinfection was not easily accepted or tolerated by the persons who had to undergo them.

It can also be assumed that there was a sufficient number of complaints made by travelers to the railway authorities that motivated railway representatives and even medical practitioners to submit suggestions to the national public health board favoring the lifting of traveling bans or regulations. In November of 1923, as a case in point, J. Benjamin Wandenberg, the bacteriologist in charge of the Quito bacteriological laboratory, wrote to the subdirector of health (subdirector de sanidad) of the province of Pichincha (the province in which Quito is located) to discuss the appearance of plague in Ambato in the province of Tungurahua, the nearest major city to the capital, in October. Plague's presence there was especially worrisome because of the city's proximity to the nation's political and cultural center and because of the high human traffic between the two cities, now made more facile by the railway. What is interesting about Wandenberg's telegraph is his suggestion to practically abandon the area's indefinite bans or regulations on transportation and travel, as they were inconvenient to both travelers and commerce.²⁶ It can also be assumed that the travelers in question were not going to be the poor or the indigenous since this period in Ecuadorian history was one in which indigenous needs or wishes were seldom taken into consideration.

²⁶ Telegraph from Wandenberg to Subdirector of Health, 6 November 1923, ASSQ.

In addition to conducting his own investigations and travelling from infected region to infected region, Dr. Miño received countless requests (and complaints) from city, municipal and indigenous community representatives. For example, in October of 1928 the now probably overworked doctor received a telegraph from the Council President of the town of Catacocha. In that telegraph the Council President, unnamed, requested medical assistance as he found it difficult, because of the area's limited resources, to provide the aid necessary in the prevention of plague infection. In that telegraph, the council president wrote that

[Bubonic] plague is but two leagues away. There are four dead, two infirm. I urge you to provide a public health doctor and necessary resources for the cantons of Macará, Calvas, Célica, and Paltas. Many areas have been infected. The medical inspector and two inspectors we have cannot attend to such an extensive area. Details are being sent via mail. We seek help.²⁷

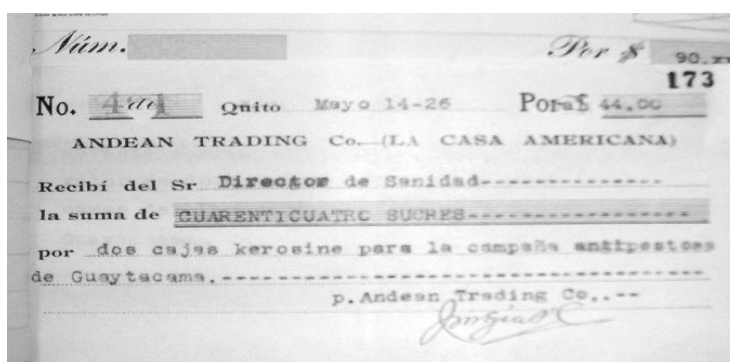
In another instance, the municipal representative of the town of Aloag also asked for assistance. He wrote, "The abundance of rats is alarming.... I would appreciate your sending traps."²⁸ The number of rats that were appearing in the lower altitudes of the highlands and the fear of the spread of plague meant that Dr. Miño and his staff would receive plenty of requests for help. Time and again, as these two sample telegraphs demonstrate, requests were made for traps, medical supplies, cages for the capture of rats, and chemicals that helped promote and maintain cleanliness in homes and buildings. Receipts remitted by the Andean Trading Company, for example, abound in the archives in which communities like

²⁷ Telegram from "Presidente de Consejo" of Catacocha to "Director General de Sanidad," 16 October 1928, ASSQ.

²⁸ Telegram from "Presidente Político de Aloag" to Director General de Sanidad, 12 October 1928, ASSQ.

that of Guaytacama were billed for supplies of kerosene used specifically for anti-plague efforts (see Fig. 4.5).²⁹

Fig. 4.5:
Bill of Lading: Andean Trading Company



Source: *Obras Sanitarias*, ASSQ.

Indigenous communities themselves also addressed their fears of plague by making specific requests for material, services, or monies. These requests often were made via public health inspectors and, more often than not, involved requests for cleaning or disinfecting material. Out of the town of Guamote came a telegraph that was written by the unnamed inspector stationed there, but that actually expressed the concerns and requests of the indigenous residents living on one of the area's haciendas. The telegraph reads,

From [the town of Cebadas] I am letting you know that the Indians of the "Gualniche" hacienda request that you send creosote and lime for the disinfection of their rooms and homes.³⁰

²⁹ Bill of Lading from the Andean Trading Company, 14 May 1926, ASSQ, a bill for 44 sucres for two boxes of kerosene "to be used in the antiplague campaign of Guaytacama."

³⁰ Telegram from "Sanitation Inspector" to the "General Director of Public Health," 31 July 1928, ASSQ.

Fig 4.6:
Telegram from Sanitation Delegate (Gualniche)

TELEGRAFOS DEL ECUADOR									
Oficina de...	Telegrama de	Del día	H. depósito	H. recibo	Nº	Pº	Vº		
Quito	0, Guamote		10	1ap	46	30	300		
Director gral sanidad Desde Cebadas me dirijo manifestandole que los indios de la hacienda "Gualnilche les suplican mande creoso y cal para desinfeccion antipestosa sus habitaciones. Inspector sanidad.									

Source: *Obras Sanitarias*, ASSQ.

Significantly, the inspector speaking on behalf of the indigenous of Guamote never wrote “I request” or “I need.” Instead of writing in the first person, the telegraph is specific about who is requesting (i.e., the indigenous, “the Indians”), what is being requested (creosote and lime), and why it is being requested (for “their” dwellings). It would seem that the news of plague and the importance of the methods by which it could be combated were reaching some of the populations to which they were targeted. Additionally, it is important that a small Indigenous community such as Gualniche took matters into its own hands and made the request for material that would keep it safe. Thus, generally speaking and quite significantly, Ecuador’s indigenous rural population was not as resistant to the new sanitary measures as were those in other countries where medicine and sanitary measures were often confronted with vigorous reactions.³¹ The real significance of this lies in

³¹ Many historians who have worked on the history of medicine or epidemics in Asia or Africa, for example, have emphasized some of the negative reactions typical of peoples colonized by the British Empire. Once again, Mark Harrison’s *Public Health in British India: Anglo-Indian Preventive Medicine, 1859-1914*, is an excellent example.

the attribution of agency to a population that is quite often thought of as helpless and hopeless from the perspective of the modernizing movements of Latin America.

The simple act of requesting the material conducive to clean homes reflects much more than a simple wish or demand made by a subaltern group as were the Indians of the Ecuadorian highlands. The act implies that Ecuador's rural populations, and specifically its indigenous populations in the highlands, were neither unaware of plague's advance and its dangers nor ignorant of the new scientific approaches to combating it. Scientific hygiene began, so to speak, to hit home and across the spectrum of Ecuadorian society people were taking notice of the public health efforts and the bacteriological advancements related to the anti-plague campaign.

At the other end of the spectrum, people who were better off socioeconomically – *vecinos* – also let the director of public health know what they required as regarded protection from plague infection. In the case of the highland city of Cuenca, the *vecinos* of Ciudad Loja (probably a high end neighborhood of the era) were alarmed to find plague on the rise throughout the province of Azuay.

Through the help of the public health director in the province, they remitted to none other than the interim President of Ecuador of the time, José Luis Tamayo (1920-1924), a map of the area and the assurance that the public health office worked tirelessly and zealously in the attempt to fight off plague. The telegraph reads:

The *vecinos* of the city of Loja are alarmed at the increase of plague in that province. A map of the province has been sent with affected areas indicated. We ask you to order the minister to establish rigorous

measures in order to contain propagation of this scourge. This office is working actively [and diligently].³²

Fig. 4.7:
Pamphlet distributed and printed in the promotion of hygiene.



Source: Obras Sanitarias, ASSQ.

What is significant about the work of Dr. Miño, the cases described above, the requests made by a wide variety of communities, and the efforts of individuals like the school director is that they all came together to form a seemingly concerted and collaborative effort in the fight against plague. It would seem, at least initially, that the nation and its various sectors – both professional and not – were taking the fear of plague and channeling it into action. In defense of the nation's wellbeing, it

³² Telegram from "Director Sanidad" in Cuenca to President Luis Tamayo, 15 August 1924, ASSQ.

appears that the effort to keep Ecuador plague-free received the general support of people from across all levels and strata of Ecuadorian society. This is not to say, however, that there were not exceptions. Indeed, various communiqués between political administrators and public health authorities, for example, demonstrate that certain individuals and communities varying in size, as will be seen below, did in fact resist the incursion of social hygiene and public health into their lives.

Escalating a Serious Campaign

As the anti-plague efforts throughout the highlands and, most particularly, the coast picked up speed and as a very watchful eye was placed on the railway itself, much effort was made to eliminate disease transmission by focusing on the daily disinfection of railway cars. This was especially true of trains that were stationed in the cities of Durán and Riobamba where the trains inevitably stopped for the night before continuing on their routes into Quito (recall Dr. Long's description of the fumigation station in Bucay). Efforts were also made to regulate passengers traveling to the interior who during outbreaks were required to show certificates of vaccination. These travelers could be stopped and questioned by sanitary and/or municipal officers and, as we saw with Mapuso, escorted off.

The case of Alausí is worth mentioning here once more, as it is the town most associated with the beginning of the Ecuadorian plague epidemic and its incursion into the highland area. As will be recalled, plague arrived in the town of Alausí in 1908 with the completion of the railway. But, plague struck the town again in 1913 when the 8-year-old son of the train station chief perished as a result of the disease

on April 8th of that same year.³⁴ Soon after plague was diagnosed and initial observations were made, to avoid the propagation of the scourge toward the interior of the Republic, Alausí was immediately and indefinitely placed under absolute quarantine.

The measures undertaken in Alausí during this incident were not trifling. They included everything from the disinfection of homes and the removal of animals and people from buildings that sheltered the infirm to the isolation of sick individuals. These measures were not received without complaint either and, in the words of one of the area's public health officials,

[t]he presence of the plague caused panic in not a few inhabitants of Alausí; but due to the disbelief of many and the ignorance, bad will, or damaged intentions of others, it was difficult...to convince the public to effectively support the measures adopted in such critical circumstances.³⁵

In order to help prevent the spread of plague and to bring this particular case under complete control, the national government became involved and sent troops and police officers to assist in the effort. The assistance of the troops and the police was essential as they helped ensure that the sanitation measures were carried out as effectively and as expeditiously as possible. By May 5th, plague in Alausí was under control and the interior cities – connected as they were to Alausí – were safe from the further spread of the disease.

The reappearance of plague in 1913 in Alausí provoked great alarm among the townspeople, but quite interestingly also elicited a sense of urgency in the care

³⁴ Asst. Public Health Service to the political administration of Alausí. Alausí, 9 April 1913, *Archivo de la Jefatura Política de Alausí* (AJPA), 1913. These are documents that are loosely grouped by year and housed at the local archives in Alausí.

³⁵ Ibid.

to be provided for plague victims. On the night of April 10th, two days after the death of the 8-year-old child, local notables gathered outside the municipal offices to propose the immediate construction of a quarantine station.³⁶ Some of the gathered villagers and townspeople offered to supply the materials necessary for the construction on condition that they later be reimbursed by the central government from state funds. Both sides arrived at an agreement and, in what seemed a perfect collaboration between people and state, the quarantine station was built within two weeks. The villagers were compensated with monies that were provided out of the budgets of the municipal council and the central government as promised; by 1913, Alausí was the only highland town receiving monies for sanitation from the national budget.

Then, in March of 1914, plague struck Alausí once again with such a force that a special cemetery now had to be created for its victims. In a turn of events, however, this time Alausí came under some scrutiny because of the special circumstances that surrounded the comportment of the town's inhabitants. Although the details or motives are ambiguous and unclear, as anthropologist A. Kim Clark indicates, there was some sort of plot in the making that was aimed at sanitation employees who were in the town performing their sanitary work. But, on July 20th, almost four months after the first case of plague this time around, the governor of the Province of Chimborazo forwarded to the political administrator of Alausí a memorandum in which he indicated his appreciable displeasure and concern over the events that transpired. He wrote:

³⁶ Ibid.

...This authority has received news that the lower classes of Alausí, stirred up by certain individuals who today as in the past exploit their ignorance to provoke them to nefarious ends, are currently concocting a plot against the sanitation employees of the canton.

The sanitation institution is deemed in any civilized country to be the most beneficial of all institutions, and therefore the people who comprise it are esteemed and respected. The very fact that there has been hostility shown to these employees *reflects very poorly on the culture of that town.*³⁷

The precise activities, as I mentioned, in this plot were not detailed, but the governor terminated his memorandum by implying that what happened in this small town at such a critical moment was reflective of the nation and, presumably, his positivistic vision for that nation as a whole. The governor, in no uncertain terms, married the rejection or the obstruction of sanitary measures to a backward barbarism that the nation could not afford as it struggled to find its place in the global community. He concluded forcefully:

It is imperative, therefore, that the authorities of Alausí use their influence to prevent the occurrence of acts that, filling us with disgrace, *would shame us before the civilized world.*

A cursory conjecture regarding the plot might lead us to believe that it had been the result of resistance to both sanitation measures and/or the officials carrying out those measures. Among the measures being undertaken was the obligatory though short-lived vaccination program against plague that had been brought out into Ecuador's smaller towns and villages. But, as Clark asks, who were these employees who were the object of animosity? First, among the employees was included a public health inspector sent from Guayaquil, for example. As a costeño, the inspector was already an outsider entering a world very much unlike his own.

³⁷ As quoted in A. Kim Clark, *The Redemptive Work*, 149. Emphasis mine.

Also included was the locally funded municipal doctor who in many ways represented the bureaucracy of Quito, the public health system, and the inspection (and consequent reporting) of homes that did not meet health standards. Finally, we must include the municipal police who were not only charged with the responsibility for sanitation, but also had to oversee the regulation of commerce, local public works construction, compliance with municipal by-laws, and (in the process) put themselves in the way of possible infection by plague. It is safe to assume that none of these would have been able to make friends too quickly in the remotest of towns and villages being affected by plague. Each represented Quito's interests and, in like, the interests of the public health elite that established and carried out public health policy.

The campaign against plague in Alausí was not unique. It was, though, indeed representative of the kind of work that was to be carried out throughout those sections of the country affected by plague. Authorities confronted plague on two fronts: (1) the elimination of sources of infection and (2) the vaccination of healthy people. This two-fold project was then transformed into a method that focused on the ways that people lived and the ways by which to keep people protected from plague. There is no doubt that Ecuadorian health experts knew what to blame for the initial spread of plague (i.e., rats), but what they did not know how to do was explain some of the nuances of Ecuadorian plague that made it a threat to the human population the way that it did. Thus, in the attempt to remove the possibility of a plague reservoir, the public health experts turned to the most obvious disease

vector immediately and attempted to bring the general rodent population under control.

Rat-Catchers, Rat Traps, and Rat Control

As mentioned above, the extermination of rodents – and rats specifically – was the cornerstone of the anti-plague campaign. Railway stations were disinfected with creosote, double walls (where rats could nest and hide) in all sorts of buildings were destroyed, and rat-catching teams were each equipped with 100 traps from Guayaquil that seemed to be relatively effective. When and where infected rats were discovered, then the streets and houses were chemically disinfected with a variety of solutions, mostly comprised of lime.

Sometimes, seemingly extremist actions were taken in the attempt to prevent the spread of plague by destroying places where rats could hide. In one indigenous settlement outside of Alausí, for example, the straw roofs of houses were burned because they were considered unhygienic and likely to harbor infected rats. As Clark quotes,

As the largest number of sick appeared in a hacienda close to town in the huts inhabited by Indians, we had to resort to the painful but necessary measure of incinerating the straw roofs, given that no other means were effective in those miserable dwellings whose hygienic conditions are disastrous, and where any work of sanitation is impossible. No recourse but fire was available to save the lives of the inhabitants.³⁸

The burning of houses that had sheltered plague victims seemed to be the only remedy and effective means of eliminating the microbe at this time and was not

³⁸ Kim A. Clark, *The Redemptive Work: Railway and Nation in Ecuador, 1895-1930* (Wilmington, DE: Scholarly Resources, INC, 1998), 150.

uncommon in global efforts to combat plague. As James C. Mohr has discussed in his work on plague in Honolulu, the mantra often adopted was “when in doubt, burn the house.”³⁹

Fig. 4.8:
A plague infected rural home.



Source: Miño, *La peste bubónica*. In this picture Drs. Mino and Long are seen in front of a home they have inspected. The young girl in the middle is the victim. Beyond the inspection of homes, considered to be among the most important

parts of plague control under Miño’s watch was the capture and autopsying or examining of rats. In this vein much of the effort was focused on maintaining current statistics on captured infected or non-infected rats and the number of fleas found on them. Medical, bacteriological, and public health officials kept incredibly detailed records of their findings in this regard and the archives are full of documents that illustrate the effort made. The species of rats and other rodents caught were specified, as were their sizes, their sexes, and the kind and number of fleas found on their bodies or in their fur. As has already been mentioned, the most common rats to be found infected with plague were typically *Rattus Norvegicus* and *Rattus rattus*.

³⁹ Mohr, *Plague and Fire*, 114.

In Ecuador, however, it was believed that other animal species also carried on their bodies the flea vector that could transmit plague. Among these were included mice, guinea pigs, rabbits, dogs, and even human beings. Other animals such as cats, despite their natural susceptibility to plague, were not pursued (perhaps “persecuted” is a better word) with the fervor with which rodents or dogs (at the very outset of the Ecuadorian plague) were. In his *La peste bubónica en el*

Table 4.1:
Fleas Examined

Locale	Rats	Mice	Guinea Pigs	Rabbits	Dogs	Humans	Total
Quito	3,264	77	481	144	290	963	5,219
Guaitacama	659	120	2,415	99	601	1,374	5,268
Latacunga	790	92	673	0	83	51	1,689
Ambato	1,273	3,020	7,537	0	1,320	8,985	22,135
Riobamba	234	228	1,282	0	1,088	1,326	4,158
Guamote	161	14,651	9,895	18	1,762	1,335	27,822
Guasuntos	30	184	431	0	0	60	705
Cebadas	10	362	3,190	0	494	571	4,627
Achupallas	26	675	3	0	282	442	1,428
Pungalá	32	0	514	0	0	218	764
Alausí	298	1,984	3,243	85	199	1,495	7,304
Huigra	42	110	390	0	133	74	749
Cuenca	* ⁴²	*	61	12	109	209	391
Cañar	*	*	51	0	42	37	130

SOURCE: Adapted from Miño's *La peste bubónica* (1933), Graph No. 2 in the appendix.

Ecuador, Miño includes a rather extensive list of the fleas that were examined throughout Ecuador's anti-plague efforts under his leadership of the National Public Health Board.⁴³ The graph includes fourteen cities,⁴⁴ for example, in which the fleas

⁴² The asterisks in the report indicate that there are no rats in these areas. Miño's exact words on his chart were "No existen ratas."

⁴³ Miño *La peste bubónica*, Graph 1: n.p.

⁴⁴ The cities include Quito, Guaytacama, Latacunga, Ambato, Riobamba, Guamote (the last stronghold for plague in the Ecuadorian Andes), Guasuntos, Cebadas, Achupallas, Pungala, Alausí, Huigra, Cuenca, and Cañar.

were caught, the species in which they were found, and the fleas found to be (1) predominantly, (2) commonly, or (3) occasionally encountered.

Table 4.1 illustrates what Miño and his staff found in their laborious collection and examination of rodents (and non-rodents) and their fleas. What might be surprising is the number of fleas found on the bodies of humans as compared to those on the bodies of the rodents examined. Rats and mice were quite obviously expected to carry large numbers of fleas, but what is more intriguing is that in cities such as Quito, Guaitacama, Ambato, and Riobamba (all in the highlands) the number of fleas borne by human beings substantially outnumbered those borne by the other creatures examined. Findings such as these helped only to confirm for investigators the belief that certain populations within Ecuador (namely the “native Indians”) were significant propagators of plague. These findings helped

Fig. 4.9:
Social Hygienist Pablo A. Suárez



Source: <http://www.cce.org.ec/imagenes/cndce-mb3-pablosuarez.jpg>.
Accessed on 11 August 2009 at 10:27 p.m.

emphasize the importance of personal hygiene and the reconsideration of longstanding traditions such as funerals and sleeping habits specific to the indigenous populations. The findings also contributed to the often already negative

view of the Indian populations held by social hygienists like Pablo A. Suárez, who emphasized “not a genetic explanation of indigenous degeneration, but more behaviourally-oriented [sic] issues such as hygiene, nutrition, alcoholism, and disease, which were seen as acting over generations.”⁴⁵

One of the most interesting facts surrounding the involvement of rats in the spread of plague in Ecuador, however, was the distinction made between rats that lived outside of buildings and those that lived inside. Both Carlos A. Miño (for Ecuador) and Clifford R. Eskey (for the United States), for example, arrived at the conclusion that rats living outside of buildings in Guayaquil were probably less exposed to plague infection because they had a very low *xenopsylla cheopis* index. In other words, on the average, outdoor rats tended to carry fewer of these fleas than those rats living with and among human beings.⁴⁶ On this basis, Miño and Eskey assumed that the rats harbored within buildings had developed a greater immunity to plague because of a closer association with the disease. They furthermore maintained that each year the infection spread slowly among the non-immune indoor rats, particularly the younger rats born each year, until the onset of the rainy season when the rats would move indoors seeking warmth and shelter.

