

# Public Health, Yellow Fever, and the Making of Modern Tampico

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Volume 36, numéro 2, spring 2008

Public Health in the City

URI : <https://id.erudit.org/iderudit/1019168ar>

DOI : <https://doi.org/10.7202/1019168ar>

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Éditeur(s)

Urban History Review / Revue d'histoire urbaine

ISSN

0703-0428 (imprimé)

1918-5138 (numérique)

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Citer cet article

Kuecker, G. D. (2008). Public Health, Yellow Fever, and the Making of Modern Tampico. *Urban History Review / Revue d'histoire urbaine*, 36(2), 18–28.  
<https://doi.org/10.7202/1019168ar>

## Résumé de l'article

Cet essai étudie le cas de la ville portuaire de Tampico, au Mexique, pour mettre en lumière les liens qui existent entre la création de l'État-nation, l'urbanisation et la politique en matière de santé publique à la fin du XIX<sup>e</sup> siècle. On y établit un rapport entre l'expansion de Tampico et la progression, en 1898, d'une virulente épidémie de fièvre jaune, tout en analysant les stratégies adoptées par les responsables de la santé publique pour la combattre. L'essai s'intéresse plus particulièrement au fait que les autorités aient eu recours aux quarantaines dans l'espoir de freiner l'épidémie. Ces dernières s'étant avérées inefficaces, les autorités nationales en sont venues à les considérer comme étant contradictoires par rapport au projet d'État-nation moderne, ce qui les a amenées à remplacer ces mesures par la mise sur pied de programmes d'hygiène urbaine. Toutefois, les autorités de la région et de l'État sont demeurées convaincues de la pertinence des quarantaines. Il faut dire qu'elles faisaient face à un besoin urgent de protéger leur population et le commerce. La lutte contre la fièvre jaune s'est inscrite dans un important virage en matière de gestion de la santé publique. En effet, ce domaine est passé sous la responsabilité des autorités nationales après avoir été administré jusque-là par les pouvoirs locaux. En conclusion, l'auteur examine les incidences de l'épidémie de Tampico en 1898 sur l'histoire des villes portuaires des Caraïbes.

# ***Public Health, Yellow Fever, and the Making of Modern Tampico***

***Glen David Kuecker***

***This essay uses the Mexican port city of Tampico as a case study of the relationship between nation-state formation, urban transformation, and public health policy during the late nineteenth century. It examines a virulent yellow fever epidemic in 1898 to illustrate how Tampico's urban transformation generated conditions for the epidemic, and how public health officials addressed the challenge of combating the epidemic. Special emphasis is placed on how officials used quarantines in a failed attempt to contain the problem. As a result of its limitations, national authorities came to perceive quarantines as antithetical to the project of the modern nation-state, leading them to adopt urban sanitation projects as substitute. Local and state authorities, however, retained their faith in the quarantine, often out of a desperate need to protect their populations and commerce. The battle against yellow fever constituted part of an important shift in public health authority from the control of local officials to national authorities, which further consolidated the power of the nation-state. The essay concludes with consideration of the implications of Tampico's 1898 epidemic for a history of circum-Caribbean port cities.***

***Cet essai étudie le cas de la ville portuaire de Tampico, au Mexique, pour mettre en lumière les liens qui existent entre la création de l'État-nation, l'urbanisation et la politique en matière de santé publique à la fin du XIXe siècle. On y établit un rapport entre l'expansion de Tampico et la progression, en 1898, d'une virulente épidémie de fièvre jaune, tout en analysant les stratégies adoptées par les responsables de la santé publique pour la combattre. L'essai s'intéresse plus particulièrement au fait que les autorités aient eu recours aux quarantaines dans l'espoir de freiner l'épidémie. Ces dernières s'étant avérées inefficaces, les autorités nationales en sont venues à les considérer comme étant contradictoires par rapport au projet d'État-nation moderne, ce qui les a amenées à remplacer ces mesures par la mise sur pied de programmes d'hygiène urbaine. Toutefois, les autorités de la région et de l'État sont demeurées convaincues de la pertinence des quarantaines. Il faut dire qu'elles faisaient face à un besoin urgent de protéger leur population et le commerce. La lutte contre la fièvre jaune s'est inscrite dans un important virage en matière de gestion de la santé publique. En effet, ce domaine est passé sous la responsabilité des autorités nationales après avoir été administré jusque-là par les pouvoirs locaux. En conclusion, l'auteur examine les incidences de l'épidémie de Tampico en 1898 sur l'histoire des villes portuaires des Caraïbes.***

In the nineteenth century, emergent cities were important to Mexico's becoming a modern nation-state. Our understand-

ing of the process, however, remains incomplete. There are abundant studies of the process for Mexico City, but a limited number analyze the role of secondary cities in the formation of the modern nation-state.<sup>1</sup> Rural to urban migration led to population growth in many provincial cities, and increased economic activity caused by dramatic expansion of the nation's railroad system converted provincial towns into emerging cities. Of special importance to this transformation were Mexico's ports, because they served as the link between domestic centres of primary product production and global markets. Nation-state planners targeted ports for modernization. They built new docks, improved sewers, provided potable water, and reconfigured public markets to meet new health standards. A key feature to the relationship between nation-state construction and the city was public health. Mexican health authorities faced a wide range of health and sanitation problems and undertook aggressive programs of health and sanitation as part of the effort to make Mexico modern.<sup>2</sup> Among the central challenges facing public health officials was the problem of yellow fever, especially in the Caribbean port cities, which were vital centres of commerce.

This essay offers a case study of the relationship between nation-state formation, urban transformation, and the public health problem presented by yellow fever in the port of Tampico, located on Mexico's Gulf Coast, on the border between the states of Veracruz and Tamaulipas. It examines the yellow fever epidemic of 1898 to illustrate how urban transformation generated conditions for the epidemic, and how local, state, and national public health officials addressed the challenge of combating the epidemic. Special emphasis is placed on how officials used quarantine in a vain attempt to contain the problem. As a result of its limitations, national authorities came to perceive quarantine as antithetical to the project of the modern nation-state, leading them to adopt urban sanitation projects as substitutes. The battle against yellow fever constituted part of an important shift in public health authority from the control of local officials to national authorities, which further consolidated the power of the nation-state. The essay concludes with consideration of the implications of Tampico's 1898 epidemic for a history of circum-Caribbean port cities.