On January 25, 1927, for example, officials and representatives in various areas of the country had arrived at the conclusion that the resources available to them for the capture of rats were insufficient and, in many cases, simply “deteriorated.” In the city of Ambato, the Health Delegate (Delegado de Sanidad), a Doctor Martínez, had telegraphed the National Public Health Director regarding his

⁴⁵ Clark, “Racial Ideologies:” 382.

⁴⁶ Eskey, “Chief Etiological Factors”

concerns over the increase in the number of rats that had been reported in his district. As a result, he not only complained about the insufficiency of resources, but also made the bold suggestion that traffic into his city be controlled and that he would benefit from monies put toward the establishment of a health or sanitary delegation. Specifically, he wrote:

I have noticed an increase in the number of rats both captured and in homes. The number of traps – guillotines – is insufficient and deteriorated.

It would be prudent to order that only closed and controlled vehicles be [allowed] to come to this city...as the vehicles which head north tend to stay here overnight.

I would appreciate the necessary motions to pay for a sanitary delegation.⁴⁷

The city of Ambato was not the only one to express alarm at either the increase in the number of rats or in the number of plague cases. Out of the city of Cuenca in the southern highlands, as a major example, the political chief of the area telegraphed the National Health Director on February 17, 1927 indicating what had been reported to him regarding the possible presence of plague and the deaths of several of the area's citizens. In that telegraph the chief wrote:

The Health Delegate of Loja has alarmedly communicated with me that new cases of bubonic plague have presented themselves . . . “At the site of Chichilona,” in the home of Luis Neira, there died N. Neira and a young man aged 18 with swellings under his arms. There is reported a high fever in the neighborhood of Hatilo where Luis González has died of the same disease and there is a case in San Pedro [where several have died from angina pestosa], I believe it to be bubonic plague.⁴⁸

⁴⁷ “Dr. Martínez to Health Director.” Ambato, 25 January 1927, ASSQ.

⁴⁸ Political Chief to Director of Health. Cuenca, 17 February 1927, ASSQ.

The political chief utilized this telegram to additionally express his views that it seemed evident that he was describing a new appearance of plague and that “the hour had arrived to “undertake an anti-plague campaign [throughout the province].”⁴⁹

Despite the various concerns of political chiefs and district officials throughout the national territory, there was an increase in the amount of information about plague and plague cases that came to both Quito and Guayaquil from a wide range of areas via telegrams and telegraphs. Some were positive in nature indicating that a specific case was not in fact plague. Most, however, were negative and confirmed many of the fears of officials both in the districts affected and at the national capital. These particular cases are important because they influenced the degree of fear expressed by public health and government officials in Quito.

In the same year of 1927, on March 10, an Inspector Cajas, for example, had telegraphed the General Health Director from the town of Guamote. In his telegram he described his inspection of the hacienda “Los Molinos” where there were found nine sickly persons, two of whom gravely infirm, but that it was not certain as to whether it was plague that was responsible for their illness. But, on March 15th, another inspector, a Mr. Egas (stationed in Guamote), had forwarded to the General Director a telegram sent him by Guamote’s political chief with the grim news that at Los Molinos three fatalities were positively linked to plague. He wrote, “I await immediate help.”⁵⁰ Egas, though, did not just report the fatalities. Instead, he also indicated his willingness to become involved and to assign his team to helping control plague in the affected zone. He wrote:

⁴⁹ Ibid.

⁵⁰ Inspector of Health Egas to General Director of Health. Guamote, 15 March 1927, ASSQ.

...it is my desire to lend my support toward the campaign in the affected region. In June I was in Guamote and in a few days I was able to contain plague. If you wish I could go to Guamote [again] as soon as I receive your orders.”⁵¹

By this time, the main focus in dealing with plague had shifted to the highlands. Although Guayaquil still saw its occasional outbursts, plague seemed to have subsided there and seemed to be in better shape in light of the city’s connections to bacteriological advancements and the expediency with which public health officials could tend to the sick. On April 13, 1927, for example, news left Guayaquil for the General Director in Quito that since March of 1923 there had been no cases of plague in the port city, but that just the day before twelve patients were admitted to the city hospital. Of those twelve patients, it was reported, two were undergoing treatment and the other ten were convalescing. The Health Director in Guayaquil wrote that,

...We have put into effect, and have been doing so, the measures against rats according to the plan established by this directorate and which you know consists principally of the cleansing of the neighborhood’s homes where there is a human case of plague, and in the capture of rats. The second half of the month of March [alone] saw 12,687 rats captured in the city.⁵²

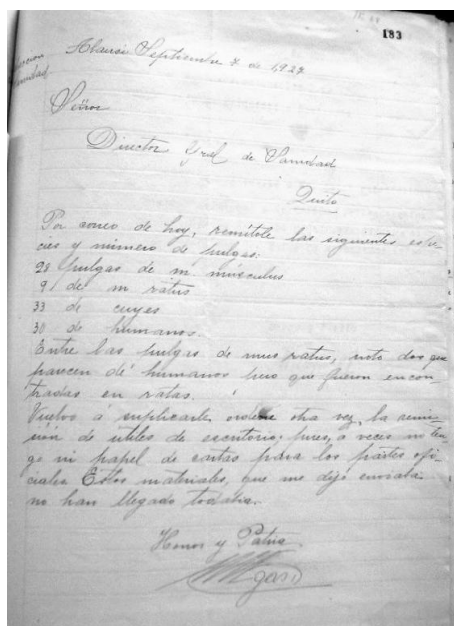
Overall, 1927 was a landmark year in the fight against plague in Ecuador. Not only did the events just described above occur during those early months, but more permanent measures were established by the national Board of Health that included the control of vehicles and cargo; the control, vigilance and capture of rats; more intensive research on fleas; local Indian-oriented health measures; and special measures regarding the dwelling places of the highland Indian population. This last

⁵¹ Ibid.

⁵² Director of Health (Guayaquil) to General Health Director, Guayaquil, 03 April 1927, ASSQ.

one specifically mentioned the “prohibition” of sleeping on floors and the building of hutches for their guinea pigs, something that had to be consistently reinforced in the highland rural areas.

Fig. 4.10:
Letter accompanying flea shipment.
In this case, the letter is sent by Health Delegate Egas.



Source: the Archives of the Oficina Panamericana de Salud, ASSQ.

Concerns also came out of the town of Célica where by July 27, 1928 there had still not been assigned an Inspector of Health to the canton. The Council President of Célica requested one once again, especially as seeing that it was here where bubonic plague (and other diseases) “appeared for the first time.” He went on to claim that at the time, there was an increase in deaths among swine, which was attributed to

plague, thus requiring that this zone be treated justly and that an official be assigned. Luis F. Apolo, a student at the University of Quito, was suggested for the post.⁵³

A rather important issue that was addressed during this more intensive phase in Ecuador's anti-plague campaign was the cohabitation of people and animals. Some public health delegates applied the rules of rat control or extermination to animals other than rats with very little regard for the animal owners' concerns even at a time when non-rat populations were viewed as having very little connection to the transmission of plague. In the town of Huigra, for example, one political lieutenant had reported his resolute intent:

I have ordered death for pigs, guinea pigs, cats, rabbits, etc...who can serve for the shelter and development of the loathsome coccus bacillus. Against dogs I have decreed strangulation since I do not have the eliminating poison that is usually administered, and I must beg you to order that I be granted the necessary materials as soon as possible, since today as never before, I must declare war to the death against the canine race."⁵⁴

This lieutenant's words reverberate because they touch upon a very important issue in the life of highlanders: the use of and the cohabitation with their animals and, most significantly, their guinea pigs.

In the United States, we might think of the guinea pig as simply a rodent.⁵⁵ Many American children have guinea pigs as pets and the small animals are often viewed as soft and cuddly creatures worthy of our care. In the Andean highlands,

⁵³ Council President to General Director of Health. Céllica 27 July 1928, ASSQ.

⁵⁴ Political lieutenant of Huigra to the political administrator of Alausí, Huigra 14 March 1914, AJPA 1927. Cited in Clark, *The Redemptive Work*, 150.

⁵⁵ The guinea pig, according to Daniel W. Gade, belongs to the Caviidae family and is more closely related to the chinchilla, capybara, and porcupine than to the rat or mouse. See his "The Guinea Pig in Andean Folk Culture," *Geographical Review*, 57:2 (1967): 213.

however, guinea pigs possess a significance that cannot be easily understood by contemporary Americans. For many people throughout the Andean region, the guinea pig is a socio-culturally essential creature with great economic, culinary, and sometimes religious significance. Therefore, the anti-plague attacks against the animal, albeit brief, touch upon a very important issue in the history of medicine as a whole: that of cultural identity and co-optation in the struggle against epidemics.

Not quite rats

Perhaps no other domestic animal was viewed with so much (perhaps unwarranted) suspicion by public health experts during the Ecuadorian plague epidemic as was the guinea pig (the *cuy*). Initially, it was believed by such men as Miño, Suárez, Eskey, and Long that the small animal might be a major reservoir for plague in the Andes. Time and scientific investigation, however, would disprove that idea and, as mentioned above, the guinea pig was determined to be but an accidental vector of plague. It is of extreme importance, however, to take into consideration the role of this small creature in Ecuadorian culture and highland society as a factor worthy of discussion in a study of Ecuadorian plague. It is especially important since the guinea pig and its cohabitation with people in Andean homes was initially viewed by public health experts as one of the more dangerous factors in the transmission of disease.

Although, typically thought of as members of the rodent family, guinea pigs are significantly more susceptible to such diseases as rickets rather than plague. As animals phenotypically similar to rats and mice, they have quite often been held as

suspicious propagators of plague but, although, there might be some truth to this⁵⁶, the guinea pig's importance in this study lies significantly more in its role as a symbol for the "noxious" habits of the indigenous that were thought to spread the plague bacillus from person to person (pneumonic plague). This is especially true in light of Ecuador's modernization and the attempts made at "civilizing" the people of the highlands.

The guinea pig is of great importance to the Ecuadorian highland cultural landscape. Although urban Ecuadorians in Quito, Guayaquil, and other cities are increasingly turning away from the guinea pig as a food source, it is still important to the lives of the indigenous who rely on it for both their daily sustenance and the transmission of their customs and traditions. In spite of the fact that it is both a very small and defenseless (and some might say useless) animal, the guinea pig possesses very important culinary, cultural and religious characteristics that make it essential to our study of Ecuadorian plague in the present chapter.

In Ecuador, and in the Andean world in general, the *cuy* is an animal that is specifically reared for killing (either for food or for ceremonial purposes), yet more often than not lives inside the house together with its owners within the same domestic space. In the peasant world (and here the literature usually means the indigenous), this cohabitation with their *cuyes* means that the animals possess special characteristics that are not shared by either dogs or cats. Yet, this intimate

⁵⁶ Guinea pigs have always been just accidental or coincidental vectors of plague. In more recent decades, though, guinea pigs have been known to be the transmitters of pneumonic plague. Wendy Orent particularly discusses the few occasions during the late twentieth century when Ecuadorian families have been struck with plague on account of guinea pig-human transmission and because of *pulex irritans*. See Wendy Orent, *Plague: The Mysterious Past and Terrifying Future of the World's Most Dangerous Disease* (New York: Free Press, 2004).

coexistence did not prevent the guinea pig from being converted into a commodity or, in the words of anthropologist Eduardo P. Archetti, a “victim.”⁵⁷ The creature did not receive a name or any affection, and this anonymity or impersonality (to borrow an anthropological term) allowed the guinea-pig to be killed, thus retaining its condition of “pure” animal and not being humanized as is so often the case in the United States or in Europe, for example, with dogs, cats, and other pets. Statistically, guinea pigs do not even count as they do not constitute a population whose growth or decrease in size depends strictly upon economic or commercial criteria.

In short, though, the guinea pig is a useful animal because it can be eaten, bought and sold. But, outside of that it cannot be taken advantage of as can so many other domesticated animals. Guinea pigs cannot be utilized for their skins, their fur, or their milk. Nor can they be put to work in the fields, as can horses. It is not a wild animal and would never survive in the outdoors like others. It is not an animal reared solely for either special or distinctive occasions or for ritualistic purposes. It is a quintessentially domestic animal through and through.

According to Archetti, human knowledge about the world of the guinea pig seems to belong particularly to the “female realm.” It is an animal that is specifically connected to the home and to the kitchen (based on the Andean belief that guinea pigs require smoke⁵⁸) within the Andean region. The use of the guinea pig transcends the house, and female knowledge about guinea pigs is “public

⁵⁷ Eduardo P. Archetti, *Guinea-Pigs: Food, Symbol and Conflict of Knowledge in Ecuador* (Oxford: Berg, 1997) for an excellent discussion on the nature and importance of the guinea-pig in the lives of Ecuador’s indigenous peoples.

⁵⁸ Edmundo Morales. “The Guinea Pig in the Andean Economy: From Household Animal to Market Commodity,” *Latin American Research Review* 29:3 (1994): 132.

knowledge because that information can be communicated.”⁵⁹ The knowledge of which Archetti writes is passed down, for example, via recipes and rituals utilizing the meat of the animal. Members of a household also traditionally pass the animal on as gift from one household to another. The cuy can even be used to foretell the future via the “reading” of the animal’s internal organs. However, the social and symbolic world of the guinea pig refers to a process in which it is possible to link together understanding, cultural practices, positions of female status, and social identity. Thus, the guinea pig is more than just a live food commodity that happens to have practically free rein of the home. It is a symbol of status and of wealth among those who rely on it; but it has also been adopted as representative of the backwardness attributed to those reliant on the animal by Ecuador’s social and hygiene experts. An attack on the guinea pig during the era of plague control, therefore, can also be viewed as an attack on indigenous habits and customs that were often perceived as not coinciding with the civilizing vision of social architects and public health experts.

Guinea pigs are present in nearly all socially important activities in individual as well as community life among Ecuador’s indigenous peoples. In fact, as sociologist Edmundo Morales has written, approximately 90 percent of all Andean guinea pigs are produced at the household level.⁶⁰ The degree of “social and symbolic saturation” of the guinea pig, then, derives from its two-fold nature: on the one hand, as “use value,” for immediate and direct consumption by producers; on

⁵⁹ Archetti, *Guinea Pigs*, 32-33.

⁶⁰ Morales, “Guinea Pig,” 132. In his article, Morales discusses the paucity of literature on the nature and importance of the guinea pig in the Andes. At the time of his writing, he cites only three journal articles and one book that contribute to the study of the animal’s cultural and social importance.

the other, as a “gift,” intended to enhance the moral qualities of those who give and those who receive. Ultimately, guinea pigs are such an important part of the Andean household that to not have them is to be considered lazy or extremely poor.⁶¹

To reiterate, the guinea pig was initially (and briefly) believed to be one of the primary vectors of plague transmission because of its proximity to human beings and its rodent-like characteristics. Many guinea pigs were brought into laboratories for autopsying and investigation.⁶² Many others were simply killed or confiscated by public health officials who were charged with the inspection of homes and the cohabitation of animals.⁶³ Many indigenous people did not follow through with the new mandates that required them to construct specially designed hutches for their guinea pigs (which could be as many as twenty in one small household) and continued to live with them as they had for generations. Guinea pigs were allowed, quite often, to roam the household and normally concentrated around the warmth provided by the kitchen’s furnace or oven. Very often the guinea pigs came into contact with rats that had entered the home in the search for food or warmth and could easily have been infected with plague by the bite of a rat flea or by coming into contact with the corpse of a rat that had died of plague.

Public officials considered it important to investigate the impact that the cohabitation with guinea pigs had on the spread of plague for two reasons. First, public health experts, following the new scientific hygiene of the time, knew and attempted to publicize that living in the same room with guinea pigs (or any animal

⁶¹ Ibid, 132.

⁶² See the reports of John D. Long and Clifford R. Eskey, the two American surgeons who represented the international efforts to combat plague in the twentieth century.

⁶³ Municipal Commissioner of Alausí to Director of Health, 14 January 1927, ASSQ.

for that matter) was unhygienic and could lead to the transmission of disease. The various decrees published by the executive branch of the Republic, for example, emphasized not only the possible contact with disease carrying fleas, but also focused on the more obvious consequences of interspecies dwelling: foul odors, feces and urine on the floor, fecal and other particles being breathed in, and the same kinds of particles landing in the family's food and personal belongings.

Second, public health experts and the hygiene ideology that often informed governmental and medical policy assumed that the Indian habit of living with their guinea pigs was representative of Andean backwardness. The guinea pig represented, then, the body of customs and habits pertaining to the Indians that were believed to be obstacles to Ecuador's modernization. Sleeping on floors, not bathing often, and the killing of fleas and lice with their teeth were only some of the habits that were both criticized and, for lack of a better word, reprimanded by non-indigenous people in power.

The idea of Indian and Andean backwardness was infused with the modernizing principles of positivism and urban planning. As such, Ecuadorian elites often utilized the idea of race to frame Indians "in their condition as inferior citizens who feared the elites."⁶⁴ For the *pensadores* in Quito, racial differences were rooted in the deep historical past and, particularly for liberal thinkers of the time, these differences were reinforced by contemporary servitude, the system of *huasipungaje* (coerced labor) particular to Ecuador's Indian labor history. In hygienic terms, as reported in one newspaper, the people of the lower (indigenous) classes were

⁶⁴ Prieto, "A Liberalism of Fear," 70.

those who had no concept of hygiene and who lived not in the central stretches of the city, but rather in the hovels and stores of separate streets and alley ways, with not a single comfort or even the slightest idea of good manners.⁶⁵

It would be foolhardy on our part to think that the procedures for inspecting households and the animals living therein would go off without a hitch.

Communiqués illustrate that there was foul play even in this particular aspect of plague control and one of those documents demonstrates that the inspection of animals occasionally became an opportunity for officials to appropriate healthy livestock for their own use and consumption. According to the municipal police chief of Alausí, for example, in 1927 it became known that the “[Señor] Rat Inspector” was collecting guinea pigs and rabbits that ended up being eaten on outings or in the house of said inspector.⁶⁶ In fact, on January 14th of that year, an unnamed official from Alausí had complained via telegraph to the Director of Health that...

[w]ithout [previous] knowledge this commission has come to learn that the Rat Inspector, Mr. Salazar, with the pretext of searching for fleas collects [confiscates] guinea pigs and rabbits which, after being defleaded, are converted into the snacks and meals of said Inspector Salazar....⁶⁷

Salazar's actions did not help to engender trust in the public health experts among the rural populations. If anything, his actions helped distance these populations from the ideals and the goals that Dr. Miño and his colleagues attempted to achieve. Vaccination and the provision of cleaning materials would not be sufficient in convincing people to follow the new standards of hygiene set up by the medical and public health bureaucratic entities. Actions such as those of

⁶⁵ *El Día*, 2 January 1925, p. 1.

⁶⁶ Municipal Police Chief of Alausí to Political administrator of Alausí, 14 January 1927, AJPA, 1927.

⁶⁷ Municipal Commissioner of Alausí to Director of Health, 14 January 1927, ASSQ.

Inspector Salazar contributed to the failures that oftentimes foiled the anti-plague campaign.

Ultimately, the suspicion of guinea pigs as a direct transmitter of plague was discarded as too few of the creatures were showing up with plague-carrying fleas. In fact, although the guinea pig was disconnected to plague, it was not until 1942 when Atilio Macchiavello, the director of Ecuador's National Institute of Hygiene in Guayaquil, finally asserted that

the guinea pig is only associated with plague by accident. "The guinea pig does not explain the origin of Andean plague, since its capacity as a reservoir is doubtful in view of its enormous susceptibility. Its correlation with plague is not perfect, and it appears rather to act as a reinforcing factor in the infection, serving as an intermediary of plague between rats and man by the liberation, at its death, of the infected fleas which it has previously caught at soil level."⁶⁸

THE ECUADORIAN ANTI-PLAGUE EFFORT: A RECAP

The Ecuadorian effort against plague is one marked by trial and error. Overall, however, the effort is one that stands out favorably because of its various initiatives. Figures such as Miño, Flores Ontaneda, and Suárez, for example, all contributed to the way that public health developed, changed, and was practiced in Ecuador. They took the new sanitary science of the time and the knowledge that accompanied it, and attempted to apply it to a situation with which very few people in the country were familiar. Miño is particularly important in the campaign against plague in Ecuador because, as the national director of health, he was the one most responsible on a national level for the eradication or control of plague.

⁶⁸ Atilio Macchiavello "Epidemiology of Plague in Ecuador" in *American Journal of Public Health and the Nation's Health*, 337 (1943): 810.

As has been seen in chapters 3 and 4, the Ecuadorian effort to fight plague began prior to the disease's arrival in Guayaquil and was comprised of two phases. Although Guayaquil had already been all too familiar with disease and disease potential, the appearance of plague in nearby ports (Paita in Peru and Iquique in Chile, for example) sent through the Ecuadorian public health apparatus a shiver from which it found it difficult to recover. Even in 1899, before plague came to the Pacific coast of South America, Ecuador had begun its preparations (the first phase) in case plague did make its arrival on to national territory. Part of this process included the coming together of scientists and public health experts as well as the formation of commissions or boards whose main responsibility lay in the appraising or evaluating of Quito's state of hygiene. The process of preparation also involved the gathering of observations from Guayaquil as well as the closing of the port, for example, to vessels arriving from plague-infected ports.

Almost as soon as the plague pandemic was announced, laws and decrees were enacted that either prohibited (or, at least, attempted to prohibit) such habits as the cohabitation with animals, or that mandated the frequent cleaning and disinfecting of public spaces and private homes. The threat of plague was viewed as something real and tangible, and documentation illustrates that that threat was dealt with almost as quickly as it showed up. Despite the alacrity with which experts attempted to deal with the threat of plague, however, the disease still arrived in Guayaquil and it was only a matter of time before it would be transported into the highlands (in 1908) where it could, if left alone, decimate a community normally isolated from the threat of tropical diseases.

Among the personalities that shine in the Ecuadorian anti-plague effort is Carlos A. Miño, physician and public health expert. His role as the National Director of Health during the outbreak of plague placed on him the responsibility of having to oversee the campaign against plague and responding to the needs (and complaints) of those sanitation and health delegates who were responsible for the carrying out of the new public health standards (the second phase). He is the one most credited with setting the anti-plague campaign in motion and he did so in as scientific a manner as he knew how. Miño was so involved in the fight against plague that he quite often found himself travelling to infected regions, villages, and towns. He interviewed health delegates and officers; he visited people infected with plague; and he conversed with family members in his search for information. He assisted in the inspection of homes, as well as in the collection and examination of fleas, and he was quite good at maintaining communication with his delegates who had been dispersed throughout the country.

The Ecuadorian anti-plague effort might have been fraught with some disappointments as has been demonstrated in the various reports of resistance or reaction to the campaign. The campaign was, however, also successful in that it was able to get the word out that hygiene was an important matter if people wanted to protect themselves from plague. Perhaps, though, it is Miño's scientific approach to fighting plague that should receive the most attention, for without that approach, the eradication of plague later in the century would have been impossible.

Miño was a scientist and as such he approached the fight against plague from a scientific and medical perspective. He knew the possible vectors of plague and he

knew how to best combat them. Thus, he initiated a program of rat control (*desratización*) that incorporated the catching and poisoning of rats throughout the city of Guayaquil and in any region where there was even the most remote possibility of plague infection. The rats that were caught were sent to the laboratories in Guayaquil and Quito where they were killed (if they were not already dead) and searched for fleas. In turn, the fleas were tested for plague and a running log was kept reflecting the findings.

Fig. 4.11:
A typical log sheet used in the collection and reporting of fleas.⁶⁹

Source: Archives of the ASSQ.

His efforts, unfortunately, were not enough and, in the end, Ecuador had to depend on the cooperation of international experts who had two things that Miño and his staff did not. In the first place, the outsiders involved had much more experience with plague than any Ecuadorian medical or public health expert. These Ecuadorian experts, as the *New York Times* stipulated, “had no experience with the disease.”⁷⁰ Thus, though their efforts might have been well intended, they were limited because of a general lack of experience with plague and the understanding that comes with that experience.

Secondly, the outsiders had significantly more financial and administrative resources with which to investigate plague and its vectors in Ecuador. The outsiders involved, in fact, represented two very powerful institutions, both of which happened to be headquartered in the United States: the United States Public Health Service and the Pan American Sanitary Bureau. Both organizations were powerhouses in the global fight against disease, and – together with the Rockefeller Foundation – had been responsible for more disease eradication in the Americas than any other institution on either a national or international level.

Clifford R. Eskey and John D. Long are the two main characters from outside Ecuador who play significant roles in Ecuador’s eradication of plague. It is quite conceivable that without the special assistance and expressed cooperation of these two men, Ecuador would not have been able to conquer the disease. Both men were physicians and epidemiologists, and both had gained renown for their work in other parts of the globe (the Philippines and Panama, for example) working with plague. Both contributed immensely to the general epidemiological history of

⁷⁰ “Guayaquil Has Lost Place as Place as Pest Hole,” *New York Times*, 30 August 1931: p. E8.

plague, but – for the sake of our discussion here – both represent the concerted efforts of health organizations that had as their goal the global eradication of disease and disease potential.

Chapter Five

Anti-Plague Efforts: The Americans Pitch In, 1929-1930

Phase IV

Ecuadorian officials eventually required the scientific knowledge and expertise of external organizations such as the United States Public Health Service and the Pan American Sanitary Bureau. These two organizations, with the aid of their key representatives in the fight against plague in Ecuador, would not only be credited with the complete eradication of plague in the Andean country, but also would receive the recognition and admiration of the Ecuadorian government and its representatives. In fact, it is the collaborative involvement of these two organizations in Ecuador that helped Ecuadorian public health experts accomplish two things: the full modernization of public health efforts to eradicate plague and the hygienization of its major port of call, Guayaquil. These two accomplishments, in turn, allowed Ecuador to incorporate itself into the world economy and participate in the international commerce that marked the twentieth century.

My goal in this chapter, therefore, is to focus on the work of Drs. Eskey and Long as the main components of the American “contribution” to Ecuador’s Anti-Plague Campaign. Special emphasis in this narrative is placed on the expertise that each man brought to the table and their methodological approaches to plague control. Of particular interest are Dr. Long’s own observations and his conclusions regarding Ecuadorian plague and its eradication. These expertise and observations are very much the crux of this chapter, because they are what allowed Ecuador’s major port to be, first, rid of a plague epidemic and, second, be classified as an

internationally recognized Class A port (i.e., no longer a danger to ships wishing to do business there).

PHASE IV: SOME OUTSIDE HELP

The morning edition of the *New York Times* on August 20, 1929 announced that Dr. Clifford Rush Eskey of the United States Public Health Service and Dr. John D. Long, also of the Health Service and representing the Pan American Sanitary Bureau, had sailed the night previous for Guayaquil. Their reason for going could have been quite simple: to evaluate the severity of plague in Ecuador. The doctors' mission, however, was going to involve much more. Their trip there had the important goal of conducting and supervising special epidemiological studies of bubonic plague and its peculiarities in Ecuador. In short, their endeavor was to collaborate with Ecuadorian public health experts in the Anti-plague campaign. The entomological and epidemiological studies, being primarily led by Dr. Eskey, were predicted to last about a year (though they would require only a few months) during which time both doctors would take up residence in Guayaquil. After their stretch there, they would then travel throughout South America to continue their studies and serve as "travelling representatives" of their respective health organizations in the effort to eradicate plague in the region.

As mentioned above, it was under the auspices of the United States Public Health Service and the Pan American Sanitary Bureau that these two men (and the expertise they had to offer) were sent to Guayaquil. The U.S. Public Health Service, for example, had, at its inception in 1798, the purpose of providing for

[the] temporary relief and maintenance of sick and disabled seamen in the hospitals or other proper institutions now established in the several ports of the United States....¹

Over the years, though, the Service grew to become one of the most resourceful and successful agencies in the combating of plague and a myriad of other diseases wherever it was needed. Additionally, the Service had made several visits to Ecuador, for example, in the fights against cholera and yellow fever, and it will be recalled that its Surgeon General (William C. Gorgas) had visited Ecuador in 1912 and maintained communication with Dr. Miño during the country's experience with plague.

In like fashion, the Pan American Sanitary Bureau also had its origins in maritime public health and was born out of a need to address diseases and disease potential that were a result of the increased participation among the various American republics involved in international trade. Currently known as the Pan American Health Organization (PAHO), the organization came to incorporate all of the American Republics and attempted to centralize and direct all disease and epidemic-related information through its central offices in Washington, D.C. By the time that Dr. Bolivar J. Lloyd (the once national Director of Sanitation for Ecuador) wrote about the Pan American Sanitary Bureau in 1930, the Bureau had adopted a mission of international involvement and cooperation that reflected very specific ideals:

[the] growing importance of the relations of the peoples of each American Republic with those of every other makes it incumbent upon all Americans, North, Central and South, to become fully

¹ As quoted in Fitzhugh Mullan, *Plagues and Politics: The Story of the United States Public Health Service* (U.S.A.: Basic Books, 1989), 14.

informed of these relations and to be informed particularly with regard to questions of an international character.²

The Pan American Sanitary Bureau grew into a permanent international organization in which all of the signatory American Republics were represented. These countries also contributed to the support and maintenance with funds in proportion to their populations. In the words of Dr. Lloyd, the Bureau was concerned in maintaining and improving the health of all the people of the twenty-one signatory republics and also in preventing the occurrence and spread of transmissible diseases in international commerce, particularly the international commerce of the republics concerned.

For many years, prior to the creation of the Pan American Sanitary Bureau conferences and Sanitary Bureaus, statesmen, meeting in international conferences blindly attempted to solve the vexing questions of international quarantines and the spread of such diseases as plague, cholera, and yellow fever in international commerce. They were, however, unable to improve general health conditions or even obviate the drastic quarantines which would invariably follow the appearance of one of these dreaded diseases in some important commercial port. Gradually, there dawned on the members of these general conferences the fact that the protection of the public health, involving as it did the prevention of the spread of communicable diseases, was a matter which had to be dealt with by “men who [were] specially trained in such work.”³

² Bolivar J. Lloyd, “The Pan American Sanitary Bureau” in *The American Journal of Public Health and the Nation's Health* 20:9 (1930), 925.

³ Ibid, 926.

So, how did these two organizations come to involve themselves in the public health issues of a South American country in the Andes? Ecuador's incorporation in international health, in fact, preceded the Pan American Sanitary Bureau when in 1888 it joined other Pacific South American countries (Bolivia, Chile, and Peru) to, first, discuss reciprocal notification of diseases and disease potential, and, second, to draft an international agreement that addressed the impact of disease presence to the area's commercial trade.⁴ Ecuador's participation in that 1888 agreement tied it to a variety of responsibilities that it accepted prior to its plague experience. Among other things, the agreement bound Ecuador and the other participating countries to general rules for prophylaxis against cholera and yellow fever. Additionally, the agreement established the organization and attributes of such important factors in the fight against disease as lazarettos, quarantines, and disinfections, as well as the types of questions passengers should be asked while travelling across international borders, specifically.

By the time that the Pan American Sanitary Bureau and the United States Public Health Service became involved in Ecuador, though, the country had already had some experience in international health organizations and policy-making. Thus, when it did finally join the Bureau in 1901 (at the Second International Conference of American States, held in Mexico City), Ecuador had brought to the table its fair share of experience and its agreement to the participating countries' goals. As Cueto points out, the plan for the organization was a simple one, but it turned out to involve more than had been originally planned:

⁴ Cueto, *The Value of Health*, 14

to improve quarantine regulations and concentrate on one disease [yellow fever] – which, in the course of discussion, was taken further, to include other health issues...⁵

The first Sanitary Conference was held in Washington in November of 1902 and the gathering effected permanent organization by electing the members of the Sanitary Bureau, the first permanent organization of its kind. The conference also cast into discard all previous quarantine measures directed against yellow fever, voting to ban future measures for the control of this disease due to the fact, which had recently been demonstrated, that yellow fever was conveyed in nature only by the bite of an infected mosquito.

Thus, when Eskey and Long were sent to Ecuador, then, the two institutions they represented had already been in the business of disease eradication and epidemic control for quite some time. As, Lloyd writes, the authorizations that were a product of Ecuador's participation in these international entities "[provided] for travelling representatives [Eskey and Long] to engage in such special coöperative work as may be agreed upon at the various conferences."⁶ The involvement of these travelling representatives would be limited only by the "available funds and expressed wishes of the coöperating governments."⁷

Long and Eskey had the resources, the manpower, and the expertise with which to address the needs of disease-infected areas and their populations. These were going to be powerful tools in the work to be done in Ecuador. In fact, within a year of waging what was by all reports deemed a successful war against plague in Ecuador, they eventually removed their base of operations from Guayaquil to Lima

⁵ Ibid, 40.

⁶ Lloyd, "The Pan American Sanitary Bureau," 927-928.

⁷ Ibid, 928.

(Peru), where they fully “expect[ed] to close their campaign in July with the enemy vanquished.”⁸

Dr. Eskey, the younger of the two men, was not a neonate in any sense of the word to the study of plague and its epidemiology. He had previously served as the chief quarantine officer in the Philippines and had, moreover, worked on plague in India when the 1895 pandemic affected those two countries. He was a man of science known for his meticulousness and his love for epidemiology. His intensively methodical laboratory work in Ecuador continued the work of Miño’s staff and contributed significantly to the eradication of plague in Ecuador so that by 1930 plague had been all but vanquished in the nation.

Similarly, Dr. Long had established his own illustrious career in public health during the beginning of the twentieth century by also focusing on the fight against plague. In California, for example, Long had gained recognition for inventing a trap specifically designed to capture squirrels, which were the major transmitters of plague in that state’s experience with the disease. Long had also put in time working in such distant places as the Philippines and the Panama Canal Zone in the same capacity of plague control. Eventually, he rose to become the Assistant Surgeon General of the U.S. Public Health Service⁹, and was instrumental in later drafting the Pan American Sanitary Code (to which Ecuador had committed itself in 1924) and in assisting Chile, Panama, and Uruguay in the drafting of their own national sanitary codes.¹⁰

⁸ Special Correspondence, *New York Times*, “Americans Fight Plague in Peru,” 28 June 1931: p. E8

⁹ See Fitzhugh Mullan’s *Plague and Politics* for an interesting portrait of the organization and its history.

¹⁰ Cueto, *The Value of Health*, 41.

The road to plague eradication in Ecuador in March of 1930, however, was not easy for either Eskey or Long. Both had under their belts more than ample experience with plague and with its epidemiology. Ecuador, however, offered them a chance to study plague from a different perspective, as they were certain of only two things. First, Ecuador's geographic and climatic situation could provide significantly new knowledge regarding plague control in the Andes and along the country's Pacific coast. Their communication with Dr. Miño and Dr. Suárez in previous years kept them informed of the valiant efforts made by the Ecuadorian public health apparatus and the difficulties that they faced, especially in dealing with non-rodent plague vectors. Thus, they were not completely unaware or ignorant of the difficulties and uncertainties they would face in Guayaquil.

The second thing that they knew was that bubonic plague in Ecuador was unique. In the words of Dr. Long himself:

[i]nteresting new facts have been discovered during the recent studies of the disease. A new and unidentified flea has been discovered in the mountain districts which is believed to be capable of transmitting plague; two new clinical types of plague [viruela pestosa and angina pestosa] have been recognized which have been known to Ecuadorean physicians but had never been reported.¹¹

The Ecuadorian plague epidemic, therefore, was a turning point in plague studies. Their investigations and research, their scientific and statistical findings, and the conclusions at which they arrived during their time in Ecuador not only helped eradicate plague in Ecuador, but also contributed a great deal of knowledge regarding the disease's epidemiology, most of it leading to the human being as a vector, as will be discussed below.

¹¹ "Fleas found to be Carriers of Plague" in *New York Times*, February 9, 1930: p. E6.

PRELUDE TO ESKEY AND LONG

In June of 1929, prior to Eskey's and Long's official trip to Ecuador, an international advisory commission was formed which, according to the recommendations of the Pan American Sanitary Code,¹² would deal with anything involving bubonic plague in Ecuador (and the other ratifying nations). Ecuador was just one of the countries that had unanimously ratified the new code (originally called the *Sanitary Conference of Washington*) in 1924 at the Seventh Pan American Sanitary Conference in Havana, Cuba,¹³ the convention having been renamed after it was amended and rewritten at Havana. Hugh S. Cummings, the retired Surgeon General of the United States Public Health Service, in briefly reflecting on the Bureau's experience with plague in Ecuador in his report on the Code, writes that

[of] signal interest in the international public health field has been the work of these travelling representatives [of which John D. Long was one] especially in the anti-plague campaigns in the Republics of Ecuador and Peru since 1929 and 1930, respectively.¹⁴

What Ecuador and the Pan American Sanitary Code, to which the country now subscribed, required in dealing with plague included the trapping and poisoning of rats, the surveying of fleas, and the studying of the epidemiology of active foci of disease and its contagions. Of special importance was the reporting of human cases and deaths from plague and of rodent infection to the Pan American Sanitary Bureau. The Bureau was then to remit the information to all of the other signatory

¹² "The Pan American Sanitary Code," *The American Journal of International Law* 20:1, Supplement (1926): 24-50.

¹³ Hugh S. Cummings. "Development of International Coöperation Among the Health Authorities of the American Republics," *American Journal of Public Health* 28, (1938): 1193.

¹⁴ *Ibid.*, 1194.

American Republics via the International Office of Public Health. Article 3 in Chapter II of the Code, for example, dictates that

[each] of the signatory governments agrees to transmit to each of the other signatory governments and to the Pan American Sanitary Bureau, at intervals of not more than two weeks, a statement containing information as to the state of its public health, particularly that of its ports.¹⁵

The spread of disease across borders was, of course, a serious issue and the Code specifically covered such diseases as plague, cholera, and yellow fever while also leaving itself room to incorporate any diseases deemed reportable by the Bureau. The goal of the Code was that each signatory government agree to notify adjacent countries and the Bureau immediately by the most rapid available means of communication, of the appearance in its territory of an authentic or officially suspected case or cases of plague or any other dangerous contagion liable to spread through the intermediary agency of international commerce. Additionally, the reports were to not just be an affirmation of the presence of the disease. The Code specifically required that the signatory countries report on the area where the disease had appeared, the date of its appearance, its origin, and its form; the probable source or country from which the disease was introduced and the manner of introduction; the number of confirmed cases and the number of deaths; and, for the case of plague, the existence among rodents of plague, or of an unusual mortality among rodents.¹⁶

One of the most significant recommendations made by the Pan American Sanitary Bureau was the undertaking of the epidemiological studies of bubonic

¹⁵ The Pan American Sanitary Code, 35.

¹⁶ Pan American Sanitary Code, p. 36.

plague in South America, for which Eskey and Long would be responsible. As Cummings mentioned above, these studies were initiated with the

proviso that such studies should begin in Ecuador on account of the fact that preliminary studies had indicated that, probably, some interesting discoveries might be made in the epidemiology of the disease.¹⁷

In this particular case the advisory commission that would initiate those epidemiological studies was comprised of the men most directly involved with plague control efforts in Ecuador: Drs. Eskey, Miño and Wandenberg, with Eskey named as President of the committee.¹⁸ The committee was advised by two men: Dr. Long, as the “travelling representative” of the Bureau, and Dr. Luis M. Cueva, Director of Health for the city of Guayaquil. After meeting about the anti-plague campaign in Ecuador and its progress, the committee arrived at two important resolutions that needed to be acted upon immediately if plague was to be brought under control.

First, the committee members had resolved themselves to follow Dr. Eskey’s plan of laboratory investigation of plague and its entomological vectors, a natural continuation of Ecuador’s anti-plague efforts. Eskey had already focused on the entomological factors involved with plague in a variety of ways and in a variety of global settings. He was deemed the expert on plague and the various fleas that transmitted the disease, and was strongly recommended by Dr. Long who had already had a relationship of mutual respect with the Ecuadorian sanitationists and public health authorities.

¹⁷ Quoted from the report of Dr. John D. Long, “Antiplague Campaign in Guayaquil and Vicinity” in *Public Health Reports (1896-1970)*, 45:47 (1930): 2880.

¹⁸ See Miño, *La peste bubónica*, 93-94.

Second, the committee members had also resolved themselves to attain from the Ministry of Health the support necessary to establish an efficient and capable organization in charge of supervising the investigations. This, of course, would entail the reserving of funds and other resources. Most importantly, however, the members had resolved to secure the support of the federal government so that plague could be eradicated in the national territory.

Upon arrival in Ecuador, Dr. Eskey and Dr. Long had put themselves to work almost immediately. Eskey was assigned a laboratory in which to work, and Long served as consultant to a variety of anti-plague commissions and in the establishment of anti-plague policies. The continued focus for the two men would be rat control, since they believed that if the rat population were exterminated in Guayaquil and its environs, there would be a much smaller chance of plague being transported to the highland areas where there would be less ability to contain an epidemic outbreak. Each man took to plague control in his own way and began by carrying on with the work that had been begun by Miño and his department in 1908, when Miño entered the Public Health Service under Dr. Lloyd, Ecuador's first national health director.¹⁹

ESKEY DOES THE LAB WORK

Under Eskey's leadership, the process of collecting and examining rats was paramount. The procedure Miño used remained unchanged initially until the investigation underwent intensification from September 24, 1929 to March 31, 1930. During the first thirty days, though, the method used for collecting fleas also

¹⁹ Miño, *La peste bubónica*, 25.

continued to be the same as had been in use for some time by Miño and his team(s). This initial procedure mostly consisted of the drowning of rats, for instance, in glass jars and then searching the dead wet rats for fleas. Overall, this particular procedure proved to be unsatisfactory as too much reliance was placed on the eyesight of the searcher and, consequently, there was much room for error. As Eskey indicated in his very own report:

Live fleas were frequently found on the dead wet rats, and some of them eluded the searcher, not only entailing the loss of the fleas, but also subjecting the workers to the possibility of being the hosts of plague-carrying fleas. It requires much time properly to search a wet rat for fleas, and after three or four hours the searcher becomes tired and careless.²⁰

A subsequent method Eskey used in the collection of fleas involved the strangulation of rats. This process, of course, caused the creatures to struggle violently with the result that some of the fleas were shaken off. The havoc that this would have caused is easy enough to imagine. The rats flailed. Fleas either jumped or were thrown off a violently shaking rat. Fleas might also have landed on an inspector who was unexpectedly bitten by the flea or became its new host. Both these methods – drowning and strangulation – proved to be less than effective and so Eskey had to come up with a new method that would be both faster and more effective.