Mexico became a modern nation-state during the late nineteenth century, a period known as the "Porfiriato," a term referring to Porfirio Díaz, who served as president from 1876 to 1880 and from 1884 to 1911. It was a time when past political instabilities and economic stagnation gave way to "order and progress." The Porfirian project was an attempt at modernization from above, an initiative thrust upon hundreds of Mexican localities throughout Mexico's many regions by national political and economic planners operating from the centre of the nation-state, Mexico City. Modernization, in the Mexican

case, was the implementation of nineteenth-century liberalism copied from Europe. This process was of long duration during which post-independence Mexico made uncertain yet incremental steps toward the establishment of free trade capitalism, a free wage labour system, cultural values of a market economy and a capitalist work ethic, and a political system where the moderating power of the state is invested in a constitution and not the individual.<sup>3</sup> Porfirian planners were known as the *científicos* (the scientists), because they sought to organize Mexico's political and economic development under the "scientific" political philosophy of positivism. They placed a premium on efficient administration of the nation's politics, an idea captured in the Porfirian slogan, "Plenty of administration and not too much politics."<sup>4</sup> Good administration, they thought, would result in progress, the program for constructing a modern infrastructure.<sup>5</sup>

The Porfirian project in Tampico meant railroad development. It took two main forms: the Mexican Central Railroad's branch line connecting Tampico to San Luis Potosí, and the Monterrey Gulf Railroad linking Tampico to the important industrial centre of Monterrey via the capital of Tamaulipas, Ciudad Victoria. The Monterrey Gulf Railroad also provided an important commercial avenue joining Tampico to United States markets as the railroad fed into the United States rail network in Texas. The railroads were the most important feature in the transformation of Tampico into a modern port city, and the driving force was the connection of global, regional, and national networks of production and commerce through Tampico. It was this connection and subsequent modernization that created the port's yellow fever nexus in 1898. The plan devised by Porfirian development ministers was rather simple. They wanted to connect Mexico's Pacific and gulf ports to Mexico City. From this network, branch lines would serve secondary cities and important agricultural and mining hinterlands. The objective, in addition to linking Mexico's diverse regions to the nation's capital, was to increase export revenues for the nation's depleted financial reserves. Increasing exports called for modernizing the principal ports so they could handle the railroads' export and import cargoes more efficiently. The national agenda correlated nicely with the structures of global capitalism. With the establishment of political stability, tax incentives, and financial subsidies, railroad developers in the United States and Great Britain were eager to participate in the construction of railroads in Mexico. Their agenda was to control global trade between the Atlantic and the Pacific by using railroads as a land bridge to connect Pacific and gulf ports. Porfirian ministers proved capable at manipulating foreign competition for control of the land bridge toward the objective of building a national railroad network.<sup>6</sup>

Construction of the San Luis Potosí to Tampico railroad started in the early 1870s, and with it came an economic boom. By 1879 over a hundred vessels annually called at the port of Tampico, delivering building materials that were hauled up the Pánuco River and carried overland to the point where the

railroad track being built from San Luis Potosí waited delivery. Construction stimulated the port's commerce, expanded the population with railroad and dockworkers, and led to the construction of new wharfs, piers, roads, bridges, and communication systems. With the economic boom, the port's customs revenues dramatically increased. The jump in receipts from 432,235 pesos in 1879 to over 1 million pesos by the end of 1882 caught the attention of the national government. Porfirio Díaz, serving as minister of development after having stepped down as president for one term, started an ambitious program in 1881 to further stimulate Tampico's contribution to the national treasury by modernizing Tampico's harbour. Díaz visited the port in 1881 to announce the plan, which centred on removing the troublesome sandbar at the mouth of the Pánuco River by building a jetty complex from the river into the Gulf of Mexico. The jetties would permit larger vessels to call on the port without having to go through the time and expense of ferrying their cargoes to and from the city docks.<sup>7</sup>

On 1 April 1890, the first locomotive from San Luis Potosí, carrying a Pullman car full of railroad executives and state dignitaries, arrived in Tampico. With their arrival, Tampico's spatial relationship with San Luis Potosí was dramatically transformed. Tampico was now twenty hours away from San Luis Potosí, a journey that for 300 years took five days by horseback. No longer integrated with the rest of Mexico by thousands of horses and mules, Tampico's commerce was liberated from their limitations in time and cost. Distant markets linked to the growing national rail network now sent cargoes to Tampico for consumption and export while Tampiqueños, receptive to a role that had been so hard to achieve, distributed commodities received from the world's trade throughout all of Mexico. By 1892 the changes were significant enough that Tampico merited special attention, a whole paragraph, in the presidential address to the legislature.<sup>8</sup>

Modernizing alterations in Tampico's urban ecology reworked the port's disease environment, making it vulnerable to sudden and unpredictable yellow fever outbreaks. Analysis of the factors necessary for yellow fever to emerge helps to understand how modernization made this vulnerability possible in 1898. Yellow fever epidemics are caused by an arbovirus, one of the 570 known viruses carried by anthropods. Of these viruses, approximately 100 cause human disease, and of these only 1 causes yellow fever. For this virus to infect people it has to be injected into the blood stream. Contrary to prevailing thinking of the time, it is not acquired by contact with other infected people, their excreta, clothing, baggage, or furniture; nor is it caught by breathing air somehow polluted with a germ. Instead, the yellow fever virus enters the bloodstream through the bite of a certain mosquito, the female *Aedes aegypti*, which has acquired the virus. *Aedes aegypti* receives the virus only when blood from an infected person is passed into its system. An incubation period between ten and eighteen days, however, must transpire before the mosquito is capable of transmitting the virus by feeding upon another human.<sup>9</sup>