On October 24th, Eskey began to use cyanide in order to kill the rats. In this method, the rats were forced to inhale the poison; they struggled for a few seconds, died, and then their fleas were removed with a fine-toothed comb. Eskey found that the number of fleas collected was slightly higher than by using either the visual

²⁰ Eskey, "Chief Etiological Factors of Plague in Ecuador:" 2099.

method or by strangulation, but combing was even more time-consuming and the process required the greater part of the day in order to compute the results and to tabulate the findings. Additionally, often enough rats were not available for the morning autopsy as they were not normally brought in to the laboratory by the trappers until later in the day and, on account of the dank and humid climate of Guayaquil, could not be kept until the following day. Eventually, on October 27th, it was discovered that still more fleas could be recovered by holding the rat by the tail and striking it with the blade of large dressing forceps.

This particular method of striking the rats with large dressing forceps was applied until investigators discovered the efficacy of hydrocyanic acid. Rats were killed by using the acid, which was generated by using both sodium and potassium cyanide. It seemed to be the quickest and most efficient way to kill the rats without risking losing fleas. Eskey describes the process in his report:

Hydrocyanic acid was used to kill the rats. It was generated in ordinary flat 4-ounce ointment tins, in the covers of which five or six holes had been punched with a small nail. It was uncertain at first whether the ordinary ointment tin would withstand the action of the acid long enough to be practicable. They were found to be entirely satisfactory as they did not have to be renewed often than once every two or three months.²¹

When trappers actually did arrive with rats they also provided Eskey and his investigators with the information that was necessary for the researchers' plague survey. This information provided – as with Miño's survey discussed in the previous chapter – the street address where the rat was found, the number of the city block,

²¹ Eskey, "Chief Etiological Factors of Plague:" 2099.

and the nature or sanitary condition of the place where the rat was caught. For this latter purpose, the investigators referred to a large wall map with

Fig. 5.1:
The autopsying of rodents²²



Source: Mullan, *Plagues and Politics*, 41

each city block numbered. The investigators seized the rats by the loose skin on their backs with 12- or 14-inch heavy dressing forceps and placed them in the glass jars, being careful to separate them by both sex and age. Most of the rats could be taken in this way with very little struggling. After the rats had been transferred to the glass jars, cards were completed for each jar, on which was recorded the information already provided by the trappers, to which was added the date, size, sex, and species of the rats. Eskey continues:

²² Adapted from Mullan, *Plagues and Politics*: 41. It should be noted that this picture depicts plague research on captured rodents (in this case rats and squirrels) in San Francisco, where Dr. Eskey was also instrumental in the anti-plague campaign there. The scene is typical of what occurred in Ecuador.

When the large rats are first placed in the jars it is necessary to hold the tops down or they are likely to be knocked off by the convulsions caused by the hydrocyanic acid. The action of the gas is so rapid that most rats are dead in about 30 seconds. When the same jar has been used two or three times or three or four rats are treated in the same jar, the concentration of the gas is lowered so that it may then be several minutes before the rats finally expire.²³

The policy of catching rats and examining them for fleas was relatively successful except that it was, as Long discusses in his own report, simply impossible to totally destroy the rat population because of their numbers.²⁴ What public health experts like Miño and Eskey make clear, though, is that the process helped Ecuadorian health inspectors and experts understand when (what time of year), where (what neighborhoods), and why (under what conditions) plague appeared. But, what can be said about the human factor? It will be recalled that one of the problems arising in a study of plague in the Ecuadorian landscape was that plague could be transmitted from person to person. How can we explain this in cities of high altitude where rats did not and could not exist? After all, as Eskey writes,

[it] might be argued that *cheopis* was carried by man from place to place, but it is improbable that one individual would carry enough *cheopis* to infect 10 others, or that two persons would carry a number sufficient to cause 53 secondary cases [as was stated earlier in his report].²⁵

One of the factors that makes the Ecuadorian epidemic particularly interesting and important in the general historiography of plague is the involvement of factors that are not normally taken into account in the study of plague in other global

²³ Eskey, "Chief Etiological Factors of Plague in Ecuador:" 2100.

²⁴ This is despite the high numbers of rats exterminated. One report, which will be discussed later, has the number of rats caught and killed by the two American doctors and their staffs at over 4 million.

²⁵ Ibid, 2097.

scenarios. These, of course, include Ecuador's geography and climate but also involve the country's entomological particularities. As Echenberg perhaps too briefly asserts in his discussion about rats and their fleas,

[despite] the critical role of insects in [plague's] transmission, extensive research by entomologists on precisely how this transmission occurred took several decades to determine. What we now know but what even the most avant-garde scientists and public health workers in 1900 did not, is that only a few species of fleas can trigger a plague epizootic among rats or a major epidemic among human beings... Thus, the human flea, *Pulex irritans*, can be a carrier of *Y. pestis*....²⁶

Among the entomological vectors present in the case of Ecuadorian plague is the overwhelming presence of *Pulex irritans*, the flea that is most commonly found on the bodies of human beings. As will be seen below, this flea has been assigned much culpability for the spread of plague in Ecuador, and especially pneumonic plague, as its spread reflects some of the customs and traditions maintained by the indigenous and perceived as some of the major obstacles to modernization in Ecuador. As the New York Times made clear, "...the Indian harbors about as many fleas as the rat, and so it seems that they infect each other [for example,] at the tribal wakes."²⁷

Fig. 5.2
***Pulex irritans*, the human flea**



Source: www.microscopy.uk.org.uk/.../jssslides.html

²⁶ Echenberg, *Plague Ports*, 7.

²⁷ "Guayaquil has Lost Place as Pest Hole," *New York Times*, 30 August 1931: p. E8.

It was habits such as the eating and sleeping beside the deceased plague victim, the sleeping on floors, and the killing of fleas, lice, and bed bugs (chinchas) with their teeth that were the focus of much of the anti-plague campaign's attempts at dealing with and eradicating plague (and its vectors) throughout the national territory and, specifically, in the highland region. On the coast, this was also true since it was where plague was becoming increasingly endemic. In order to address these customs and habits, Ecuadorian officials utilized much of Eskey's laboratory findings. Miño himself incorporated those findings into his own work on plague and credits Eskey with the knowledge necessary to understanding more fully the nature of plague in Ecuador.²⁸ Eskey's report on plague in Ecuador in the Health Service's *Public Health Reports*, for example, is a significant contribution to the study of plague epidemiology in a variety of ways that can be attributed to his anti-plague efforts in Ecuador during the period straddling 1929 and 1930.²⁹

First among Eskey's contributions is his general description of plague in Ecuador. He discusses the character of the epidemics in Guayaquil as well as their seasonal periodicity, and provides an explanation as to the changes and extent of those epidemics. Part of this discussion includes the issues particular to Ecuador such as climate, altitude and the involvement of Indian living conditions and habits which he seems to blame for the quick spread of pneumonic (or inter-human) plague, saying that

[the] Indians of the Sierra have a custom which is undoubtedly responsible for causing many cases of plague among them and

²⁸ Miño, *La peste bubónica*, 23.

²⁹ See his "Chief Etiological factors of plague in Ecuador and the Anti plague Campaign," *Public Health Reports*, 45:36 (1930): 2077-2116.

prevents the disease from dying out in this region as quickly as it does in the towns of the mountains.³⁰

He was writing about the traditional Indian “velorio,” or death wake, held in the house of the deceased. Additionally, he provides an account of how the epidemics normally spread from town to town (providing maps and charts that are quite useful for the reader).

Second, Eskey provides a detailed account of the varieties of rats, fleas, and other vectors that might have a connection to the spread of interspecies plague contamination. He discusses characteristics, populations, and habits of rats found most commonly in Ecuador. He also discusses the wide variety of fleas, but focuses his attention on *Pulex irritans*, the flea most commonly found on the human body, saying that

[it] is one of the pests of Ecuador. It is found everywhere, on the coast and in the high mountain districts. Every Indian blanket and the blanket like poncho worn continuously by the mountain Indians is an ideal harboring place and hatchery for these fleas.³¹

In one instance of flea collection, Eskey had described that so commonplace was the human flea, that in December of 1929 alone, 45 of them were taken from just three Indian blankets, from different Indian houses, in about 15 minutes, and that more could have easily been acquired by further search.³²

Finally, and most importantly, Eskey discusses his rigorous efforts in the investigation and extermination of the rat and flea populations most associated with plague. He discusses the ways in which rats had to be captured, who caught them, the times the rat-catchers brought them to the laboratories, and the addresses

³⁰ Ibid, 2083.

³¹ Ibid, 2095.

³² Ibid.

where the rats were found. In addition to all of this, he discusses the best methods to collect fleas for investigation and the shortfalls of methods that did not prove as successful or as advantageous as he had hoped (as mentioned above).

Scientifically written, Eskey's report is a description of Ecuador's laboratory-based attempts at investigating plague, and his involvement in the anti-plague campaign is most definitely worthy of discussion in the study of plague and its eradication in the Ecuadorian territory. Eskey's involvement is a result of Ecuador's membership into the Pan American Sanitary Bureau (now the Pan American Health Organization³³) and the country's receiving and accepting the cooperation of the United States Public Health Service. As a result of that help, both Eskey and physician John D. Long (who was already residing in Guayaquil at the time) became involved in the control and ultimate eradication of plague in Ecuador. *Time* Magazine, for example, wrote that "[from] Guayaquil, Ecuador...went triumphant despatches [sic] that U. S. Public Health men had eradicated bubonic plague from the community. The men were Drs. John D. Long and Clifford Rush Eskey."³⁴

LONG: CONSULTANT AND CHIEF RAT-CATCHER

John D. Long's involvement in Ecuador's anti-plague campaign is of even more importance in this study on plague because of his involvement in the establishment of Ecuadorian health policy and the many accolades and honors he received from the government by the time of his 1949 death in Guayaquil. As

³³ Marcos Cueto provides an excellent history of the organization in which he discusses its beginnings, its mission, and its most important personalities. See his *The Value of Health*, for a more detailed discussion.

³⁴ *Time*, 13 May 1930.

mentioned above, Dr. Long had served as a consultant while he resided in the port city and, had it not been for his suggestion to do so, plague would not have been officially and publically acknowledged as an epidemic within the country's borders during the country's experience with the disease. It was, in fact under his direction that Ecuador was forced to declare an epidemic as Long had not only made his findings known to government and public health officials, but also put his findings in the various memoranda that he sent back to the United States.³⁵ The *New York Times* also extolled the involvement of Long in plague eradication and wrote that

...[b]ubonic plague, which made its appearance in 1908, spread into the mountains and created a panic. The papers were full of academic discussions as to the measures to be adopted for prevention by doctors who had no experience with the disease. Matters got to such a point that the old Municipal Building was burned, as being the oldest building in the place and housing the market place on the ground floor it was believed to be the focus of infection.

After a while patients were isolated and the houses fumigated, but very little was accomplished until Drs. J. D. Long and C. R. Eskey of the United States Public Health Service started their war on rats last year.³⁶

Long's involvement was so important that newspapers both in Ecuador and in the United States credited him with much of the country's success at eradicating plague by the end of the 1930s through the implementation of what Miño has termed "el Sistema Long," or the "Long System" of rat control. The Ecuadorian physician credits this system for the complete absence of any plague cases for the first three years after Long's work was completed.³⁷ The *New York Times*, additionally, had begun to follow Long's involvement in an August 20, 1929 article in which "[after] a

³⁵ As the bureau's "traveling representative" he was required to send dispatches to the U.S.P.H.S. describing the progress of his anti-plague efforts.

³⁶ *New York Times*, 30, August 1931.

³⁷ Miño, *La peste bubónica*, 24.

recent survey of health conditions in South America while representing the Pan-American Sanitary Bureau, Dr. Long reported the presence of plague in Brazil, Paraguay, the Argentine, Peru, and Ecuador.”³⁸ In the case of Ecuador, Long was quoted – as he so often was – as saying that “certain epidemiological features were found in Ecuador which had not been encountered before.” The possibility of such findings precipitated that a specific investigation be conducted in Ecuador as “the council of the Sanitary Bureau approved Dr. Long’s recommendation that a special study be made, and after completing the work in Ecuador Dr. Eskey may visit other countries where the plague is present.”³⁹

Until his death in 1949, Long’s work focused primarily on anti-plague campaigns throughout South America, and quite often he collaborated with Dr. Eskey in those campaigns and in the establishment of anti-plague policies and measures. In Quito in 1929, he had persuaded Archbishop Manuel María Pólit Lasso (1918-1932) to send a letter containing public health recommendations to the latter’s religious and political authorities. Those recommendations eventually became the guidelines for combating plague discussed earlier in this chapter.

Long’s impact on the Ecuadorian plague epidemic scene was profound for two main reasons. First, his work aided in ridding Ecuador of its reputation as a country of disease and filth associated with the transmission of plague. Second, his work took place, as Cueto asserts, at “a juncture in time when other international organizations were not overly concerned with the disease.”⁴⁰ Yet, by 1931, Long had concluded his successful work against plague in South America ending a thirty-

³⁸ *New York Times*, 20 August 1929: p. 9.

³⁹ *Ibid.*

⁴⁰ *Ibid.*, 68.

year period during which the disease was endemic in cities such as Lima, Guayaquil, and others along the continent's western coast. As the *New York Times* declared, "It was an unfortunate day for the rat population of South America, and particularly Ecuador and Peru, when the Pan American Sanitary Bureau declared war on them."⁴¹

Fig. 5.3:
Drs. Long and Miño visiting indigenous homes



Source: Miño, *La peste bubónica*, 26.

The recommendations that Dr. Long made were not only detailed in commission reports or in conversations with the Archbishop. Quite often, they went out in the form of a letter, for example, to the President of the Republic. Primarily, Long advocated for the establishment of a permanent commission in Ecuador with the goals of studying the epidemiological factors of plague, and from the beginning,

⁴¹ Ibid, 68.

he advocated that Dr. Eskey was the one who should oversee this commission. Under the umbrella of this commission, Long had also three distinct recommendations to be followed in Ecuador's anti-plague campaign. First, he suggested that a special entity be created focusing on the study and control of plague. This agency was to be part of the General Board of Health and would work in unison with that board for the sake of public health. Second, this plague-focused section was to be divided under the charge and supervision of two qualified administrators. In the central and southern regions of the country, supervision would fall to the General Inspector of Health of the Republic (that is, Dr. Miño). In the littoral or coastal region this responsibility was to fall to Dr. Cueva, who was the head of Guayaquil's Board of Health. Finally, the staff of the entity was to be comprised of people who already had experience in the control of plague in Ecuador. Specifically, these people would be those who until then had formed the Rat Control Service that worked with and under Dr. Miño, as well as with Dr. Eskey. All of Dr. Long's suggestions were agreed to and then signed by Eskey, Miño, Cueva, Long and Wandenberg.⁴²

LONG'S WAR AGAINST RATS

Dr. Long's plan for the eradication of plague coincided with that of Dr. Eskey. It comprised of two major phases. The first phase entailed the trapping of rats. This process was undertaken for two purposes: destroying as many rats as possible and obtaining rats for laboratory examination in order to have constant information as to the percentage of plague infection among them and to know when the plague had

⁴² See Miño, *La peste bubónica*, 96-97.

disappeared. As we saw, the rats' destruction would be accomplished through the use of poison on a large scale.

The second phase of Long's plan in plague eradication consisted in the poisoning of rats, as the measure had very good results wherever it was utilized. At first, according to his report, the poison used was composed of corn-meal flour, to which 35 percent of barium chloride had been added, together with a small quantity of ground cinnamon. After considerable experimenting it was found that there were two forms of poison that seemed to be the best. The first consisted of the previously

Fig. 5.4:
Dr. John D. Long of the Pan-American Sanitary Bureau



Source: www.paho.org/Images/DPI/album12.jpg and accessed on June 30, 2009 at 4:20 p.m.

mentioned corn-meal flour to which he added 18 per cent of white arsenic and 10 per cent of boneless codfish that had been run through a meat grinder. This mixture was wrapped in small paper packages by a group of small boys recruited from local neighborhoods. Subsequently, the paper packages were placed in a barrel and sprayed with oil of anise in sufficient quantity to produce a barely perceptible odor.

This concoction was then mixed and thoroughly shaken to distribute as evenly as possible the oil of anise.

The second type of poison was the same as the first except that grated Parmesan cheese was substituted for the ground codfish. The cheese was mixed in the proportion of 5 per cent. What Long found was that rats apparently tire of one class of poison (or, at least, the material with which it is mixed) and then tend to ignore it. So, what Long did was substitute one for a time and then another, and in this way the efficiency of the poison was maintained without “boring” the rats.

For the purpose of rat extermination, chief dependence was placed upon the poison, and this later appeared justified. In the beginning of Long’s poisoning plan, two (unnamed) inspectors who followed behind the poisoners to observe the efficiency of the poison reported finding one poisoned rat for each 1.75 houses visited.⁴³ “This proportion steadily decreased until the inspectors reported one dead rat for each 12 houses visited – an apparent reduction of over 80 per cent as compared with 75 per cent shown by trapping statistics.”⁴⁴

The poisoning of rats seemed to be Long’s pet project, so to speak. And he took special notice of how the poison worked in interior towns as well. As human plague had appeared in the interior towns of Durán, Milagro, Huigra, Daule, and others, in the coastal zone, and in Ambato and some of the Indian villages of the mountain districts, it was decided to use poison on a rather large scale in these places. This poisoning would replace trapping since the latter procedure would have

⁴³ Long, “Antiplague Campaign in Guayaquil and Vicinity.” 2882.

⁴⁴ Ibid.

been both much more expensive and restrictive, since there were no laboratory facilities at hand for rat examination in the area.

The results of the poisoning were quick and fulfilled Long's expectations. Human plague ceased, as a rule, after the first poisoning, and the mortality among rats was very high. Instructions were then given that all these places should be thoroughly poisoned once a month. As the towns were small, he believed, it required only from two days to one week to place the poison throughout them.

It is not known how much total poison was placed in the towns and villages, as no strict record was kept. It is interesting, however, that in the city of Guayaquil alone, in the course of about seven months, over five tons of the poison mixture previously described was placed, and no serious accidents had occurred. But even in this, Long had to fight off some rumors that related to his use of poison. In one rumor that he cites, for example, it had been stated that a few pigs, chickens, and cats were poisoned, but Long disregarded the claim because, as he wrote, "there [was] definite proof that this [was] unlikely."⁴⁵ Long reports still other rumors that were spread as when a child was said to have been made sick by having eaten some barium chloride or when a woman was said to have eaten one of the packages of poison with the purpose of committing suicide. In the former case, Long reports having discussed the matter with the child's father and, in doing so, found that the rumor had been false. In the latter case, experts had managed to save the woman's life. There was some reported resistance on the part of the public to the placing of the poison near their homes and other public spaces, but Long claimed that in each case the resistance had been overcome by him or his staff.

⁴⁵ Long, "Antiplague Campaign:" 2883.

Estimates as to the number of rats destroyed in Guayaquil was of special interest to Long. Guayaquil, in 1929, had an approximate human population of about 100,000 and it is usually believed that an average city has one rat for each inhabitant. According to Long, Guayaquil must have had many more than this number, and he came up with this idea because most of the houses in the city were constructed of light materials, such as bamboo side walls covered with mud or plaster stucco, wooden framing, and sides with double walls and partitions. Additionally, many of the houses rented out the ground floors as stores, many of which were food stores, groceries, food warehouses, and in too few instances were these articles sufficiently and appropriately protected from rat invasions. Thus, Guayaquil must have had a much larger rat population than most cities its size, a fact substantiated by Guayaquil's sanitation director who claimed that the rats' numbers "[increased] geometrically."⁴⁶

The inspectors whose duty it was to report upon the efficiency of the poison usually reported about as many dead rats as were caught by the traps. They frequently stated that they were convinced that, on the average, two rats died from the poison for each one found dead.⁴⁷ They based this statement on the number of complaints that came from householders relative to bad odors resulting from dead rats between walls and partitions under floors. Also, many householders told them of dead rats that had been found and buried, burned, or thrown into the garbage cans. Taking all these factors into consideration, Long conservatively estimated that approximately three rats were destroyed by the poison for each one caught in the

⁴⁶ As quoted in Pineo, *Social and Economic Reform in Ecuador*, 105.

⁴⁷ Ibid, 2884.

traps. If this estimate can be considered as fairly exact, it would appear that about 172,000 rats had been destroyed in the city of Guayaquil in a little over seven months.⁴⁸

THE ECUADORIAN PECULIARITY

The fourth phase of Ecuador's campaign against plague involved Eskey's intensive dissectional research and Long's providing him with the rats on which to work. A few important observations were made from this work that the Americans recorded in their reports and it is to those findings that we now turn, with the hopes of making sense of the now international campaign's results in the larger fight against plague.

Once plague arrived in Guayaquil, it was difficult to keep the disease from becoming endemic. A combination of factors that included the city's port and coastal location, its booming immigrant population, and its miserable sanitary and health conditions all came together to promote the transmission and spread of plague in the city and beyond. What Eskey and Long discovered was that plague's continued presence in the city, was significantly due to a continuous, and not just seasonal, epizootic extermination of rats, and not other rodents or animals as some had previously believed (recall the extermination of domestic animals including dogs). The rats that were most prevalent in the spread of plague in Guayaquil were those typical of rat plague in other parts of the globe: *Rattus rattus*, *Rattus norvegicus*, and *Rattus alexandrinus*. All of these rats were hosts to one predominant flea: the typical rat flea, *Xenopsylla cheopis*. This was true not only for Guayaquil, but the

⁴⁸ Ibid.

research had also demonstrated to them that in other coastal cities where rats were trapped and inspected that they were of the same three species.

The case of plague in the mountain districts was not so easy to determine. There the problem, Long admitted, was quite different, and what made it different was that very few rats lived in the highlands. The highlands were too high to be able to sustain either rats or the *Xenopsylla cheopis* fleas. Thus, another source of plague transmission had to be found. Long believed, as did Miño and others, that the disease was undoubtedly originally introduced into the mountain districts from the coast towns and cities through the rats carried on the cars of the Guayaquil & Quito Railroad. On several occasions, as has been repeatedly mentioned, railroad employees stated that they frequently saw the rats and that people were often bitten by fleas while sitting on the sacks of food being transported in the train's wagons. Both Long and Miño had received these types of accounts from their interviews.

The remainder of Long's conclusions result from his conviction of Ecuadorian plague's peculiarities. His belief that Ecuador would offer new and interesting information was confirmed and most of those conclusions were based upon the transmission of plague among people through cultural customs or habits as he indicated numerous times throughout his report.⁴⁹

The disease was apparently transmitted from one Indian village to another through the agency of the Indians themselves, for a number of reasons. First, confirming what Eskey believed, it had been the custom among Indians for many years, to hold wakes over their dead. The wake was usually held in the hut of the deceased and could easily have lasted for several days. The attendants at the wake

⁴⁹ Long, "*Antiplague Campaign in Guayaquil and Vicinity.*"

drank large quantities of chicha (a corn-based liquor), became intoxicated, and slept on the floor of the deceased victim's hut. As there were indubitably infected fleas in the hut, the Indians either became infected themselves or carried infected fleas with them in their clothing to their own villages to start a focus of the disease there.

Seeming proof of this is found in the fact that many of the cases were preceded by an epizootic among guinea pigs that are commonly kept running around loose in the huts.⁵⁰ It was a fairly common occurrence for all the guinea pigs in a hut to die soon after the Indian had returned from a wake, and soon after the guinea pig mortality, human cases occurred.⁵¹

Another possible factor in the transmission of the disease in the mountain districts is the occurrence of two unusual forms of the disease, both highly contagious and infectious. The one is locally known as viruela pestosa and is a manifestation of the septicemic form of the disease. It is characterized by a chicken-pox-like eruption composed of vesicles, filled with a straw-colored liquid, that rupture easily when touched. The liquid of these vesicles contains numerous plague bacilli, so that any one touching or handling a patient or a person dead with this form of the disease is extremely likely to become infected. This is particularly interesting in light of the commonplace practice at wakes for the Indians to handle, caress, and wash the body of the deceased.

The other form of the disease is locally known as angina pestosa, and is characterized by a violent form of tonsillitis and pharyngitis, with involvement of the cervical lymphatic glands. This particular type of plague is believed to be due to the

⁵⁰ Eskey, "Etiological Factors:" 2083.

⁵¹ Ibid. and Long, "*Antiplague Campaign in Guayaquil and Vicinity.*"

custom, existing among the Indians, of killing with their teeth fleas that they find on their persons and clothing. It can readily be seen how infection could find lodgment in the crypts of the tonsils if one of those fleas so killed should be infected. This form of the disease is highly contagious and infectious, just as the pneumonic type, through coughing and through the discharges exuding from the mouth and the nose.

So far as Eskey's and Long's investigations are concerned, little was found to indicate that the rats played any great part in the spread of the disease in the mountain districts, except possibly as the agent that introduced and reintroduced infection from coast cities and towns via the railroad. As a consequence, the measures recommended and carried out in the Indian villages consisted primarily of periodic poisoning to keep the rat population as low as possible, the early detection and isolation of cases, fumigation of huts for flea destruction, the prohibition of wakes in huts, and better storing of grain and foodstuffs so as to protect them from rat depredations, and frequent visits of sanitary inspectors to all Indian villages.

To prevent re-infection of the mountain districts from the coast, Long had suggested three key elements. First, of utmost importance was the establishment of fumigation centers. In this particular case, these centers were meant to primarily disinfect materials that were being transported on the railroad and between regions (coast to sierra, particularly). Zyklon B⁵² (a hydrogen cyanide) was the chemical to be used and was rather successful in controlling the spread of disease potential. Bucay and Riobamba, as has been stated above, were the two main fumigation centers for the railroad wagons when they were held overnight before heading up into the highlands.

⁵² Interestingly, Zyklon B is the same gas used in Nazi Germany at the Jewish extermination camps.

GUAYAQUIL LOSES ITS STIGMA

By October 21, 1930, Long believed that for all practical purposes, bubonic plague had been eliminated from Guayaquil and from the towns and villages situated along the Guayas River and the railroad as far inland as Huigra. It was realized, however, that in order to make sure that plague did not reappear, anti-plague measures had to be actively and continuously implemented for one or two more years. The work was carried out and, by October 1930, when Eskey and Long had terminated their work, Guayaquil had to deal with a new outlook and a new classification.⁵³

Long eventually concluded that the port of Guayaquil was no longer a menace to other countries through international commerce. By October 1, 1930 the port of Guayaquil could be reported to the Pan American Sanitary Bureau in accordance with the 1924 Pan American Sanitary Code, as a “clean” port of Class A, as long as there were no further cases of human or rat plague. Six months had to pass without a case of plague for the port to meet all the requisites that the treaty specified. Among these requirements stipulated by the Sanitary Code were included: the presences of a qualified and adequate health staff; adequate means of fumigation; adequate personnel and material for the capture and destruction of rodents; an adequate bacteriological and pathological laboratory; a safe water supply; the adequate means for the collection of mortality and morbidity data; and adequate facilities for the isolation of suspects and the treatment of infectious

⁵³ Long, “Antiplague Campaign” and “Guayaquil has Lost Place as “Pest Hole,” *New York Times*, 30 August 1931, p. E8.

diseases.⁵⁴ As Dr. Long stated, this was only accomplished through the “complete and unselfish cooperation that was extended by the officials and health authorities of Ecuador, who manifested great interest in this work, and [the] valuable aid [that] was given by their subordinates and employees.”⁵⁵

Dr. Long’s role in Ecuador was an important one because, as the article pointed out, Long was directing a series of cooperative studies of plague in the infected countries of South America under the auspices of the Pan-American Sanitary Bureau. In this capacity, he pointed out that the work already done in Ecuador “[would] be useful in the anti-plague campaign in the other countries.” The work began in Ecuador on September 18, 1929, and by the time that Long had been interviewed by the *New York Times*, he had reported that 60,000 rats had been destroyed through the use on a large scale of traps and poison. Over 150,000 fleas, carriers of the germ, had been collected, examined, and identified. The proportion of infected rats reached its maximum in December 1929 with one infected rat to each 150 examined.

In January this proportion had fallen to one infected rat to each 1,200 examined. The average number of fleas per rat reached its maximum in late November, the index being twelve, but this index fell in January to four fleas per rat.⁵⁶

Among Long’s important findings was that in the interior of Ecuador the problem was distinct from the situation in the coast towns and cities. “The so-called plague flea is not found in the mountainous districts, rats are relatively scarce, and here the disease was more often transmitted through the agency of human carriers.

⁵⁴ Pan American Sanitary Code, 40.

⁵⁵ Long, “Antiplague Campaign:” 2887.

⁵⁶ Ibid.

These carriers were the native Indians, who either became infected at the wakes held over the bodies of those who had died of plague or carried infected fleas in their clothing to their homes and villages.

By June 11, 1930, the *New York Times* was reporting that Dr. Long's efforts in Ecuador were successful. It wrote, "...after completing his anti-plague work [in Ecuador], [Dr. Long] has gone to Lima to begin a campaign in Northern Peru. Ecuadorean sanitationists regard the results of his work in Guayaquil as good grounds for hope that this joint action will rid the two countries of bubonic plague."⁵⁷

The results of Ecuador's antiplague campaign translated into a series of efforts between Ecuadorian and Peruvian public health experts in the eradication of plague. On August 8, 1930, the *New York Times* had reported that not only would the Directors General of Health of Peru and Ecuador (Nicolás Cavassa and Carlos Miño respectively) join efforts to combat bubonic plague, but that Dr. John D. Long and C. R. Eskey were to act in an advisory capacity in the carrying out of the agreement. Dr. Long was quoted as saying that he was confident that this joint action would bring the extermination of the plague on the frontier, where formerly lack of concerted action prevented control.

In the end, Long's involvement in the eradication of plague in Ecuador was no small matter. Though he was praised profusely by the American media both there and in other parts of the region, his dedication and his talent also brought him honors and praise that were more typically Ecuadorian. On June 21, 1931, for instance, President Isidro Ayora conferred on Long the degree of *Comendador al Mérito* for his successful campaign against bubonic plague. As such, his efforts

⁵⁷ *New York Times*, 12 June 1930.

were credited for the coast having been free for fifteen months, “leaving only one small area near Guamote still infected.”⁵⁸ In an eloquent testament to the work of Long and the overarching anti-plague efforts of Ecuadorian and American collaboration, Miño had stated that all of the work involved were

part of a grand effort to offer a total guarantee to both international commerce and tourism, and to strengthen the prestige of the nation before the scientific community. [This has been accomplished] by the interest and determination with which Ecuador has complied, is complying, and will continue to comply with efforts to maintain her “home” clean and thus not be an occasion for any ills to her neighbors.⁵⁹

Thus came the end to plague and to the official anti-plague campaign in Ecuador. What began as a long distant fear in 1899 became reality in 1903. Through the efforts of a systematic and moderately well organized collection and sharing of knowledge, not only was plague eradicated throughout the region, but the information gathered provided new insight into the world of plague epidemiology and control efforts.

⁵⁸ “Ecuador Honors Dr. Long,” *New York Times*, 22 June 1931: p. 12.

⁵⁹ Miño, *La peste bubónica*, 89-90.

Chapter 6

Lessons of Ecuador's Anti-Plague Efforts

In his seminal work on epidemics, French historian and demographer Louis Chevalier illustrated how various societies and countries coped with, reacted to, and interpreted epidemic crises.¹ After that there came much work that has focused on new interpretations as well as novel social, economic, or political approaches to epidemic crises. More importantly, though, a significant amount of the more recent work has contributed to a broader understanding of a greater variety of epidemic diseases, the ways they have been confronted, and how the reactions to them respond to questions raised by some of today's epidemics. A good portion of that literature concentrates on the study of plague and, most particularly for the purposes of this work, on the 1895 Third Plague Pandemic on which this dissertation is focused.

Accordingly, having looked at the Ecuadorian plague epidemic in this dissertation, I discuss in this final chapter the role of the Ecuadorian experience within that greater body of literature regarding plague and plague control. My aim has not been to provide an exhaustive interpretation or analysis of the overarching themes that could be extrapolated from a study of an epidemic crisis. Themes such as those of nationalism, nation-building, and twentieth-century modernization in Ecuador, for example, would require much more intensive research and a rather more extensive body of literature than was utilized here. My aim, therefore, has

¹ See Paul Slack, "Introduction" in *Epidemics and Ideas: Essays on the Historical Perception of Pestilence*, edited by Paul Slack and Terrance Ranger. (Great Britain: Cambridge University Press, 1992). In the chapter Slack discusses Louis Chevalier's *Le Choléra: la première épidémie du XIXe siècle* (La Roche-sur-Yon, 1958) very briefly in order to place the study of epidemics into a global context.

been a simple one: to discuss the basic facts — the story of plague and its control — within the confines of a small country in the Andean region, a story that has not yet been told.

Primarily, this chapter focuses on three major themes, all of which will attempt to situate Ecuador and its turn-of-the-century epidemic crisis within the greater scheme of international plague control. First, I will review and discuss the basic processes utilized in controlling plague during much of the first half of the century (i.e., 1895-1930). As presented throughout my discussion here, I maintain that Ecuador's "modernization-via-hygiene" approach to plague control was comprised of four major phases: (1) preparation, (2) reconnaissance, (3) the launching of the Anti-Plague Campaign, and (4) the involvement of outside influences in the eradication of plague. Thus, the chapter necessitates a brief recapitulation of those phases and their place within the overall campaign.

Second, this chapter discusses which strategies and policies failed and which were successful in the attempt to control plague. The Ecuadorian anti-plague effort was successful specifically because it put into motion a public health system and practice that focused more on a proactive, rather than a reactive, approach to epidemic crisis. It is just as important, then, to take note of what did not work (such as the obligatory vaccination policy) as it is to note what did (rat control, for example), and the reasons for why they did or did not.

Third, I will discuss the significance of Ecuador's anti-plague campaign for both the social and hygienic landscape. The work of Ecuadorian and American epidemiological experts on plague was in no way irrelevant to the overall picture of

public health in Ecuador. The truth of the matter is that much, if not all, of the collective work of these men of science contributed to a new and modern way of thinking about hygiene and cleanliness in Ecuador. More importantly, it is their observations and their conclusions that will assist us in understanding the true importance of plague control in Ecuador and in comparison to anti-plague efforts in other global scenarios.

Finally, I will discuss how all these factors (policy decisions, successes and failures, as well as social implications) coalesced in order to help Ecuador find its niche within the global community. Ecuador's experience with plague coincided with its desire to be part of a greater body of nations. Thus, not only did public health decisions help in the eradication of plague (with the cooperation of Drs. Long and Eskey, especially), but also helped Ecuador more fully join that global community by becoming a member of the Pan American Sanitary Bureau and subscribing to the tenets and policies of international maritime and health organizations. Therefore, the country's anti-plague effort possessed political implications that helped to further erode Ecuador's isolation from the outside world and modernize its political apparatus in light of the country's incorporation into the global community of the twentieth century. These are implications that require further research by a broad range of academicians and experts.

SITUATING ECUADOR'S ANTI-PLAGUE EFFORTS

Efforts to combat plague in Ecuador originated in the years prior to the disease's leaving the Chinese mainland. As we have seen in Chapter 3, Ecuador began its first phase of anti-plague efforts well before 1903 in the preparation for an impending or possible plague epidemic. Although cities along the country's coastline, such as Guayaquil, were more than familiar with epidemics and disease potential, the specter that was plague had nevertheless sent a shiver down the backs of not a few public health experts. This fear was reflected in some of the policies put into force by such heads of state as Presidents Eloy Alfaro and Leonidas Plaza Gutiérrez, but also in the preventive sanitary measures that were enforced.

The importance of timing cannot be overlooked either, for plague threatened to throw Ecuador into epidemic crisis at a time when the country was attempting to free itself completely from the vestiges of colonial domination and the backwardness of many of its political, economic, and social institutions. As such, plague was confronted not by a population or a medical apparatus that depended on a faraway colonial or hegemonous bureaucracy. Rather, it was confronted by a bureaucracy that had to depend upon its own merits and upon whatever economic, scientific, and intellectual resources it could muster up in the fight against plague or any disease epidemic. In short, Ecuador – through her political and public health representatives – had to act autonomously as the independent albeit young nation it was and this often took on a nationalistic tone as it was often viewed as a

patriotic duty of the state to guarantee the optimum well-being, health, and productivity of its citizenry, creating and maintaining a favorable environment for the elimination of those ills that exhaust

the overall health and physical stamina, as well as [the nation's] morals....²

Perhaps it is fortunate that plague forced Ecuador to prepare for its arrival when it did. Nineteenth century ideas of positivism, order, and progress had infused many of the rather new nation-states of Latin America, and this was seemingly also true in Ecuador. Under the liberal administrations of Alfaro, Plaza Gutiérrez, and Ayora, for example, Ecuador attempted to free itself from the grip of many of its conservative and ecclesiastically-influenced traditions of the previous century. It had sought to become a member of the global scene by entering the world market, by participating in international organizations, and by modernizing its social, political, and technological infrastructures.

Ecuador was, of course, part of and influenced by much of what was going on around it in the region. Among the ideas that had pervaded South American thought, in this vein, was the evolutionary theory of Lamarckism which believed that eugenics was not a matter of simple biological (Mendelian) genetics, but a more social process, a process by which customs and habits that are changed in one lifetime can be passed down evolutionarily to future generations. In the last decades of the nineteenth century, this breed of eugenics emerged as an idea in many areas of Latin America as part of the debates about evolution, degeneration, progress, and civilization. Yet, very few theories have been as criticized or as reluctantly abandoned in Latin America as Lamarckism.³ Thus, it might be safe to assume that

² Pablo A. Suárez. *Organización sanitaria del Ecuador: Espíritu de la ley actual: Presupuesto en vigencia y presupuesto en proyecto para imprimir al servicio toda la amplitud y eficacia que prescribe la ley* (Quito: Talleres Tipográficos Nacionales, 1926), 3.

³ Essential to an understanding of the influence of eugenics and its impact on race and nation in Latin America is Nancy Leys Stepan's *The Hour of Eugenics*.

much of what Ecuador and her political and public health experts did in the way of plague control coincided with this marriage of progress with a Lamarckist view of culture and of civilization; the belief that the nation's vulnerability to plague – especially in the lower predominantly indigenous highlands – was a direct result of a “cultural or social backwardness” that both social hygienists and other men of science often claimed applied to the Indians.⁴

Generally speaking, Ecuador's attempts to control plague transmission and to eradicate plague illustrate the efforts to modernize a public health system and approach that needed to catch up with the biological and epidemiological advances of the twentieth century. As Kingman Garcés so pointedly discusses, social hygiene (what the pensadores called *higienismo*) did not become a coherent aspect of Ecuador's public health apparatus until the first half of the twentieth century.⁵ To be more specific, social hygiene did not in fact become essential to the nation's political bureaucrats and officials until the 1930s when Dr. Pablo Arturo Suárez, whom we have encountered within this work, became the most influential thinker and reformer of things hygienic in Ecuador. To top it off, though elites had leaned toward the ideals of progress and social action (in imitation of other similar movements throughout the Americas and Europe), they did not abandon totally a perspective or approach that was heavily “marked by indicators of race, decency and privilege” during the eighteenth and nineteenth centuries.⁶

⁴ As discussed within this work, men of science such as Drs. Miño, Suárez, Long, and Eskey have all implied the direct or indirect involvement of the Indians in the spread of plague in the highlands.

⁵ Kingman Garcés, *La ciudad y los otros*, 273.

⁶ *Ibid*, 275.

Public health ideology in Ecuador prior to the bacteriological revolutions of the twentieth century were very dissimilar from that with which Drs. Miño, Suárez, and others had had to deal. For the most part, the care and cleanliness of plazas, streets and other public places had to depend heavily upon the vigilance of the authorities and on the action of the town's or city's inhabitants. The nineteenth century saw an Ecuador in which there existed no police force (in our more contemporary sense) since vigilance and what Kingman Garcés calls "preoccupation" were the responsibility of the community. This did not mean that inhabitants took turns at cleaning streets and paving roads. Ecuador still held on to traditions of elitism and social hierarchy and these would be reflected in the ways that certain groups were put to work in the upkeep of cities and towns.

Public health in nineteenth century Ecuador was a world of polarities. The idea of purity was put up in opposition to the idea of impurity (*puro-impuro*), and the same occurred with the ideas of cleanliness and contamination (*limpio-contaminado*). In light of the idea of social hierarchy found in Ecuadorian elitist thinking, these categories were specifically tied to ideas of race. Thus, public activities that involved the cleaning of the city were reserved for the less *pure* and less *clean*: the Indians.

The Indians who lived in the peripheral areas of Quito, for example, were uniquely responsible for the city's cleanliness and maintenance. Quite often these Indians came from city dwellers' haciendas where they most often served as *huasicas* (the quichua word for domestic servants). Once brought into the city, they were responsible for the cleaning of streets and the upkeep of drainage canals.

Quite often they were also responsible for the portage of potable water to the city's homes, and had to carry off the dead and those who had fallen victim to plague or other epidemics. Interestingly, though it is difficult to think of how they might actually accomplish this, they were also responsible for the handling of miasmas, which in the nineteenth century were thought to be the cause of illness.