For a yellow fever outbreak to happen, three factors must be present: the virus must be extant in either the human or mosquito reservoir; susceptible, non-immune human material must be available; and the female *Aedes aegypti* mosquito must be present. In this nexus of reservoir, material, and vector, the proper climate increase chances for an epidemic. Weather patterns, such as heavy rains and short, warm winters without freezes contribute to increased breeding of the yellow fever mosquito, which enhances the possibility of a serious outbreak. In contrast, a cold snap can disrupt the development of a yellow fever outbreak, because the *Aedes aegypti* will not feed when temperatures drop under sixty-two degrees Fahrenheit.<sup>10</sup>

Favourable conditions for yellow fever can develop when demographic changes, such as migration, increase the size of a city's non-immune population. In some localities the nexus of virus, mosquito vector, and human material becomes a permanent condition. In these endemic situations, yellow fever cases are reproduced throughout the entire year. An endemic yellow fever nexus, however, was especially difficult to generate and sustain; only New Orleans, Havana, Veracruz, and Rio de Janeiro have had the distinction of being such places. While tropical urban ecologies such as Tampico's did not experience mosquito-killing winter frosts, their disease environment remained innocuous without the constant influx of non-immune material and an established reservoir of disease holders needed for the perpetual reproduction of yellow fever.<sup>11</sup>

Increased migration to the port not only augmented its non-immune population, but also led to the growth of new neighbourhoods that increased the number of mosquito vector habitats and breeding grounds, such as cisterns, gutters, and standing water. The increased density, poor living conditions, and high turnover of the port's population worked with Tampico's enhanced communication with endemic centres to push the city beyond a critical point that made the sustained transmission and propagation of yellow fever a reality by 1898.<sup>12</sup>

An estimated 230 Tampiqueños went to their graves during the epidemic of 1898. The event caught everyone by surprise because the last yellow fever fatality happened twenty years earlier, when the great epidemic of 1878 and 1879 snatched over a thousand lives.<sup>13</sup> Unlike Havana, New Orleans, and Veracruz, and despite regular commercial contact with these ports, Tampico escaped becoming an endemic centre of yellow fever. Even before 1878, yellow fever was an exceptional occurrence in Tampico, almost always introduced by outsiders, especially soldiers who had recently been stationed in Veracruz or from foreign armies invading Mexico.

The first victim was a German traveller who died on 8 July after a month's stay in Tampico.<sup>14</sup> It was not until 24 July that the municipal president first notified state authorities that Tampico had "a few" cases and his concern that an epidemic was possible.<sup>15</sup> By 26 July, the United States vice-consul

reported that seven had died since 21 July.<sup>16</sup> Mexican newspapers first reported yellow fever's presence in Tampico on 30 July, stating that there were nine cases.<sup>17</sup> By 11 August, the papers reported, "Every day the yellow fever epidemic has increased." A traveller from Tampico told one reporter that he "had seen three customs house workers die in the middle of the plaza, and that he had news of many alarming cases."<sup>18</sup> When papers reported thirty-four deaths on 13 August, they also described a population in panic.<sup>19</sup> One Tampiqueño wrote President Díaz, begging for a transfer from his lucrative position at the customs house. "The bad and unhealthy climate," Chavez wrote, "has undermined my health to the extent that if I stay here one year more, my poor family will have to mourn the loss of the only person who provides for them."<sup>20</sup> Felipe González, the port's leading health authority, compared the 1898 epidemic to the great epidemic of 1878, which "converted this city into a cemetery" and "snatched away in one moment the promising hopes of progress."<sup>21</sup>

Medical reports from the 1898 epidemic highlight how yellow fever struck Tampico's poorest and those recently settled in the city. One of the earliest victims, twenty-year-old Camila Mancilla, had lived in the port for only ten months before becoming sick on 14 July. She lived in the city centre, managed the family household, and brought food to her husband, who sold fruits and vegetables in the city market. Perhaps this work kept Camila from going to the hospital during the onset of the illness, and maybe the "period of calm"—when serious yellow fever cases go into remission for a day or two—encouraged her to delay seeking medical care, but she did go on 19 July, which is probably when the second, deadly stage struck her. By 21 July she had "vomit the colour of coffee grounds," which was a certain indication of a lethal case. Camila died that afternoon. Darío Rodríguez, an eighteen-year-old baker's assistant, did not remember when he became sick, as the severity of his fever had caused delirium, but he arrived at the hospital on 22 July. The doctors "found him from the moment of his arrival to be in a constant state of unrest, and not able to respond to the questions put to him." Darío passed away on the next day. Twenty-five-year-old Francisca Cruz had recently arrived from Pánuco, a town one day's journey upriver from the port, when he became sick on 19 July. He went to the hospital a week later, and died in a "state of convulsions" on the following day. The parents of a thirteen-year-old boy who had lived in Tampico for six months explained to the doctors that their son had become sick during the night of 25 July, at which time he vomited all the food in his stomach, had a strong headache, and a temperature of forty degrees Celsius. When he was brought to the hospital a week later, the doctors described him as "agitated, screaming and changing position at every moment." The next morning he was "in a state graver with each passing moment," and "convulsions started moments before his death." The doctors noted that the victim had such "an abundant *vómito negro* [black vomit] that he soiled the sheets, bed, and ground." Daniel Inestrosa, a twenty-year-old tailor from Morelia and resident in Tampico for

"just a few months," spoke of "his getting better and his prompt release from the hospital." His words were uttered in a state of delirium before dying on 8 August.<sup>22</sup>

Mexicans were not the only victims. At least ten people from the United States succumbed to the "King of Terrors." Most of them were skilled workers for the Mexican Central Railroad, such as Frederick Emmons, a thirty-four-year-old night telegraph operator who died on 2 September.<sup>23</sup> The United States consul, Samuel Magill, was in charge of caring for the ill compatriots and raising relief funds from the American colony. Magill related the sad story of twenty-five-year-old Stephen Hoiles of Greenville, Illinois, who had come to Tampico in August to try his luck in the fishing business. Instead of fish, he caught yellow fever on 28 October. Magill cared for him, even giving up his own bed. Hoiles died on 3 November.<sup>24</sup>