As I discussed above, Ecuadorian elite ideas of cleanliness and occupation were tied to race. With this in mind it is keenly interesting to learn that those Indians had to share the responsibilities of the city's cleanliness with those people who were often thought of as the dregs of society. Especially in the transportation of the dead and the ill, Indians had to work with the indigent, prisoners sentenced to hard labor, and vagrants. This use of prisoners, for example, in hygienic work was perhaps a respite for the criminals since the trend in Latin America penology, for instance, reflected the idea that "repetitive work performed during a large part of the day aimed only at the creation of habit, not at the production of useful goods or services."⁷ Leaving the walls of García Moreno's *panopticon*, for instance, meant leaving the terror that accompanied the prison's black walls, shadowy hallways, and strict punishments for violations of silence

Thus, quite often, the social hygiene policies (if that is what we can call them) of the nineteenth century in Ecuador were quite practical and straight forward. The responsibility fell on local communities and simply accompanied municipal and communal measures enforced by whatever vigilance entity existed. Social hygiene

⁷ Ricardo D. Salvatore and Carlos Aguirre, "The Birth of the Penitentiary in Latin America: Toward an Interpretive Social History of Prisons" in their edited work the *Birth of the Penitentiary in Latin America; Essays on Criminology, Prison Reform, and Social Control, 1830-1940* (Austin: University of Texas Press, 1996), 11.

and public health as we know it came into being in the twentieth century and saw development primarily in the coastal city of Guayaquil. The highland cities, however, did not see the full modernization of public health policy until well into the third decade when hygiene and public health were intricately tied to the development of an international market in which Ecuador desperately hoped to participate. As one public health bureaucrat wrote in 1912:

[very] soon shall our ports be hygienic so that those who want to work in support of the nation's public and sanitary laws may enter freely and, in doing so, strengthen individual rights, protect health, and guarantee human life.⁸

My argument throughout this dissertation has been that Ecuador's anti-plague efforts illustrate the reciprocity between the development of public policy and political and socio-cultural modernization. Primarily, this was achieved through what I have called "modernization-via-hygiene," but also enabled the country to develop a proactive ideology concerning disease, disease potential, and the transmission of disease across borders. These could only occur because Ecuador took steps necessary to fight off epidemics as it did with plague in the early half of the twentieth century. These efforts, as discussed herein, occurred in four stages: preparation, reconnaissance, the launching of a full anti-plague campaign, and the involvement of international (American) health entities and experts.

Phase I: Preparation

As has been made clear, the first phase in Ecuador's anti-plague campaign was that of preparation. Plague's reputation and word of its spread reached the

⁸ Subdirector de Sanidad Pública de Pichincha, Quito, 1912 as quoted in Kingman Garcés, *La ciudad y los otros*, 287.

shores of Ecuador long before the disease did in 1903. Among the first things that Ecuador did in this initial phase was to place restrictions on the disembarkation of vessels that were attempting to dock at Guayaquil. Bureaucrats and public health experts were consulted and the goal was to keep the disease out as long as it could. In one particular case, this policy almost caused international diplomatic problems since in 1903, as the *New York Times* reported, Ecuador had refused to allow into port the German Kosmos Line steamer *Hermonthis*, which was travelling from San Francisco on its way to Hamburg, Germany.⁹ San Francisco was already experiencing a plague epidemic and the decision was made by the Ecuadorian Board of Health to close the port of Guayaquil from all ships originating in port-infected cities. Additionally, the members of the board had also successfully petitioned then President Leonidas Plaza Gutiérrez (1901-1905) to recall the Ecuadorian Consul at San Francisco back to Ecuador until plague had subsided in that northern city.

Under President Eloy Alfaro, in 1899, however, the government of Ecuador first established a Board of Maritime and Urban Health whose specific function was to deal with the possibility of plague invading the nation's major commercial city. In this particular case, the board had been given full authority over not only the city of Guayaquil and its port, which is where plague was most likely to make "landfall," but also over the entire Pacific coast as ships could come into contact with Ecuadorian land anywhere along that coast. Of key concern were places such as the ports of Esmeraldas or Bahía de Caráquez, which were in constant danger of plague infection because of their connection to and dependence on the sea.

⁹ *New York Times*, 26 January 1903: p 3.

In addition to protecting its coastline and its port cities, Ecuadorian officials also pushed for regulation of movement of people and products in response to the threat of an “Asian pestilence.” Some of this might be considered to have gone too far, but much of it was done, so it was said, because of the potential fears brought on by those most prone to carry plague.¹⁰ Among these perhaps most questionable actions is the October 1899 law that prohibited the continued immigration into Ecuador of Chinese persons, or the same year’s legislative decree that had ordered closed all of Ecuador’s maritime ports to all ships and cargo that were scheduled to arrive from India and Portugal, two countries that had been invaded by plague during the outbreak of the pandemic.

Consistently, reports were coming out of places such as New York and Panama’s capital, that Ecuador had kept its ports closed to ships from infected ports. Time and again, as was the case with the *Hermionth*, ships were refused entrance into ports for the simple reason that there might be plague on board. When, Guayaquil’s Board of Health had also refused admittance to the *Chili*, a steamer of British origin and which had recently left dock at Iquique (Chile), Ecuadorian officials must have felt justified for soon after its decision, news had arrived that three persons on board had died of plague and that several others were ill (from other causes).¹¹

In the end, Ecuador’s preparation phase was not successful, for it could not prevent plague from entering the country. It was, however, able to avert it until 1903 when a jute-transporting vessel had arrived in Guayaquil with a case of plague on

¹⁰ See Pineo’s brief discussion in his *Social and Economic Reform in Ecuador*, 52.

¹¹ Smith Ely Jelliffe, “Bubonic Plague on Isthmus:” 34.

board. This was all that was needed to confirm the fears of Ecuadorian public health officials, and immediately, with the guidance of American Dr. Bolivar J. Lloyd, the then acting National Director of Health of Ecuador, commissions and observation teams were sent out to check for the impact of plague on the port city and its surroundings. The disease unfortunately swept through the city and city officials attempted to respond just as quickly to no avail. Roofs were torn off infected homes so that their interiors could be naturally disinfected by the sun's rays; rats and other animals were trapped and exterminated; and anything and everything that could be chemically disinfected was. None of this really worked, of course, since the belief that the sun had disinfecting powers was as old a myth as the Black Plague itself, and the city just had far too many rats to be easily brought under control. It was not long before news articles asserted that "Ecuador [feared] the plague"¹² or that "plague [would soon be] rife in Guayaquil."¹³

The primary goal in this first phase was not simply to eliminate plague, as it had not yet arrived. Instead, the goal was to attempt to keep plague at a distance. The disease had real power, the power to instill fear and to create panic. Almost immediately, outsiders were blamed for the transport of plague across seas; the Chinese were particularly vulnerable to this blame and suffered racist attacks here as they did in other parts of South America. For both Europe and America, asserts historian Carol Benedict, plague marked China as a hygienically 'backward' country

¹² "Ecuador Fears the Plague," *New York Times*, 26 January 1903: p. 3.

¹³ "Plague Rife in Guayaquil," *New York Times*, 23 April 1908: p. 4.

that continued to incubate a medieval disease in the modern era.”¹⁴ Quite commonly, as Pineo has pointed out in his work on Ecuadorian health, viciously racist anti-Chinese articles appeared in Guayaquil city papers. The government also added to the pressure, for instance, by banning Chinese immigration (see Chapter 3). Much of this blame placed on immigrants, as has been shown in various histories of epidemics,¹⁵ was misguided as

[the] lawmakers disingenuously claimed this an effort to halt the arrival of undesirable [potentially plague-carrying] Chinese “coolies,” but they clearly had others in mind; there were few coolies in Ecuador. Seventy-three Chinese lived in Guayaquil in 1903, of which sixty-four worked as small shopkeepers.¹⁶

The preparation phase was not only an opportunity to blame others for something either unexplainable or uncontrollable. It was a way by which the government, especially under Eloy Alfaro, could work toward inculcating the ideas of progressivism and order, cleanliness, and the new hygiene throughout the national landscape.¹⁷ His public health laws and his executive decrees, for example, that focused on the need to collaborate with health experts in the civilizing (i.e.,

¹⁴ Benedict, *Bubonic Plague in Nineteenth-Century China*. In her first two chapters, Benedict offers an enlightening look into the nature of the Chinese outbreak of epidemic, its trajectory, and the connection that China has to plague in the minds of people in both Europe and the Americas.

¹⁵ Some very interesting histories of various epidemics and the “immigrant problem” can be found in historians’ works such as Allan M. Kraut, *Silent Travelers: Germs, Genes, and the “Immigrant Menace”* (Baltimore and London: The Johns Hopkins University Press, 1994), Carlo M. Cipolla, *Fighting the Plague in Seventeenth Century Italy* (Madison: The University of Wisconsin Press, 1981), Howard Markel, *When Germs Travel: Six Major Epidemics that have Invaded America since 1900 and the Fears They have Unleashed* (New York: Pantheon Books, 2004), and John C. Mohr’s *Plague and Fire* (already cited).

¹⁶ Pineo, *Social and Economic Reform in Ecuador*, 52-53.

¹⁷ An excellent source in the discussion of how the new bacteriology and new hygiene movements of the twentieth century were implemented and taught is Nancy Tomes, *The Gospel of Germs: Men, Women, and the Microbe in American Life* (Cambridge: Harvard University Press, 1998). Tomes focuses on twentieth-century America, but the discussion is applicable to a comparative study among nations in the spread of the new “gospel” of hygiene.

sanitizing) of the nation, formed much of the backbone of subsequent public health regulations.

Finally, plague offered Ecuador, as well as any other nation experiencing it, a grand opportunity to establish or reinforce public health institutions that would serve the cause of “emergency measures” and improve the nation’s infrastructure. As Cueto has pointed out for the case of Peru, for example, epidemics afford countries the precise opportunity to re-evaluate their bureaucratic infrastructure and to adapt it to face the issues that are most pressing during epidemic crises: disease control, vaccination policies, and sanitary regulations, just to name a few.¹⁸ Thus, Ecuador’s Anti-Plague Campaign would take on new meaning not for the simple reason that it eventually eradicated plague, but because it granted Ecuador the chance to survey its own strengths and faults; this became the nature or *raison d’être* of the campaign’s second phase.

Phase II: Reconnaissance

In 1903, plague did finally arrive in Guayaquil and it was thought to have arrived, as mentioned earlier, on a merchant ship arriving from its southern neighbor. Various researchers, such as Eskey, Miño and Long support this claim as do some historians like Cueto and Pineo.¹⁹ As the disease swept through the city, public officials were thrown into a frenzy and with it came new measures and new

¹⁸ See Marcos Cueto’s various works including his *The Return of Epidemics in Twentieth Century Peru* (Aldershot, England: Ashgate Publishing, 2001) for his general view on the importance of studying epidemics and how they help countries and organizations deal with crisis.

¹⁹ Refer to Eskey’s “Chief Etiological Factors,” Miño’s *La peste bubónica*, Long’s “Antiplague Campaign in Guayaquil and Vicinity,” Cueto, *The Return of Epidemics*, and Pineo, *Social and Economic Reform in Ecuador*. All of these have been cited throughout this work.

regulations that were established in any number of ways to track plague's movement and pace. On February 10, 1908, for example, Pablo A. Suárez, the Ecuadorian physician and social hygienist, had immediately thought that plague had invaded Guayaquil when a number of dead rats were discovered on the streets. On the 14th, the major Quito daily had confirmed his belief and also reported the death of several rats throughout the city. Normally, of course, a few dead rats found on a street in a major port city would not have been an issue, except that it had occurred at a time during which plague incidents were on the rise.

Preventive and defensive measures were immediately put into effect. Medical and public health experts were sent out to autopsy the dead rats, and Dr. Bolivar J. Lloyd, who played an important role at the onset of the campaign as the nation's interim Health Director and as the author of Ecuador's first public health law,²⁰ believed that if the rats had indeed died of plague, that human cases were soon to follow. Not surprisingly, the rats were discovered to have died from plague and Lloyd's prediction was fulfilled. Plague cases began to increase, reaching in the month of March alone over 67.7 per cent (225) of the total (332) number of cases of plague in 1908.²¹

The events described herein – during what I am terming the Phase of Reconnaissance – were all followed by the newspapers in Ecuador and in the United States, the *New York Times* being the one with most coverage. On March 18th, for example, an untitled *New York Times* article reported that bubonic plague was apparently prevalent in Guayaquil and that the number of cases was

²⁰ See Miño, *La peste bubónica*, 69.

²¹ Recall Figure 3.1, adapted from Pineo, *Social and Economic Reform in Ecuador*, 130-132.

increasing.²² Lloyd, accompanied by a Dr. Perry, travelled to Quito to confer with the government regarding measures to be adopted in the port city and also reported the grossly unsanitary conditions of neighboring towns. According to Lloyd, by March 18th there were already fifty-one cases of plague in the lazaretto and more were inevitable.²³

Upon the discovery of plague, city and public officials had deemed it necessary to mandate that certain measures be enforced. On February 14th, four days after Dr. Suárez had reported his own suspicion of plague, the *El Comercio* (Quito's main newspaper) dedicated a significant portion of its morning edition to the government's reactions to the plague scare. The daily emphasized the government's unconditional and unmitigated support for the work of public officials and cited some of the actions it took in closing off ports to outsiders: the division of the city into wards for easier control, the denial of entry to ships that had not undergone the process of disinfection or fumigation, and the refusal to allow ships originating in ports south of Ecuador from even entering Guayaquil's harbor.

President Alfaro became involved during this phase also by establishing, for example, two more boards of health in Quito and Cuenca. This was done in the attempt to blanket the coastal and highland regions of the country under anti-plague regulations and preventive measures that, under a different executive decree promulgated the same day, required that a special commission on public health be created. Again, this commission was to be directed by an officially degreed and accredited medical health officer.

²² No title, *New York Times*, 19 March 1908: p. 4.

²³ Ibid.

The second phase of Ecuador's anti-plague effort, then, consisted of what I have termed a reconnaissance. It was a surveying, in other words, of various areas that were seen as being prone to plague or in need of prevention. First and foremost among these was Quito, which as the political and cultural capital of the nation, was perceived as top priority in keeping it safe from disease and disease potential. The problem was not only political, but it was also biological. Highlanders, on the whole, had been isolated from tropical diseases, since they so frequently travelled to the coast. Diseases of the coast usually remained there and this was true, at least, up to the time when the railroad opened communication and transportation between the two regions.

The reconnaissance of the Ecuadorian landscape was comprised of a number of measures all of which were geared to the physical, medical, and physical factors that could contribute to a plague epidemic. The process of surveying fell to the various cadres of hygienic inspectors whose job was to determine the sanitary wherewithal of the general population and, specifically, of those areas which were most in danger of falling victim to the scourge. These cadres included, for instance, members of the Hygiene Inspectors *ad honorem* as well as the members of the Anti-Plague League (*la Liga Antipestosa*), both commissions being formed in response to suggestions made by American specialists (such as Lloyd and Long), supported by the executive branch of the government itself, and carried out by Ecuador's public health apparatus.²⁴

The reconnaissance included the inspection of private homes, public spaces, and municipal buildings, and recommendations were made on the basis of the

²⁴ See Miño's *La peste bubónica* for an excellent discussion of these commissions.

newest bacteriological, sanitary, and public health knowledge available at the time. Committees such as the one comprised of Dillon, Larrea, and Pérez, in particular, helped paint a portrait of sorts of Ecuadoran health standards and then attempted to extrapolate them to a larger area that was aimed at eventually incorporating the rural regions of the nation in the combating of disease via hygiene.

Committees such as these often received the support of quite a variety of officials and provincial representatives. In one documented case, Abelardo Martínez, it will be recalled, who represented Quito on the city's municipal health commission, had expressed his pride in the humanitarian work of these committees and offered them whatever support they required. Eventually, these commissions came back with recommendations and suggestions regarding hygiene in the capital city and throughout the national territory that was comprised mostly of sanitary recommendations originally made by Dr. Lloyd. These were a result of their observations in cities as well as in homes, and quite often they reported rather publicly the sorry state of homes that were not considered to be clean or hygienically up to standard.

The reconnaissance phase primarily aimed at surveying the landscape, but perhaps what is most important about this phase is its actual recommendations. Committees such as the Anti-Plague League recommended that homes and buildings be constructed in new ways and that kitchen, specifically, be built in such a way as to restrict access to rats and other vermin. Doors and windows were to be widened, metal was to be used instead of wood where possible, chimneys were to be made in such a way as to ventilate kitchens, and walls were to be whitewashed

as frequently as possible. All of these recommendations were in keeping with current anti-plague thinking throughout the globe.²⁵

The problems raised by the second phase were not small in any way, either. Many private homes were in disastrous conditions, but the homes of the elite or the socioeconomically advantaged met well the standards and not a few owners were commended for their cleanliness. Other buildings, such as municipal buildings and even the Sucre National Theater building were practically condemned by the commission for their filthy, unsanitary, and unsafe conditions. Since the country was on a modernizing track, and since many of the members of those surveying committees were presumably influenced by the new positivistic thought that was popular in Latin America at the time, hygiene was given new prominence, and communities were encouraged to view hygiene and cleanliness as something to be strived for since “good hygiene [was viewed as] one of the best and greatest benefits given to [society] by education.”²⁶

Throughout the country, steps were being taken in the constant watch against plague. Monies were diverted to public health measures, and buildings were constructed that were designed to care for the infirm or for bacteriological and chemical research, as was the case in the predominantly Afro-Ecuadorian province of Esmeraldas in the northwest. Yersin and Haffkine serum were ordered from Lima, for instance, and distributed for a vaccination program that in the end was both limited and ineffectual. Eventually, by October of 1908, soon after plague was

²⁵ See, for example, Mohr's *Plague and Fire*, Echenberg's *Plague Ports*, Harrison's *Public Health in British India* (all previously cited throughout this work) for a comparison. Also recommended is Echenberg's *Black Death, White Medicine: Bubonic Plague and the Politics of Public Health in Colonial Senegal, 1914-1945* (Portsmouth, N.H.: Heinemann, 2002).

²⁶ Inspectors' report, 24 March 1908, ASSQ.

reported at the foothills of the Andes, Ecuador saw its first Public Health Law (drafted, as mentioned, by Dr. Lloyd).

It was when plague did finally move inland that government authorities officially declared plague's presence in Guayaquil and announced an epidemic. This was not done willingly. Dr. Long, who had been in Guayaquil at the time, had to insist on the declaration of an epidemic, and unfortunately one of Ecuador's key bacteriologists and chemists (Dr. Ramón Flores Ontaneda) had to die from an infection caused by the very same vaccine with which he was working, a death that captured international media attention.²⁷

By 1913, the Ecuadorian plague epidemic had deeply impacted the country. Cases were appearing sporadically with neither rhyme nor reason, and the government attempted to establish a sanitary campaign for which it reserved a total of S/.200,000 sucres. Part of the money was used for the purchase of the Haffkine serum so that a vaccination campaign could get started. The vaccination campaign did not last long, but was able to treat an approximate 20,000 people. Reasons for its abandonment focused on the idea that people were still getting sick (2% of those vaccinated) despite being vaccinated and that a much more effective method of prevention came from the standards recommended by contemporary scientific hygiene and public health experts

Special attention was directed to the movement of people between and among provinces and regions. Of special suspicion was the railroad which seemed to travel along plague's path as it invaded town after town. The focus, then, would shift to disinfection and much more intense regulation of cargo and transportable

²⁷ "Plague Rife in Guayaquil," *New York Times*, 23 April 08: p. 4

goods. Meats, grain sacs, and entire train wagons had to undergo various processes of disinfection. Buildings were constructed for these purposes, and the level of safety and precaution was upgraded so that a true anti-plague campaign could begin in 1916.

Phase III: Launching the Anti-Plague Campaign

1916 was the landmark year for Ecuador in its struggle against plague. It was the year in which the campaign really went into overdrive on the part of the Ecuadorians who were involved in the process. A more conscious and intensive effort was made to eradicate plague. The Anti-Plague Campaign after 1916 took on a much more scientific and methodical identity as Miño and his colleagues began to seriously focus on those approaches to plague control which seemed to be the most efficacious. Most of these, rather than being vaccine-oriented, focused on some sort of rat control, capture, or extermination.

Thus, between 1916 and 1929, the Ecuadorians focused on the capture and the autopsying of rats. Not only were rat-catchers and rat-trappers going from region to region in the search for rats, but health delegates and sanitation officers like Leopoldo Vera (whom we met in Chapter 4) had the duty of inspecting homes and reporting those homes that did not meet current sanitary mandates. It is still a bit uncertain as to what would have been the penalty for keeping an unkempt home. No documents were ever found that implied that a fine or punishment was imposed. The most common occurrence, however, seems to have been humiliation via the public announcement through publication of homes such as those in Quito that were

considered substandard and filthy. Perhaps it was just a simple matter of embarrassment, but it would be interesting to find out if there is anything in the archives that could still be ferreted out.

The inspectors that worked for Miño's Health department were not the only ones to bring the Anti-plague campaign out into the field. Quite often enough, the national director himself, since taking over the position in 1908, took on the charge of inspecting and visiting homes, doing so with the expressed intention of accumulating information and data so that he could better understand the disease and its vectors. Miño's involvement in the campaign became exponentially more important as the epidemic progressed, for with the knowledge he accumulated, he attempted to set public health policy. In doing so, he utilized the expertise of such figures as Dr. Lloyd, Surgeon General William Gorgas, and Dr. Long of the United States, all of whom had gained more than enough experience in dealing with epidemics throughout Latin America and in other parts of the world.

An important focus of the Anti-plague Campaign at its peak, however, was still the railroad. All parties involved believed that the railroad was the major instrument of plague transmission among rats and from rats to humans. As such, representatives of the Quito-Guayaquil Railway Company provided their support to the public health director and kept him updated on their policies and any changes made in the carrying out of their normal procedures. Disinfection and cleaning of railway facilities took on a new sense of urgency, and the death of a railway chief's 8-year-old son was sufficient impetus to make certain that procedures were carried out to the letter.

The anti-plague campaign sent out pamphlets (see Figure 4.7) and published announcements in newspapers about how to keep homes and property clean, claiming, for example, that hygiene was the “tonic for a healthy life.” It made suggestions as to how to deal with grains and other comestibles that were normally attractive to rats, and it also addressed how the highlanders ought to house and look after their guinea pigs, which of course, had their own special social significance. Changes in these regards were small, but they only appeared as such. To change the way rural inhabitants raised their guinea pigs, for example, meant changing customs and habits that did not die easily so ingrained were they in Andean culture.