The crisis local authorities confronted is indicated by a report written by Dr. Narciso Del Río, one of the Consejo Superior de Salubridad Pública (CSSP)'s finest yellow fever experts. The national health board dispatched him to Tampico on 13 August with orders to take charge of the situation. The hospital, he reported "had been provisionally set-up in a run-down building, which had been used for storing gunpowder." The building was "entirely inadequate for its new purpose." The condition of the health care facilities was not much worse than the care given the patients. Del Río found twelve people sick with yellow fever, "in its gravest form." He explained that as "they were all persons of the most lowly social class . . . they have been left totally abandoned, without any recourse." He concluded, "Not even the most basic hygienic precautions" were taken "to combat the sickness." Local authorities, under his direction, devised a plan that called upon the Mexican Central Railroad "to designate the people strictly necessary for its works and those of the port," and to evacuate the others to "another place where because of the altitude they cannot spread the disease."<sup>25</sup>

Tampico's city officials worked to contain the epidemic in 1898. On 8 August, upon instructions from the state governor, authorities in Tampico "reorganized" the city health board in order to address the yellow fever crisis. It consisted of officials with prior service to the health board. The governor appointed Felipe González "special sanitary agent."<sup>26</sup> The committee met frequently through August, having evening meetings that normally lasted several hours. It met only once in September, when it was decided that the dwindling number of cases no longer made the committee necessary.<sup>27</sup> The committee worked on how to isolate the sick from the general population, what to do with the dead, how to carry out health measures without causing panic in the population, and preventing the spread of the epidemic outside of Tampico. They ordered house-to-house inspections in search of suspected cases. They increased inspection of meat quality sold in the market. They also ordered the evacuation of three neighbourhoods—Doña Cecilia, Cascajal, and Cortadura—which were the poorer sections of Tampico.<sup>28</sup>

Starting with the first meeting, the special committee focused its work on what to do with people living in "El Paso de Doña Cecilia," a neighbourhood just outside the city limits. This zone developed with the railroad boom and was the primary residence of railroad workers. Many perceived it as an unsanitary and unhealthy section of town. When the epidemic struck, the association among yellow fever, the poor, and bad sanitation was easily made by authorities. One national paper, when decrying Tampico's dilapidated circumstances, recalled that Doña Cecilia was the centre of the port's epidemic in 1878.<sup>29</sup> The committee occupied much of its time debating a CSSP plan to remove only railroad workers from Doña Cecilia. The committee was concerned that the plan neglected other community members, especially those without work and less able to care for themselves. One committee member protested, "A sanitary measure ought to be made more general, more extensive, whatever the consequences might be." He continued that the committee was attempting "to put a lid on an epidemic that threatens the life of the inhabitants on the town." On 15 August the committee decided to form a subcommittee to study the issue.<sup>30</sup> Five days after, the committee discussed news from the state governor that the first yellow fever case appeared in Ciudad Victoria, a person who had arrived from Tampico. This news was bad, as it meant a total quarantine of Tampico would follow. The CSSP responded by issuing orders that Tampico officials inspect all passengers before being allowed seating on trains departing the city. At this point, the committee decided to carry out the full evacuation of Doña Cecilia. Felipe González ended the meeting by declaring the situation to be "unfavourable and unhygienic." They were in "worsening conditions," and he warned that "at an increasing level we find a great part of the population of Tampico" was in the same situation.<sup>31</sup>

While modernizing changes of railroad and port development made yellow fever a reality in Tampico, they also worked against the port's ability to reproduce its role within the nation-state as a link between global markets and those within Mexico. This predicament happened because epidemics in Tampico spread to interior locations of Mexico by train, especially the important industrial city of Monterrey. San Luis Potosí was exempt from this problem because of its geographic position; the altitude placed the city outside of the yellow fever spatial nexus. Port cities along the Atlantic and Gulf of Mexico coasts of the United States were also vulnerable to epidemics coming on board vessels sailing from Tampico. Texas was also threatened by Tampico's overland railroad traffic. Self-defence led cities linked to Tampico to impose stringent quarantines upon Tampico, acts that crippled the port's capacity to link Mexican and global markets.

Despite the work of city officials, Tampico was not able to ease the fear of contagion harboured by Tampico's inland trading partners, especially those in the northern states of Tamaulipas and Nuevo León. The governor of Nuevo León, Bernardo Reyes, diligently worked to protect the industrial city of Monterrey from yellow fever. Throughout early August,

Reyes was confident that geography made the city "technically free from this epidemic," a view that would prove tragically wrong.<sup>32</sup> Instead, his main preoccupation focused on the economic consequences if Texas authorities quarantined Monterrey because of their fear of yellow fever in Tampico. Upon hearing reports of yellow fever in Tampico, Reyes decreed on 31 July that shipments coming from Tampico would not be allowed to enter the state.<sup>33</sup> The United States consul in Monterrey reported the next morning that a passenger with yellow fever arrived in the city on the Monterrey Gulf Railroad from Tampico.<sup>34</sup> The state of Tamaulipas responded to this news by establishing a checkpoint at Ciudad Victoria for the inspection and disinfection of people and cargo moving from Tampico on the Monterrey Gulf Railroad. Reyes was confident that "local government has taken effective measures to avoid the contagion." By 25 October, however, Monterrey reported two well-defined cases. Reyes remained optimistic, stating that Monterrey faced "favourable circumstances" as winter weather was setting in. He also thought the cases were a weaker form of yellow fever.<sup>35</sup> By 27 October Reyes reported eight yellow fever deaths, and by 28 October he stated that Texas's recently imposed quarantine was justified.<sup>36</sup> By the end of the year, Monterrey had 281 fatalities from 1,124 cases among its population of 60,000 people.<sup>37</sup>

Governor Reyes's futile effort to prevent the epidemic illustrates the challenges facing public health officials. Central was the predicament of how to protect citizens and commerce without disrupting a city's place within the networks created by nation-state projects such as railroad development. In addressing this challenge, authorities used the power of the centralized nation-state to implement quarantines as a way to disconnect dangerous cities like Tampico from healthy cities.<sup>38</sup> In Tampico's case, their strategy called for inspection and fumigation of train passengers and cargoes routed to Ciudad Victoria. The plan failed, because the regime of inspection and fumigation was not total in its application, and the system never became completely disconnected. Bad equipment and incorrect procedures subverted the effort. The Ciudad Victoria inspection station, for example, was nothing more than a wooden shack just large enough to contain one railcar during fumigation. Taking six hours to complete a full train, the inspectors often felt compelled by the schedule-driven railroad to save time by skipping cars. Even worse, the inspectors left railcar doors open during the fumigation.<sup>39</sup> One Mexican public health official, disgusted with these bumbled efforts, described the results: "The contents of the coaches . . . were not subject to precautions of any kind, that is to say, the truly dangerous entered Monterrey, in the same fashion that they left Tampico . . . the train did not arrive in Monterrey disinfected." Consequently, he explained, the epidemic was allowed to spread from Tampico by rail to Ciudad Victoria and Monterrey.<sup>40</sup>

Quarantines are imperfect because they stimulate contestation from the city subject to them. The contestation comes in

the form of cheating, or hiding the truth about the existence of yellow fever. People in Monterrey, for example, attempted to hide the existence of yellow fever once it struck. The United States consul in Monterrey demonstrated the problem: "For some time the prevalence of yellow fever in Monterrey has been rumored," reported Consul Pollard, who spoke with a doctor of "eminent standing and experience." Yet other physicians "strenuously deny that there has been a case of yellow fever in Monterrey. The latter are supported in their opinion by the Municipal and State authorities." Pollard explained, "The interests of the city are at stake and feeling runs high between the believers and non-believers in the existence of the disease."<sup>41</sup> By 25 October, Pollard described the daily death rate as "very heavy," and he stated, "All doubt of the presence of yellow fever has disappeared, Physicians and the community generally concurring in this." Despite the transparency of the situation, city officials did "their best to keep this a secret, and if it had not been for the courage and independence of one Physician, the people would have been kept in the dark as to the disease."<sup>42</sup> Dr. Eduardo Licéaga, Mexico's top public health official, would later reflect that official uncertainty was largely due to "the unfamiliarity with the illness on the part of the doctors of the locality . . . supposing that they did not know it could develop in Monterrey."<sup>43</sup> These responses made the quarantine dysfunctional as effective public health policy.

In response to the epidemic of 1898, United States and Mexican governments increased monitoring of Tampico's public health. The United States consul in Tampico argued for the stationing of a United States Marine Health Service (USMHS) physician at Tampico.<sup>44</sup> "During the coming season," he explained, there was a need "to watch sanitary conditions here thereby preventing if possible the introduction of the disease into the United States by vessels sailing from hence." Magill argued, "While ports north of Hatteras are reasonably safe from contagion from Tampico, our Gulf Ports are so near that unless proper inspection is had here before sailing, the disease could be carried and not develop before arrival at such port." Magill thought that "efforts" to counter yellow fever "may be neutralized, unless the likelihood of infection from Tampico and Vera Cruz was prevented, and the danger there from would be greatly lessened by proper inspection here." The problem in Tampico was the lack of self-regulation. "Local Health Authorities," he explained, "cannot yet be relied on to carry out Sanitary regulations, they have no fumigating apparatus for vessels, and their examinations are perfunctory." Intensified U.S. surveillance was the mechanism to get the Mexican nation-state to self-regulate.<sup>45</sup> Mexicans, according to Magill, "might be induced to take more thorough precautions both in the city and harbor, by the knowledge that present conditions made it necessary for the United States to appoint a special physician here."<sup>46</sup> The USMHS approved Magill's request and stationed an inspector in Tampico.

U.S. health officials struggled to design a mechanism in Mexico that would establish self-regulation. Travelling to



Veracruz, Samuel Hodgson, a USMHS doctor, stopped in Tampico in April 1899. He reported to the USMHS that a yellow fever fatality had occurred, a three-year old child. "The danger of infection through El Paso and Laredo via railroad," he claimed, "is as great as that by sea."<sup>47</sup> One month later Texas health authorities refused entry to persons arriving overland from Tampico. "The physician sent by the State of Texas to investigate the condition and extent of yellow fever at Monterrey, Tampico, and Vera Cruz" reported "some yellow fever at Tampico, and a good deal at Vera Cruz," while "conditions at Monterrey" were seen as "favorable for an epidemic if yellow fever is introduced there." The same report related, "The federal sanitary board of Mexico is taking some steps to prevent the introduction of yellow fever into Monterrey from Tampico."<sup>48</sup> The USMHS, on 21 June, tightened its rules for people entering Texas, due to the "prevalence and increase of yellow fever" in Mexico. Travellers now needed "evidence" in the form of a sworn statement from a United States consul or Mexican official that they came from a non-infected territory or faced a ten-day quarantine before entering the United States.<sup>49</sup> Quarantine detentions and inspections remained in place until an early frost fell upon Texas during the first week of November.<sup>50</sup>

The USMHS's premise was that if Tampico were to remain part of the Caribbean commercial system, its continued contact with the endemic centres necessitated surveillance. One USMHS doctor confessed that while he did "not believe that a single case of yellow fever exists in Tampico," he did think it "necessary that we should require detention of passengers and disinfection of baggage coming from that place on account of its weekly communications with Vera Cruz by steamer."<sup>51</sup> Ultimately, Tampico's position within the geography of yellow fever placed it in a contingent but pivotal position where it was at once linked with Monterrey and Texas by railroad, and dependent upon health and sanitary conditions in Veracruz, Havana, and New Orleans. Dr. Cofer, the USMHS doctor stationed in Tampico, explained, "In our inability in Mexico to compel these passengers to submit to inspection in Monterrey lies our weakest point in protecting the border from Vera Cruz via Tampico."<sup>52</sup> Yellow fever's geography, when connected to United States health and economic interests, led U.S. health officials to focus on the nexus between Tampico, Monterrey, and Texas. The USMHS stationed an inspector at Monterrey in July. He kept names of travellers from Veracruz and Tampico and issued certificates of health to passengers going to the United States. The inspector was to advise Cofer "immediately" when a yellow fever case appeared in Monterrey, so that Cofer could "endeavor to have the general managers of the Mexican International and Mexican National lines forbid their trains from stopping at Monterrey."<sup>53</sup> The inspector was instructed to "regard with suspicion all persons, particularly traveling men, who claim origin from points north of the City of Mexico, and who apply at the last minute for their certificate."<sup>54</sup> In case Monterrey fell to yellow fever, Cofer planned to move the inspection point north, to Saltillo, at which point

a final defence would be maintained.<sup>55</sup> When another yellow fever death occurred in Tampico on 20 September 1899, Cofer thought "the probability of the infection by this disease of Monterrey is markedly increased." He moved the disinfection and inspection service to Saltillo and had the railways run special coaches exclusively between Monterrey and Saltillo.<sup>56</sup> These measures remained in place until health officials in Texas lifted travel restrictions in November.