The efforts to combat plague during these years were accompanied by a wide range of support from individuals, communities, and institutions. We have seen examples of individuals participating in the campaign, but we have also seen how institutions willingly partook in the inspection process, and how indigenous (as well as more socioeconomically able) communities took it upon themselves to acquire the materials needed in order to follow through with the new standards of hygiene, thus protecting themselves from the dangers of plague infection. One only need to look at the evidence provided by the cases of Gualniche or Guamote (both predominantly indigenous towns), or even that of the more high end Ciudad Loja in Cuenca, to understand that the idea of hygiene was at least momentarily making its mark on the lives of communities as a whole.

Ecuador’s Anti-Plague Campaign received the attention of outside sources as well. We saw how the *Pasteur Laboratories of America*, for example, attempted to gain the business of Ecuador’s public health administration. We saw how private

enterprises in Ecuador also attempted to get people to follow through with the new standards by offering new constructions, or new homes that met those standards. Even beverage companies saw the epidemic crisis as a moment during which to address the concerns of a people plagued by fear. Of course, in hindsight, much of this (the effervescent beverages and the “natural” elixirs”) was unwarranted, knowing what we know now about plague’s epidemiology and its transmission. People being people, however, will try anything if it at least promises a solution to a problem.

Under the rubrics of the campaign, zealous effort was placed in the attempt to control the movement of plague across regions and across provincial borders. It was believed, for example, that plague had to be contained on the coast where there existed better-equipped medical facilities and more capacious lazarettos for those who became infected with the deadly disease. The reality, however, was that it was difficult to control the movement of people who might be harboring the microbe in their clothing, on their bodies, or in their sputum. As such, policies under the umbrella of the campaign required the disinfection of passengers and their belongings whenever and wherever they travelled by train. Fumigation centers were set up wherever trains had to remain overnight (in Bucay or Durán, as an illustration), and people often had to travel with vaccination certificates while that policy was in effect.

Quite often, when a town or an Indian village (caserío) experienced cases of plague, drastic measures were taken in order to contain and control the spread of the disease. These measures included everything from the disinfection of the homes and the belongings of the infirm, but also went as far as the removal of

animals and people from buildings that sheltered a plague victim, as well as the complete isolation of the sick. This often upset people and, as the Assistant Public Health Service reported for the case of Alausí in 1913, “the presence of plague caused panic in not a few inhabitants “and it was often “difficult to convince the public to effectively support the measures adopted in such critical circumstances.”²⁸

Measures such as these were not uncommon. The Anti-Plague Campaign, when it was in full force, had as its goals two priorities: (1) the elimination of sources of infection, and (2) the vaccination of healthy people. Time and again, we have seen in histories of epidemics that public health experts of the nineteenth and twentieth centuries quite often resorted to what we would think of as simply misguided responses today. James C. Mohr, for example discusses, the burning of entire neighborhoods in Honolulu during its experience with plague,²⁹ somewhat reminiscent of the burning of entire homes (or at least their roofs) in the Ecuadorian highlands. Myron Echenberg, in discussing plague in colonial Senegal, finds it a fascinating effort to graft African symbolism and purification practice onto the Western control measure which the plague lazaretto represented.³⁰

The primary human element behind the Anti-Plague Control was the body of people whom Dr. Long and others called the Rat-boys. As the name implies, most were young men, but their function was not so easy. The extermination of rodents – and rats specifically – was the cornerstone of the campaign. As such, double walls (where rats could build nests, multiply, and die) were destroyed; crawl spaces were

²⁸ Assistant Public Health Service to the political administration of Alausí. Alausí, 9 April 1913, AJPA 1913.

²⁹ Mohr, *Plague and Fire*.

³⁰ Echenberg, *Black Death, White Medicine*, 164.

blocked or eliminated; holes were filled; and traps were set wherever there was even the most remote possibility of a rat's finding safety. Teams of rat-boys were equipped with traps and their goal was simple: trap as many live rats as possible. These rats would then be sent to the laboratories in Guayaquil (and a few to Quito) where they would be cut open and checked for signs of plague infection. Fleas were separated from their hosts, counted, and classified.

It was not only rats that were caught up in the business of fighting plague, though. Miño focused on any creature that could harbor fleas and that could be in contact with humans; including other human beings themselves. The reader will recall Table 4.1, which illustrates the various species that were under the very watchful eye of Miño and his staff: rats, mice, guinea pigs, dogs, and humans. No creature was free of suspicion and some were persecuted with more vigor than others (the case of dogs, for example) by a small number of sanitation delegates. The experts took it upon themselves to meticulously count as many fleas as they could find or that were brought to them.

Perhaps the most interesting thing that was discovered at the height of Ecuador's anti-plague campaign was the human being as a primary vector in the spread of plague in Ecuador. This was especially true in the highland areas where people were less strict in maintaining regular hygiene and where traditions among the indigenous were less apt to die. Public health experts such as Suárez, for example, who had no great love for the habits of the indigenous people, believed that many of the Indians' traditions were culpable for the spread of (pneumonic) plague. They were, of course, referring to the peculiarities of Indian wakes and

festivals when and where participants drank themselves to the point of total inebriation (chicha being the beverage of choice); where they slept on the floors where their clothing and their food were accessible to rats; and where they would share the clothing and other articles (ponchos, for example) of plague victims at funerals.

Suárez addressed his concerns and emphasized what he believed was the state's responsibility to all of its citizens, whether they were indigenous or not. For him, the Board of Health was the highest sanitary authority. It was the institution with the widest purview in "orienting, guiding, and controlling all local goals with only one end: to create an environment appropriate for the improvement of civilization and the nation's culture."³¹ Thus, Ecuadorian public health policy in the twentieth century incorporated scientific and technological characteristics that were oriented toward generating the growth and development of the cities and their populations.

Ultimately, the campaign's third phase was a segway of sorts for some of the most intensive of efforts that would be seen in Ecuadorian epidemiology. The knowledge that was gained during this phase was indispensable to how Americans Dr. Eskey and Dr. Long would approach their own internationally-sponsored anti-plague efforts in the laboratory once the United States Public Health Service and the Pan American Sanitary Bureau became involved. The two men did not come to Ecuador to do what the Ecuadorians could not. Instead, they brought their expertise and their resources in order to collaborate with a country's body of experts whose experience with plague was unique and which offered new knowledge to be utilized in the complete eradication of plague in the global scenario.

³¹ Suárez, *Organización sanitaria del Ecuador*, 4.

Phase IV: The Americans Pitch In

The major and final thrust of Ecuador's anti-plague campaign came when the team of Eskey and Long became intimately connected to the work of vector eradication. Under their direction, much scientific knowledge was acquired and even more rat extermination was conducted in the attempt to understand plague in all its facets. Both Americans were sent by the United States Public Health Service, and Ecuador was only the first – but very significant – stop on a tour of South America that had as its aim the vanquishing of plague from the region.

The Americans' effort took two forms: laboratory work and consultation in keeping with the agreements made between Ecuador and, among others, the Washington Sanitary Conference of the early twentieth century. The laboratory work was predominantly conducted by Eskey, who used his teams of investigators to collect, classify, cut open, and investigate rats and a few other rodents. I have outlined in Chapter 5 some of his intensive work as well as some of his conclusions. The task before him was intensive, repetitive, and dangerous to say the least. The goal was to find out what the entomological vectors of plague were in Ecuador. His experience and expertise centered on entomology and it is the main reason for why he was brought to Ecuador. The question to be answered: What insects transmitted plague when *Xenopsylla cheopis* was absent?

Long, on the other hand, played two very important and distinct roles. On the one hand, he served as a major, if not *the*, main consultant on plague eradication in Ecuador. Much of his time was spent in meeting with and the advising of commissions. He travelled often between Guayaquil and Quito, and he sent letters

to Presidents as well as archbishops regarding public health policies and recommendations, always on the constant look out for new measures to be put into place. On the other hand, he was also very much focused on rat control. His main goal was to capture and exterminate as many rats as possible, with the belief that this would be the best way to control plague. Long's rat trapping policies were uncomplicated: catch as many as possible.

Long's research not only helped determine what areas of the Ecuadorian territory were more likely to suffer an incursion of plague, but focused on Guayaquil's own status as a city in which plague had over the years become endemic. His conclusions, for example, that Guayaquil had more rats per capita than other similarly sized cities, that the city's infrastructure and building construction were of poor quality and amenable to rat infestation, and that the city's outlying areas were abysmally unsanitary all helped Ecuadorian politicians focus their energies on cleaning and modernizing the city.

The significance and importance of the Americans' involvement in Ecuador's anti-plague campaign, therefore, lies in the goal of classifying Guayaquil as a clean port. Throughout the twentieth century, and especially during the first half on which we are focused in this dissertation, Ecuadorian political officials had been in the constant search for ways by which to incorporate itself more completely into the global economy. Unfortunately, in an age of overseas transportation, international commerce, and increasing tourism opportunities, this would only be possible if the country's ports could claim to be Class-A clean ports (i.e., free of disease epidemics). Earning this classification, in the minds of politicians like Ayora, would

enable Ecuador to be a full member of a more civilized community of nations and then create potential for other economic opportunities, opportunities such as tourism and new construction.³²

Ultimately, the Americans' involvement is also a showcase for Ecuador's cooperating with the world. Long had applauded Ecuadorian preparation and initial investigations prior to his arrival in Guayaquil. He consistently praised the participation of Ecuador's public health authorities in the campaign, but made special mention of the zeal with which they performed their functions, saying that it could not have been accomplished without their help and that Ecuador was a clean port because of that cooperation.³³ Of course, Long also stipulated that it would only continue to be a clean port as long as measures were maintained and that "very little laxity [was] presented."³⁴

DECISIONS AND REACTIONS IN RETROSPECT

No epidemic crisis has ever been confronted perfectly. That is to say, no epidemic has been dealt with in the absence of obstacles, problems, or failures. As our story demonstrates, this has also been true of the Ecuadorian experience with the plague pandemic. Overall, despite the limitations and obstacles that faced Ecuadorian public health officials and delegates, there was a general sense of accomplishment. Thousands of rats were caught and exterminated. Homes, public spaces, food warehouses, and railway cars were disinfected and fumigated. There was a general sense that a good proportion of Ecuador's inhabitants accepted or at

³² "Ecuador is Seeking to Draw Tourists," *New York Times*, 12 October 1930: p. E8.

³³ Long, "Antiplague Campaign:" 2887.

³⁴ Ibid.

least tried the new hygiene. All these factors make Ecuador's response to plague an effective one. This is not to say, however, that it was a success easy to come by. Indeed, the Campaign enjoyed a moderate success because it saw its fair share of resistance, faults, and problems. Most importantly, it is significant, though, because it set the stage for the complete eradication of plague with the invaluable assistance and expertise of the Americans who came to collaborate with their expertise and experience so necessary at a time when so much about plague was still little known.

Many of the various policies that were set in place from beginning to end of the campaign were successful. But, there were a few policies that were misguided due to ignorance or to a lack of necessary knowledge. This was, as has been discussed earlier, more prevalent in the initial phases of the campaign than at any other time. Evidence has shown us that the attempt to prevent plague from entering Ecuador was often colored by fear, dread, and the assignment of culpability. The attempt, however, also involved cultural, political, and economic dimensions that coalesced with anti-plague efforts in the modernization of hygiene. Thus, it is important for us to take note of what actually failed and what succeeded in the fight against the disease, and to take into consideration the concept of unforeseen consequences as they help us understand the Ecuadorian pandemic.

What Did Not Work

First among the more misguided reactions was the anti-Chinese immigration policy of 1889. The Chinese, as well as those of other nationalities, had been migrating to South America for some time prior to plague's appearance. The fact,

however, that plague had come out of the Chinese province of Canton, for example, did not make it any easier to still the enmity and the fear that came with the arrival of new people and new cultures to a rather homogenous (Spanish American, Catholic, and mestizo) society. The fear was great, obviously, but there was no need to restrict immigration. Ecuador was a destination on too few people's minds and, although Ecuador had attempted to attract white Europeans, it never proved to be a big draw. Most Europeans, according to Pineo, preferred an Atlantic orientation and, consequently, Ecuador was simply too far away and just too isolated from the European metropolises.³⁵

Experience has also demonstrated that many societies have blamed the "other" in the spread of epidemics. The blaming of foreigners is nothing new to the study of epidemic crises. In the seventeenth century, as historian Carlo M. Cipolla discusses, Muslims and Jews were often blamed for the spread of plague and cholera, for poisoning water wells, and were often accused of kidnapping, killing and eating children.³⁶ Historian Howard Markel, in his work, also addresses the treatment of migrants and makes it clear that, at least in the United States, "[a] convenient target for the dangerous conflation of epidemic disease and social scapegoating...has [often] been the immigrant."³⁷ But, the Chinese, as Benedict has asserted time and again, have had to bear much of the weight of the blame game

³⁵ Pineo, *Social and Economic Reform*, 52.

³⁶ Carlo M. Cipolla, *Fighting Plague in Seventeenth-Century Italy* (op. cit.) for a brief but extremely interesting story on fears, reactions, and policies that were related to the treatment of foreigners and religious dissenters.

³⁷ Howard Markel, *Quarantine! East European Jewish Immigrants and the New York City Epidemics of 1892* (Baltimore and London: The Johns Hopkins University Press, 1997), 4-5.

when it came to plague, especially seeing as how the third pandemic originated in China and seeing how China was often perceived as a backward country.³⁸

Many Ecuadorian hygienists and politicians bought into the blameworthiness of the Chinese migrant and, despite the latter's small numbers in Ecuador, still found them a feasible scapegoat. As I have mentioned elsewhere here, the Chinese were often excluded from membership in important social and economic organizations and were quite often barred from Guayaquil's Chamber of Commerce. This was also true for persons of nationalities other than the Chinese because, as Lois Roberts has pointed out, the economic stagnancy of the late nineteenth century in Asia and the Near East (Turkey and Lebanon, primarily) brought a fair but not significant number of immigrants to Ecuador's shores.³⁹ Once there, these immigrants set themselves to what they knew best: they often became shopkeepers or merchants and tried to become part of the Ecuadorian, or more specifically the Guayaquilean, fabric of society.

Generally speaking, the campaign to fight off plague was limited, and it was so in a number of ways. Economically, the Ecuadorian campaign (excluding the help of the Americans and their concomitant resources) was limited because Ecuador did not have in its coffers the financial resources necessary in carrying out a full-blown campaign that addressed the nation as a whole. Despite the fact that the national government, for example, had dedicated a whopping 20.3 per cent of its already

³⁸ Benedict, in her *Bubonic Plague in Nineteenth-Century China*, offers an intriguing discussion on the perceptions of China as a backward and plague-transmitting society and how the Qing epidemics solidified the European view, for example, that China was the original home of plague.

³⁹ See Roberts, *The Lebanese in Ecuador: A History of Emerging Leadership*, 11-26, for an interesting discussion on the history and background of the Lebanese migratory experience to Ecuador.

limited 1909 annual budget to health care and to sanitation, only a small percentage of Ecuador's residents saw any fruit of that investment. There were, as the sanitation delegates so often complained, never enough rattraps or rat poison. There was seldom an adequate amount of creosote and lime for disinfection purposes, and, of course, there was seldom enough manpower to carry out the wishes or mandates of the public health authorities. Our own sanitation delegate from Chapter 4, Mr. Vaca, was just one of the many delegates who complained that so many of his efforts were fruitless, caused as it was by his isolation and his being left alone to carry out such a heavy task as making home inspections in his assigned district.

The campaign was furthermore limited in terms of the expertise that was available. Although Ecuador had a fair number of public health experts, bacteriologists, and social hygienists available during the crisis, these men of science were often left having to deal with an entity of which they were uncertain. In other words, plague was a new disease to the Ecuadorian officials and, as such, required a set of skills and a knowledge base that they simply did not possess. Miño and Suárez maintained contact with the outside world of experts, but until Lloyd, Eskey, and Long came into the picture they were encumbered by the obstacles that often accompany ignorance and trial-and-error learning.

The problems that accompanied this ignorance, though, were compounded by the medical thinking of the time. Even in the countries of Western Europe or in the United States, blessed as they were with advanced medical knowledge, conventional thinking about the origin, spread, and treatment of disease continued to

rely upon centuries-old medical wisdom little modified by time. The prevailing opinion, for instance, maintained that disease was spread either by contagion or by infected airs, and that these infected airs – miasmas – were tainted by putrefying organic material. Physicians commonly believed that all disease stemmed from a single cause – poisons in the system – and thus they often mandated the use of doughty measures such as purging and blood-letting to rid the body of whatever toxins might be causing it to lose its natural balance. Thus, medical care throughout much of the nineteenth century and even into the early part of the twentieth century continued to be based upon serious misconceptions; treatment too often proved to be ineffective or even harmful. This, of course, would all change with the advent of the new bacteriology and the microbiological discoveries of Koch and Pasteur.⁴⁰

Moreover, the campaign workers were simply outnumbered. The estimated number of rats that were, for example, in Guayaquil is staggering. In his own studies, Long had attempted to do the calculation, and he generally believed that the number of rats in Guayaquil exceeded the normal number accepted for similar large cities. He believed that since the average city had one rat for each inhabitant, Guayaquil must have had many more as most of the city's construction was based on "light materials, such as bamboo side walls covered with mud or plaster stucco, wooden framing, and sides with double walls and partitions[.]"⁴¹ So, for the

⁴⁰ Numerous historians have discussed nineteenth-century medicine and medical practices in Europe and elsewhere. Among them are the already cited Nancy Tomes' *The Gospel of Germs* and David Arnold's *Colonizing the Body*. We can also include Nancy Stepan's *Beginnings of Brazilian Science: Oswaldo Cruz, Medical Research and Policy, 1890-1920* (New York: Science History Publications, 1976), Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York and London: W. W. Norton & Company, 1997), and Charles Rosenberg, *The Cholera Years: The United States in 1832, 1849, and 1866* (Chicago: University of Chicago Press, 1962), just to name a few excellent discussions pertaining to the dynamics and shifts of nineteenth-century medicine.

⁴¹ Long, "Antiplague Campaign in Guayaquil and Vicinity." 2883.

Ecuadorian teams of rat-catchers and rat-trappers, the lack of economic resources would have placed limitations on the number of rats that could be caught. Add to this the degradation of trapping materials and cages (another common complaint that came from the delegates) and we can see how it might have been difficult to run a fully successful campaign to exterminate rats.

Finally, and perhaps most importantly, there was the single issue that most limited the anti-plague campaign: the human being as vector. Much of what was known about plague was based on the European and Asian knowledge that associated plague with rats. This much was easy to understand, but in cities, towns, and villages that were situated in altitudes higher than that in which rats could live, there was no way of explaining the transmission of plague. High altitude meant no rats; no rats meant (supposedly) no rat fleas; no rat fleas meant no pestis bacteria. Or, so they thought. Too little was known about the plague bacillus to consider any cohesive scientific theories about plague transmission, but eventually officials began to equate the spread of pneumonic or tonsillar plague with, first, the movement or conveyance of Indians who were infected with the disease and, second, the traditional habits and customs identified with the living conditions of Ecuador's indigenous population.

Ultimately, as far as the human vector was concerned, the most crucial role to be played in plague transmission in the Ecuadorian highlands was played by the human flea (*Pulex irritans*, see figure 5.2), affirming perhaps, Echenberg's idea that only rarely does bubonic plague cross over to humans from rats because of the rat

flea.⁴² It will be recalled that in Miño's study many more fleas were discovered on the bodies of human carriers. Interestingly, there were even cases of rat fleas found on the bodies of people (see Table 4.1). Pablo Suárez had no problem knowing who and what to blame as he viewed the Indian condition as one of poverty and backwardness.⁴³ He believed it was their customs, culture, and traditions that caused such ailments as tuberculosis, plague, alcoholism, etc. Perhaps one can make the argument that it was much easier to blame the Indians in the spread of plague in Ecuador, but the Indian factor does not account for the high number of plague cases on the coast (where relatively few Indians lived) or, conversely, for the high number of epizootic deaths among rats, since so few Indians living in the upper highlands ever came in contact with rats.

What Did Work

Most of the anti-plague policies that did actually work, on the other hand, took place during the campaign's third and fourth phases, when the Anti-Plague Campaign was in full effect. In other words, it was the agency of and effort made by individual as well as collective members of society and the public health apparatus that made the difference. The members of the commissions and anti-plague leagues that were sent out to reconnoiter, to inspect, to cite, and to report homes in violation of public health measures utilized whatever tools they had at their disposal to obtain the cooperation of the people they were visiting. Armed with a view to improving and educating society and a philosophical approach that reinforced the

⁴² Echenberg, *Plague Ports*, 6.

⁴³ Once again, see Clark's "Racial Ideologies" for her brief discussion on social hygienist Pablo Suárez and his Lamarckian view of the Indian's condition in Ecuador.

ideas of positivism, modernity, and progress, these inspectors had the charge of surveying a nation that, for all intents and purposes, was only recently going through the processes involved in national integration and nation-building.