By 5 April, the governors of Nuevo León and Tamaulipas had sent detailed proposals for confronting yellow fever to Mexico's CSSP, arguing for the total suspension of railroad trade with Tampico if yellow fever returned to the port.<sup>57</sup> The CSSP, however, was strongly against quarantines of any kind. National health officials described the governors' proposals as "very grave" and "in transcendent need of resolution." Instead of quarantine, the CSSP recommended a list of nine preventive measures, which included the customary steps of reporting and isolating all suspected cases, the "rigorous medical inspection of all passengers who attempt to leave Tampico," and the disinfection of clothing and cargoes. The CSSP also recommended establishment of an inspection station at González, a town outside of Tampico and on the way to Ciudad Victoria. At this point, all passengers would be inspected for fevers, their clothing and baggage would be disinfected, and they would be transferred to a new train, so that the train from Tampico would run only between the infected city and the checkpoint. "For greater precaution," the CSSP suggested that state governors should post doctors on board trains, who would check all the passengers in transit from Tampico to Ciudad Victoria and Monterrey. The CSSP claimed that if these measures were adopted, it "would be very remote that yellow fever will spread from Tampico to other places." But if state governments "find it impossible to put into practice these steps," the CSSP would consider authorizing the "extreme measure" of suspending railroad traffic from Tampico.<sup>58</sup>

When news of the fever's reappearance in Tampico reached Ciudad Victoria and Monterrey in June 1899, the cities reacted with what the CSSP described as "justified alarm." State health officials demanded the immediate and total isolation of Tampico. The CSSP was sympathetic to their need "to be defended," but cautioned that "implementation of defensive steps against *el vómito*" had to be "in proportion to the imminence of the danger present."<sup>59</sup> By late June, Governor Mainero of Tamaulipas again requested that a sanitation station be established in González, and asked for federal funds to pay for it. Mainero also related the "disgust of the state's inhabitants when they hear of measures that will not satisfy their demands" that the spread of yellow fever be prevented. President Díaz decided in late July to have the national government pay for the sanitary station.<sup>60</sup> Once established, a medical officer from Nuevo León was posted at the González station, "whose duties [were] not to pass anyone on the trains with a temperature of one-half a degree above normal." In

addition, all train cars leaving Tampico were disinfected, and “the engineers and trainmen receive[d] an injection of Saranelli’s serum.”<sup>61</sup> The governors of Nuevo León and Tamaulipas, however, declared “that the measures proposed by the Health Board are ineffective.” Citing the lessons of “the eloquent and painful experience acquired last year,” the states demanded strict quarantine with Tampico as the only practical, preventive action.<sup>62</sup>

The CSSP launched a vigorous argument against these quarantine measures. While the national health board certainly supported state and local initiatives, especially programs aimed at sanitation and public hygiene, the national authorities were concerned about the anti-modern impact of quarantine upon Mexico, arguing that the government of Nuevo León needed to consider “the difficulties involved with . . . suspending the traffic of a railroad, especially the harm it will cause to other states . . . and the obstacles it could cause to contract concessions.”<sup>63</sup> The interior minister endorsed the CSSP’s concern, and ruled that “railroad traffic ought not be suspended in cases of epidemics.”<sup>64</sup> The Porfirians recognized that the nation-state project could be subverted if Tampico was quarantined, because without port cities like Tampico their carefully crafted modernization would be compromised.

The national government’s rejection of Nuevo León’s defence plan was premised upon the CSSP’s claim to scientific knowledge needed for balancing the trade-off between public health and commerce that was at the core of quarantine debates. The CSSP defined the issue: “Can the interest of public health be protected, without the least harm or prejudice to the interests of commerce and the ease of communications?” The CSSP cited international conferences—especially those held in Venice (1892) and Dresden (1893)—as the authoritative source for its rejection of the Tampico quarantine. These conferences “defined most exactly the action that should be followed with passengers and cargo.” They endorsed the use of health inspection stations instead of the suspension of trade. Licéaga insisted that as the top national “health authority” he could “not advise the Mexican government to adopt a resolution of transcendental importance, such as the suspension of a railroad’s traffic, when the most advanced nations in public hygiene will not allow, for the purpose of stopping the spread of an epidemic, the suspension of railroad traffic.” Authorities in Nuevo León, he asserted, “are in disagreement with the preponderance of evidence presented by the delegates to the Venice, Dresden, and Paris Conventions.” Although they were men of science, the health authorities in Nuevo León were not using modern methods.<sup>65</sup>

In the battle over policy, the national health board used its claim to scientific knowledge as a tool for limiting the autonomy of state and local action. In a long essay explaining the national government’s position opposing strict quarantine policy, Licéaga outlined “all of the details of the doctrine that currently dominates in science as it concerns measures of public hygiene.” This included a history lesson, one that

projected Nuevo León as backward, if not anti-modern in the field of health science. “In past times, and until very recently,” Licéaga patiently explained, “it was believed that the surest means of detaining the spread of an epidemic was the complete interruption of communication with the infected place and those who were trying to be defended. Toward this end *cordones sanitarios* were established.” These dark days of medieval Europe’s quarantines were an antinomy to the modern nation-state being constructed by men like Licéaga. They wanted Mexico to be like England, because, as Licéaga explained, the British were the first to break the darkness of quarantines by cleaning port cities and trading freely with the world. “United by its conviction not to put barriers in front of its external commerce,” he stated, the English “promoted the idea of substituting maritime quarantines and replacing them with rigorous sanitary inspections of those ships that arrived in its ports.” Licéaga maintained that the “practical spirit of the English people” helped them to understand that inspection of shipping was only part of the answer, “that the indispensable measure was to sterilize the land exposed to germs, that arrived from the exterior.” Sterilizing the land meant “proceed[ing] with the sanitation of all of its maritime cities, in a greater scale than had ever been done before among any of the people of the earth.” The English example swayed the world’s leading scientific opinion against the total quarantine. “The idea gained ground quickly,” and by the time of the Venice Conference, all hygienists of “first order” agreed: “IT IS POSSIBLE TO PROTECT THE INTERESTS OF THE PUBLIC WITHOUT INTERRUPTING PASSENGER AND CARGO TRAFFIC, AND WITHOUT PREJUDICING COMMUNICATION, OR CAUSING THE LEAST DAMAGE POSSIBLE.” In step with the progressive march of history and the “labor of so many men of science and of so many men of public administration,” Licéaga explained that Mexico’s Maritime Sanitation Code of 1894 was directly modelled after the protocols of the Dresden Conference. Nuevo León was simply out of step with the modern world.<sup>66</sup> Health officials selected sanitation as the replacement for quarantines.

On 15 September 1899, Tampico’s municipal president, José María Maraboto, wrote the minister of government a memorandum praising the advances made in the port. “The whole country can see, with unanimous applause, the persistence with which the national government has pursued the country’s development and progress. The beneficial protection of peace has generated innumerable and important industries, expanded commerce, improved all public services, [and] secured the solid basis for the national credit.” Maraboto compared Tampico’s material progress, especially the dredging of the bar of Tampico, the new jetties, the construction of the customs house, and its new wharfs and piers to the projects underway in the port of Veracruz. His memorandum, however, moved beyond a celebration of the modernizing nation-state by addressing the problem of Tampico’s health and sanitation, presenting it as the single most significant challenge to the port’s capacity to sustain “progress and civilization.” Maraboto



explained the problem in clear terms. "Unfortunately," he stated, the completed projects "[have] not actually offered the advantages that are desirable in regards to hygiene and health. In Veracruz yellow fever is endemic and in Tampico . . . various bouts with yellow fever have appeared, which in the last year caused considerable havoc." He emphasized with caution, "It is important to note that every appearance of yellow fever in Tampico constitutes a serious threat to all of Tamaulipas as well as the important parts of Veracruz, San Luis Potosí, Nuevo León, and Coahuila."<sup>67</sup> Responding to the municipal president's memorandum, the national government placed Tampico's yellow fever problem in even larger terms. "I only want to add," replied the minister of government, "I have been taught that when yellow fever invades Tampico, not only do we see Tamaulipas and its other *tierra caliente* neighbors seriously threatened, but through the connection of railway lines with those of the American nation, it also affects international traffic."<sup>68</sup>

From the Tampiqueño point of view the core of the problem was the port's lack of basic sanitation. Maraboto speculated yellow fever was "caused by the lack of sewers . . . the deficient quality of water that the majority of the people drink, and the porous nature of the streets that allow gases to evaporate into the atmosphere from the puddles made by the boorish." Local doctors, he continued, "have indicated that to annul the effects of these physical conditions the establishment of a complete system of sewers, the paving of the streets, and the introduction of drinkable water" was necessary. Maraboto pointed out, however, that the solution to the problem, a major public works project, far exceeded the municipality's ability to finance.<sup>69</sup>

In a sweeping review of CSSP efforts at combating yellow fever, Narciso del Río, in March 1900, put forward the national health board's sanitizing agenda. It echoed Maraboto's analysis. "For some time now the CSSP has tried to implement throughout the Republic the most effective and scientific steps for improving the hygiene of its population." The CSSP's resources were committed to the sanitation of Veracruz, the endemic yellow fever centre of Mexico. "But as the experience of so many years has proven, in this region of the Mexican Gulf yellow fever is born spontaneously." Consequently the CSSP perceived "the urgent necessity for proceeding with the sanitation of both Veracruz and Tampico to attack the yellow germ in its cradle." Del Río was convinced that as long as yellow fever was possible in Tampico or Veracruz, the Porfirian project was in jeopardy. "To remedy this," he asserted, "the CSSP insists upon the necessity of sanitizing our ports." Through sanitation "the city which until now has been a dreadful center of *el vómito* and a dangerous neighbor for the other ports, will attain with hygiene the heights of the most advanced capitals. Sanitation will be the most salient note of admirable progress that the nation is experiencing."<sup>70</sup>

The sanitation solution meant reworking the urban ecologies of port cities like Tampico. The nation-state promoted

major sanitation projects in order to break up the yellow fever nexus. Tampico's sanitation, however, came with a serious price, a Faustian bargain that stripped the city of its economic autonomy and left it increasingly dependent upon the nation-state to implement urban planning.<sup>71</sup> This dependence was enhanced because eliminating Tampico's yellow fever problem did not rest solely within city limits. Tampico depended upon the nation-state to wage anti-yellow fever campaigns in distant places like Veracruz and the Yucatán, points from which Tampico's commercial contact left it exposed to yellow fever. Tampico could be perfectly sanitized, but as long as yellow fever remained endemic in Veracruz, the port's yellow fever nexus remained active. Tampico would not be liberated until the endemic centres were also liberated, which made the port's future contingent upon what happened in localities and regions outside of its control. The nation-state was the only administrative entity with the capacity to survey and supervise the yellow fever campaign throughout multiple and diverse locations.

Ultimately Tampico's problem was resolved because of a major shift in the knowledge about yellow fever. In 1900, doctors confirmed that yellow fever's transmitter is the mosquito. Public health authorities now had the paradigm needed to dismantle yellow fever's nexus. Health officials launched mosquito eradication campaigns, which were designed to remove the mosquito from yellow fever's spatial structures. Without the mosquito buzzing about the port's urban geography, Tampico could finally be safely coupled with Caribbean port cities, as well as Texas via Monterrey.