It is what came of these surveys and inspections that made the campaign effective. Although plague could probably have had more of an impact on the lives of Ecuadorians, I believe it did not do so because of the efforts put forth by these hygiene inspectors and the policies set in place throughout the campaign. As a result of approaching plague potential with the lessons of the new hygiene and the new bacteriology as soon as word reached Ecuador about the pandemic, hygiene inspectors, bacteriologists, and public health experts set themselves to implementing changes in the social and hygienic landscape of Ecuador. These changes came in the form, for example, of new techniques in the construction of buildings, especially on the coast. No longer were buildings to be constructed with the light materials (such as bamboo) that rats found so attractive as shelters. Rather, steel and other metals were to be used. Homes and public spaces were to be cleaned and disinfected regularly, and wastewater was to be removed at more frequent intervals so that odors and waste did not have the chance to attract unwanted vermin.

Hygiene, and the civility (“cultura” or “educación”) that it supposedly represented, was to be applied throughout all levels of Ecuadorian society. Private homes were to be kept clean, sewers and plumbing maintained or repaired, and stores and warehouses disinfected as frequently as possible. The penalty for not carrying these measures out in the city of Quito, for example, was embarrassment and denunciation; the reward, commendation. Such was the case with the homes of

Merced Coronel, Pablo Vascones, and others, for example, that were illustrated in Chapter 3 in my discussion of the work of the inspectors *ad honorem*.⁴⁴

Interestingly enough, strong criticism was applied to municipal buildings and monuments of Ecuadorian patrimony. Municipal buildings were often recommended for complete disinfection and fumigation (and a few, such as in Guayaquil were actually burned down!) as they often also held the daily food market on the bottom floor, a place where rats would find more than their fill of scraps and nesting material.⁴⁵ The National Sucre Theater, in what is now downtown Quito, received much of the inspectors' attention, it will be recalled, because the inspectors had viewed the theater as a symbol of Ecuadorian heritage and as such should have served as an embodiment of hygiene and modern cleanliness.⁴⁶ A progressive and modernist approach would have held the state itself as an exemplar and with it the small corps of intellectuals who deployed their expertise (and skills) in the service of the nation-state. After all, "[most] Ecuadorian residents were excluded from these projects [of modernity] by racism, poverty, and lack of education."⁴⁷

The campaign's focus on the railroad was not only well intended, but also well organized. Miño and Gorgas were right to believe that the railroad would be the main vehicle of plague invasion in the highlands. The towns and cities that most frequently saw cases of human plague in the highlands were those that lay along the railroad route, and thus a simple connection between plague and rail transport could

⁴⁴ "Inspectors' Report," 24 March 1908, ASSQ.

⁴⁵ No title. *New York Times*, 19 March 1908: p. 4.

⁴⁶ Ibid.

⁴⁷ See Sarah A. Radcliffe's "Geographies of Modernity in Latin America: Uneven and Contested Development" in Nicola Miller and Stephen Hart, ed. *When was Latin America Modern?* (New York: Palgrave MacMillan, 2007), 36.

be made. Immediately, public health regulations were established that concentrated on the disinfection and fumigation of the railway cars and their cargos, especially at the fumigation terminals (Bucay and Riobamba, for example) where trains often passed the night before heading on to their destinations the following morning.

Additionally required from railways passengers were such things as vaccination certificates, as well as papers that certified the sanitary and hygienic treatment of salted meats travelling between regions on the train. Both of these policies, despite the former's ultimate abandonment, helped in the control of what was being transported. Evidence has shown us that these railway-focused measures were not only effective, but that they more often than not received the full support of the railway company's executive and station managers who not only maintained these measures in effect, but also communicated their updates and their findings to Miño's office.

I believe it was the Anti-Plague Campaign's impact on Ecuadorian society and culture that is of most importance and significance. Among the many policies and measures taken to prevent plague, none were perhaps more essential than the ones that were directed at the quotidian habits of the rural or indigenous classes. The recommendations, for example, to build a new type of meshed guinea pig hutch was highly effective. Those that followed the measure were able to limit the contact that these small socially, economically, and culturally invaluable creatures had with rats (thus eliminating any possibility of an epizootic among the guinea pigs). More importantly, though, such measures taught the rural classes not to cohabitate with their animals and to keep their floors clean and free of animal excrement and the

remains and scraps of food and waste that naturally attracted rats and other types of vermin.

Other recommendations that addressed the customs of the indigenous, for example, included their sleeping arrangements, as well as their funereal customs. As has been mentioned in Chapter 3, it will be remembered that the indigenous customarily slept on the floor and that their clothing (the poncho, specifically) also served as the bedcovers. In short, they carried their bedding on their person wherever they went. Sleeping on the floor, thus, attracted fleas and other vectors to hide or live in the fabric of the clothing. Thus, the new measures had suggested that people sleep at least 50 centimeters off the floor on a wooden plank so as to limit access to the creatures that roamed the night floor.

Finally, new anti-plague measures addressed the funereal customs of the indigenous. The measures prohibited the traditional Indian wake, but also made arrangements to build buildings whose aim was to serve as funeral parlors. These parlors limited the contact between the deceased and the mourners, thus keeping to a minimum the potential for the spread of disease via human flea, body lice, and bed bugs (*chinchas*). These buildings were disinfected and cleaned regularly, but more important was the communicating to the indigenous of the usefulness of the new hygiene, which frowned upon the killing of lice with their teeth, and the poor hygiene which was often referred to by social hygienists and the upper classes whose sensibilities were offended by the “poor hygiene habits of the [Indians].”⁴⁸ For pensadores like Suárez, Ecuador’s indigenous population represented a

⁴⁸ Miño, *La peste bubónica*, 45.

“vanquished but plastic race, apt for eventual citizenship [...but who had to be prepared for it] by supervisory work contracts, education, and protection.”⁴⁹

The Significance of the Anti-Plague Effort

In the end, Ecuador’s anti-plague efforts served a number of very important and consequential purposes throughout the social and hygienic landscape of the nation. First and most obviously, the anti-plague campaign eradicated the disease within the national territory and helped control it in those areas in which the disease was endemic. On the coast, for example, the frequent or regular cleaning of municipal sewers and plumbing, the disinfection of bathroom and water closet facilities, and the strict control of access to grains by rats all enabled the powers charged with public health to make Guayaquil, for all intents and purposes, a new city. It was the new hyper-vigilance that accompanied the implementation of hygiene and the modernization of the city’s infrastructure that helped transform Guayaquil into a modern city that now no longer suffered as it did from the foul odors and disease potential of days gone by.

On the coast, the new hygiene was implemented in the way that homes and other buildings were being constructed and in the ways that kitchens and warehouses were being designed. No longer were light materials like bamboo being utilized in the construction of homes; instead, metal and other material not attractive to rats had now to be used. In the highlands, there were restrictions placed on the funereal customs of the indigenous and effort was made to get people to not sleep

⁴⁹ Prieto, “A Liberalism of fear,” 107.

on floors and to not “touch or caress” the bodies of their deceased, as was their custom.

Plague eradication also had economic significance. Guayaquil’s status as a pesthole, for example, was no longer wholly appropriate in 1930 thanks to the concerted efforts of Ecuadorian and American scientists. In October of that year, for instance, when Dr. Long had announced in his report that the port city could be classified Class A, President Ayora had shifted attention from Ecuador’s now forgotten status as cacao exporter to tourism. When Dr. Long finally made the announcement, Ayora immediately put himself to “looking for new visitors,” believing that Ecuador had much to offer in the way of touristic draws. *The New York Times*, for example, in what is perhaps Ecuador’s first post-plague tourism advertisement claimed that a trip to Ecuador was one that would be

found full of interest and thrills for the most jaded and blasé, from the sail up the tropical Guayos [sic] River, the first few miles through real jungle, and then the steady climb on the rim of a country set on edge, until the high Andean plateaus are reached. Alligators and queer tropical birds are to be seen on the river, and the skill of the cholos in their small dugouts hardly wide enough for them to squeeze into, and the different customs of the various districts each inhabited by distinct tribes, should provide enough variety to keep all interested.⁵⁰

Most importantly, though, Ecuador’s efforts to combat plague reflect an international cooperation that ultimately helped minimize its isolation and brought it into the larger fold of countries. This was done through general cooperation with the Pan American Sanitary Bureau and newly established international sanitary conferences. It was accomplished specifically, however, with the collaboration of the two Americans sent to Ecuador for that purpose. Dr. Long’s belief that, for all

⁵⁰ “Ecuador is Seeking to Draw Tourists,” *New York Times*, 12 October 1930: p. E8.

practical purposes, bubonic plague had been eliminated from Guayaquil and from the towns and villages situated along the Guayas River was a result of those very same anti-plague efforts undertaken by both Ecuadorian and American collaborators. Had it not been for the effort of Miño and his staff, for the bacteriologists like Flores Ontaneda, and for the promotion of hygiene by men such as Suárez, plague might still have been a problem into the fourth decade of the century. Instead, it was the collaboration between these men and the Americans that helped eradicate plague once and for all.

Overall, the eradication of plague carries significant weight in the cultural or social arenas. The new hygiene that was promoted in pamphlets, newspapers, and by the national government, helped change the way that people looked at cleanliness and at disease potential. No longer were there still very staunch ideas that disease was caused by poison airs or by miasmas. The works of Yersin, Kitasato, and even of Flores Ontaneda, helped people view disease as something preventable if only some effort was made.

Finally, the case of plague in Ecuador has also demonstrated cases in which some marginalized peoples were not necessarily slow to accepting the new hygiene. Examples have been found of Indian villages and communities attempting to protect themselves from the dangers of infection by using the very methods proposed by the national government and by the Public Health boards of the various communities. Some historical scholarship has argued, for example, that autochthonous or otherwise marginalized populations have put up great resistance to the techniques

and knowledge of western medicine.⁵¹ The case of Ecuador, however, does not seem to be overwhelmingly colored by crippling indigenous perspectives on western or foreign medical practices. The caseríos of Guamote and Gualniche which I have discussed herein illustrate that Ecuadorian indigenous populations did maintain a sense of agency and that they acted on their own behalf in the prevention of disease.

Ecuador and Modernity: Concluding Thoughts

The fact that agency can be attributed to indigenous populations and individuals is of paramount importance if we are to incorporate Ecuador into a larger and broader study of the history of medicine and epidemiology. As such, it is imperative to take into consideration the numerous challenges that the case of plague in Ecuador presents to the maintenance of the polarities implied by a modernistic approach to history and to peripheral sites in general. The case presented here does not fit nicely and neatly into polarities that distinguish between rational and irrational, objectivity and subjectivity. Nor can it be viewed from either the utopian and elitist lenses of modernity's universal or objectivist values or the disenchantment with material truth that normally accompanies the precepts of post-modernism.

The importance of studying Ecuador in the way we did is that it challenges, to use the words and thinking of Overmyer-Velázquez, the "rigid polarity usually drawn

⁵¹ See the already works, for example, of Mark Harrison (for India) and Myron Echenberg (for Senegal) for discussions on resistance to western doctors and, specifically, to vaccination policies.

between sites of modernity and sites of tradition.”⁵² Thus, viewing modernity from the perspective of Ecuadorian highlanders and the people who tried to “change their habits” helps recast Ecuador and its population’s definition of itself because members of the elite and commoners simultaneously and reciprocally constructed modernity historically within the cultural confines of tradition. In our case, modernity and the process of modernization prevalent in the twentieth century was negotiated at the local and administrative levels as well as among the so-called peripheral places and people. The fact is that as the idea of “center” grows or expands, the idea of “periphery” necessarily becomes more vague and ambiguous.

Throughout the era discussed herein, city pensadores utilized the jargon of modernity – “civilization,” “progress,” “hygiene” – in the attempt to transform those elements of Ecuadorian society that they saw as backward. For this intellectual elite, modernity was an essential part of Ecuador’s slow but steady state formation and it included involving rival cities (Quito and Guayaquil) in national projects that focused on economic, cultural and political development. As Quito’s elites attempted to construct a society that was very much based on the diametrically opposed concepts of high and low culture, clean and unclean habits, they also tried to marginalize the city’s workers, members of the lower middle class, and Indians from the center of their centralizing and marginalizing visions.

In short, the Ecuadorian plague epidemic is a case that negates the idea that modernization’s hygienic and sanitary efforts were detrimental to local or autochthonous traditional ways and generally resisted by highland communities. Indigenous communities accepted the precepts of scientific hygiene and adopted the

⁵² Overmyer-Velázquez, 8-9.

recommendations and suggestions that accompanied it. Thus, Ecuador is also a case for the compromise between a modern and traditional view of disease and epidemiology. Ecuador's is also a case of cooperation and participation, for much of the successes of plague eradication were made possible by the willful collaboration of the country's scientists with international political and maritime entities. With this in mind, several specific conclusions can be made that shed light on Ecuador's historiographic potential to move out of the periphery of Latin American medical history.

Specific Conclusions:

This dissertation has focused primarily on the eradication of plague, but what has been uncovered are some of the nuances and unintended consequences of the procedures and processes that led to that eradication. As such, in light of what has been encountered in the various archival documents and in the cases cited herein, I have been able to make some rather general conclusions which, though they might seem to be obvious, reflect a desire and maybe a need to include Ecuador's history as part of the larger scope of historiographic scholarship that centers around plague and its epidemiology.

1. Plague has to be viewed within the natural context.

The presence of plague on the coast did not only reflect the poor sanitary conditions of the internationally connected port city. Indeed, its presence reflected negatively on both the littoral region and the nation as a whole. Thus, the problem of

plague was part of a larger problem that was linked to regional development. It could not be confined on the coast due to modernization and the technological advances that marked the early twentieth century throughout the globe. These advances brought the plague virus not only to a new height, but, quite literally, to new heights at the foothills of the Andes.

The Ecuadorian plague epidemic in its initial stages was attributed to foreigners and newcomers, but the new bacteriology had also attributed its arrival and transmission to other factors. These included, for instance, the living conditions on the coast (poorly constructed infrastructure, tropical climate, and the filth associated with Guayaquil's port) as well as the habits of the Indians which had helped transmit the pneumonic form of plague in the highlands.

Lesson reinforced: epidemiology is about more than just disease and its transmission. Unlike virology, epidemiology relies heavily on the social dimension in that it uniquely “incorporates perceptions of a population’s social relations, behavioral patterns, and experiences into its explanation of disease processes.”⁵³

2. The Ecuadorian Anti-Plague Campaign was based on local nuances.

The effort to combat plague had to be adapted in order to deal with the uniqueness of Ecuador’s geography and its cultural landscape. For a number of years, 1899-1903, the public health apparatus labored in the attempt to keep plague outside of Ecuadorian borders. The focus was on the border and the coast with the

⁵³ Gerald Oppenheimer, “Causes, Cases, and Cohorts: The Role of Epidemiology in the Historical Construction of AIDS” edited by Elizabeth Fee and Daniel M. Fox, *AIDS: The Making of a Chronic Disease* (Berkeley: University of California Press, 1992), 50.

goals of keeping plague out, having ships quarantined, disinfected, and inspected, and the recall of national representatives from plague infested cities and countries.

Once plague entered the coast however, a new model had to be utilized; one that not only immediately dealt with coastal plague cases, but that would also prepare itself for the possible incursion of plague into the highlands. As there was no experience with plague in the highlands, there was a need to conduct a survey or reconnaissance. Commissions and leagues were sent out and the question as to how to protect Quito was paramount because of the city's historical, political, and cultural significance.

Miño developed his model of plague control through close observation and familiarity with local environments. The Ecuadorian case demonstrates that social interventions based on local knowledge (the habits and customs of the highlanders, for instance) are generally preferable to those based on any sort of universal or general knowledge. Important, too, though was Ecuador's efforts to modernize, to integrate its regions, and the involvement of the human being as a plague vector where rodent or flea vectors do not exist or are too low in numbers to be significant.

The overall lesson is this: foreign science can collaborate with national programs, but caution is needed in order to adapt to local necessities and realities. The Ecuadorian campaign was successful exactly because it did take the various nuances into consideration. Rather than coming in to "take over" the anti-plague effort, the American scientists came in to cooperate with the Ecuadorian officials under the latter's own expressed wishes and limited only by Ecuador's available funds.

3. *The temptation to generalize has to be avoided in studying popular reactions to epidemics.*

As discussed elsewhere in this work, popular resistance to public health policies has often been a given. This has been especially true in the case of nineteenth century British and French colonial medicine. It has also been particularly applied to people of marginalized status (the poor, the subaltern, etc). Despite any ideas that might have existed regarding the Ecuadorian Indian as retrograde, we have found there to be a seeming willingness with which Indian communities used the modern techniques of disinfection and fumigation in their homes and in their communities. In other words, they freely utilized (and expected the materials for) the precepts of the new hygiene and the new bacteriology of which it was a result.

Here the lesson is an easy one: We ought to be wary of any comprehensive models of anti-modernization or generalization. It is a faulty assumption to believe that “the people” will always resist what is new. Quite often, what is new works and that might just be good enough. Akin to Overmyer-Velázquez’s own argument, the case of Ecuador’s indigenous populations undermine the notion of a universal standard because they “challenge the rigid polarity usually drawn between sites of ‘modernity’ and sites of ‘tradition.’”⁵⁴ The case of Ecuador is not one, therefore, in which there reigns supreme the overarching combination of ideals so typical to thinking on Latin America: a homogeneous, monolithic, and reified social system that

⁵⁴ Mark Overmyer-Velázquez, *Visions of the Emerald City: Modernity, Tradition, and the Formation of Porfirian Oaxaca, Mexico* (Durham; Duke University Press, 2006), 8.

trumps individuality and historical exceptions. Both elites and non-elites manipulated modern and traditional notions to define themselves and others.

4. International cooperation was an essential component of Ecuador's efforts to eradicate plague.

At the turn of the century, the globe had become a much tinier place than it was in the previous century. Transoceanic travel was made faster and much more efficient by the advancements that accompanied commercial and maritime technology. Not only did these advancements allow the easier transport of people across continents and oceans, but also brought disease and its vectors to their destinations that much more quickly. In other words, since the travel time was minimized at sea, there was more of a chance that diseases can incubate at sea without there being a single case until after docking at the receiving port.

In order to prevent this, a new system of international laws and codes was established called the Pan American Sanitary Code. The government of Ecuador had become a signatory to this Code in 1924 in the effort to protect its own port and those of its neighbors from the potential of epidemic crisis. With the dedicated assistance of Drs. Long and Eskey, Ecuadorian public health experts and bureaucrats were able to implement the necessary characteristics of a successful plague control effort (focusing on rat extermination, fumigation, and disinfection) and thus be classified a Class A clean port, one in which there is an “absence of non-

imported cases of any of the diseases referred to in Art. 23 [cholera, yellow fever, plague, typhus fever, or other pestilential disease in severe epidemic form].”⁵⁵

5. *Sometimes it is the story that just needs to be told.*

When I first embarked on this project, I aimed at studying the reciprocal and mutual impact of plague and modernization. Since then, this project has undergone any number of changes and redirections as too little information could be gathered to provide an overarching theme that would respond to all questions regarding Ecuador in the twentieth century. Since I found it impossible to study plague outside of its historical actors, I focused on simply telling the story since it had never been told completely in Spanish and not at all in English. The sources to do otherwise are simply unavailable, lost, or filed in parts of the archives that are still currently undergoing remodeling and cataloguing. Any hopes that any of this would soon be digitized is moot.

I came to see the quest to understand plague in light of grander racial theories equally as impossible. Future historians and academicians might want to investigate the more abstract and intangible factors involved in the political effort to control disease and the connections that that control has to the Indian population and the ways in which the indigenous were viewed by Ecuador’s pensadores. Mercedes Prieto, in her dissertation, has already embarked on this endeavor and I believe that the invitation is open to future scholars to expound on what she has

⁵⁵ Pan American Sanitary Code, 38.

already unearthed. It is my hope that my project will contribute in at least a small way to the scholarship waiting to be excavated.

Above all else, plague control in Ecuador was not just about plague and how to control it. I still believe that it emerged from intersecting ideologies, scientific frameworks, environmental conditions, and racial viewpoints that might not be overly dissimilar to those in other parts of Latin America. The true legacy of plague in Ecuador – and throughout Latin America – is that it changed the attitude towards public health in a very general sense. State authorities, physicians and rural communities viewed public health measures. From the time of the plague epidemic onward, as Cueto points out, “doctors increased their until then meager participation in public matters. The epidemic was a great opportunity to convince public authorities and part of the population, of the importance methods and specialists in the area of hygiene had.”⁵⁶ Most essentially, perhaps, I believe that Ecuador’s anti-plague efforts helped the country become a more proactive nation when it comes to public health policy and medical practices. This is currently being seen in the ways that Ecuador is establishing laws and policies aimed at controlling disease infection (HIV, AIDS, etc), the preventing of domestic violence, and new policies aimed at incorporating the cultural practices and beliefs that are the basis of the nation’s environmentally-focused constitution. It is this proactive approach that deserves attention by future scholars because plague (among many other diseases) cannot be permanently eradicated as long as rats and other rodents exist; therefore we can expect a new epidemic to arise. We may not know when or where, but one thing is certain: the lessons learned from the Third Pandemic will be tested.

⁵⁶ Cueto, *The Return of Epidemics*, 23.

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ANEQ: Archivo Nacional del Ecuador (Quito)
ASSQ: Archivo de la Subdirección de Salud (Quito)
CCE: Casa de la Cultura Ecuatoriana (Quito and Guayaquil)
MNHM: Museo Nacional “Eduardo Estrella” de la Historia de la Medicina (Quito)
BNEQ: Biblioteca Nacional del Ecuador (Quito)
MCQ: Museo de la Ciudad (Quito)

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