Evaluation of Tampico's 1898 yellow fever epidemic highlights several significant areas of concern for urban historians. The case study demonstrates unintended consequences of modernizing projects sought by local populations as well as the nation-state. In the late nineteenth century, Tampico was eager to become part of the modernizing nation-state, and enthusiastically embraced becoming part of the nation's railroad system. Tampiqueños welcomed infrastructure projects designed to make their city modern. These undertakings, however, significantly altered the urban ecology, making dangerous yellow fever epidemics a significant problem for local health authorities. Their problems, however, were no longer local in scope and impact. The same railroad that modernized Tampico also brought yellow fever to other cities within Mexico, making its poor health a national problem. The health consequences of modernity also demonstrate limitations within the ability of local officials to contend with epidemics. Tampico's health authorities were overwhelmed by the epidemic. They struggled to adequately provide for their population, and failed to prevent yellow fever from spreading outside of the city. Likewise, state governments were unable to contend with yellow fever. The Tampico case illustrates that urban health in late nineteenth-century Mexico was preeminently an issue for the nation-state to address. The 1898 epidemic revealed an intricate battle between state and national authorities over the

use of quarantines. The nation-state's anti-quarantine position triumphed and thus enhanced national authority over urban public health policy.

The Tampico case highlights the need for urban historians to conceptualize a history of the circum-Caribbean.<sup>72</sup> Sinews of commerce connected all Caribbean port cities and formed a regional economy integral to particular nation-state projects as well as the urban geographies of each city. Commerce meant that all Caribbean port cities contended with common public health problems, especially yellow fever. In the Caribbean system, the primary port cities of Havana, New Orleans, and Veracruz served as pandemic centres. Urban historians need to explore the constants and variables within the pandemic cities, in order to understand how each city devised technologies of power to face yellow fever, how these technologies intersected with the modernizing agendas of their respective nation-states, and how these intersections influenced the links between the Caribbean port cities. The last point indicates the importance of secondary ports like Tampico, Progreso, Galveston, and Mobile within the Caribbean's urban ecology. As shown in the Tampico case, important lines of analysis need to focus on the role of quarantine, imperfect public health paradigms, sanitation projects, and the interactions among local, regional, and national public health authorities.

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61. Slabey to Cofer, 7 October 1899, *Public Health Reports* 14 (1899): 1819. "Sanarelli's serum" was a yellow fever prophylactic and treatment developed by the distinguished Italian bacteriologist Giuseppe Sanarelli in 1897. Hired by the Uruguayan government's Institute for Hygiene, Sanarelli applied the scientific method of Robert Koch that was used in identifying germs causing epidemic diseases like yellow fever. Sanarelli claimed that he had discovered the much sought after "yellow fever germ," a microbe called *Bacillus icteroides*, from which he developed the serum. The USMHS, under the direction of George Sternberg, investigated Sanarelli's findings and flatly rejected the Italian doctor's claims to having found the yellow fever germ as well as providing for its prevention and effective treatment. Before its scientific defeat, however, the Sanarelli serum had gained wide use throughout the Americas. A thorough discussion of Giuseppe Sanarelli and the search for the yellow fever germ is in Margaret Warner, "Hunting the Yellow Fever Germ: The Principle and Practice of Etiological Proof in Late Nineteenth-Century America," *Bulletin of the History of Medicine* 59 (1985): 361–382.
62. Licéaga and Elguero, "Medidas para impedir la propagacion de la fiebre amarilla," 107.
63. CCSP evaluated each of the arguments made by the Nuevo León studies, endorsing much of the factual information, but "truly lament[ed] not being able to accept neither the conclusion that our Monterrey companions have arrived at nor the reasons that they are founded upon." For example, the Consejo concurred that cases were developed from contact with shipments originating in Tampico. However, they did not prove conclusively that these were the first cases and there was thus no proof that the commodities were necessarily contagious or carrying fomites. The Consejo agreed that the spread of yellow fever Tampico was a possibility, but it disagreed over what means and conditions of conveyance were possible. Maintaining that only in certain cargoes and circumstances did yellow fever spread, the Consejo reasoned that inspection, not suspension, was the appropriate course of action. Eduardo Licéaga, "Medidas para impedir

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- la propagacion de la fiebre amarilla," 1 July 1899, *Boletín del Consejo Superior de Salubridad* 5 (1899): 127–129.
64. Licéaga and Arellano, "Medidas para impedir la propagación de la fiebre amarilla," 109.
65. Ibid. For background on the international conferences, see Milton Roemer, "Internationalism in Medicine and Public Health," in *Companion Encyclopedia of the History of Medicine*, Vol. 2, eds. W. F. Bynum and Roy Porter (New York: Publisher, 1993), 1420–1422.
66. Eduardo Licéaga, "Medidas para impedir la propagación de la fiebre amarilla," 1 July 1899, *Boletín del Consejo Superior de Salubridad* 5 (1899): 135–136. Capital letters are original.
67. José María Maraboto to ministro del estado, 15 September 1899, foja 012601, caja 26, legajo 24, CPD.
68. Secretaria de gobernación to ayuntamiento de Tampico, 15 September 1899, foja 012600, caja 26, legajo 24, CPD.
69. José María Maraboto to ministro del estado, 15 September 1899.
70. Narciso del Río, "La desinfección en la fiebre amarilla," *Boletín del Consejo Superior de Salubridad* 5 (March 1900): 377, 385–386.
71. Glen David Kuecker, "Alejandro Prieto: *Científico* from the Provinces," in *The Human Tradition in Mexico*, ed. Jeffrey Pilcher, 91–102 (Wilmington, DE: Scholarly Resources, 2003).
72. A research team at Mexico's Instituto Mora recently concluded a multi-year seminar on Caribbean port cities. They published a two-volume collection of essays that provide the foundation for future work on Caribbean cities. Johanna Von Grafenstein Gareis, cord., *El Golfo-Caribe y sus puertos*, vol. 1, 1600–1850 (Mexico: Instituto Mora, 2006); Johanna Von Grafenstein Gareis, cord. *El Golfo-Caribe y sus puertos*, vol. 2, 1850–1930 (Mexico: Instituto Mora, 2006).