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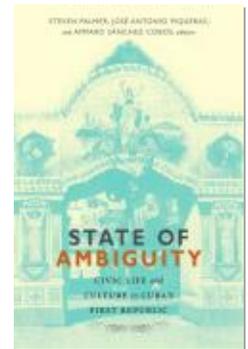
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CHAPTER 4



Slaughterhouses and Milk Consumption in the “Sick Republic”

Socio-Environmental Change and Sanitary
Technology in Havana, 1890–1925

Reinaldo Funes Monzote

“I think of our republic as a sick patient who has to be led by the hand along an endless path overlooking an abyss into which we might fall at the slightest inattention.”

—MIGUEL DEL CARRIÓN, 1921

In August 1924, in its “Palpitations of National Life” section, the magazine *Cuba Contemporánea* dedicated one of its entries to the appearance of a serious epidemic of typhoid fever in Havana.¹ The heading, “The Sick Republic,” was also the title of one of the permanent sections of the Havana medical journal *Vida Nueva* (*New Life*). The diagnosis in this particular case was that the Republic of Cuba, “mistreated by the ineptitude and avarice of its governors,” displaying the general breakdown of its vital organs, had been seized by certain illnesses “whose destructive power was growing within the exhausted organs.” Among the conjunctural causes cited were the economic crisis and a deficient official protection of sanitation. The latter was particularly evident in the contamination and insufficiency of drinking water in the capital that came from an aqueduct built originally for a population of 150,000 to 200,000 inhabitants that had now topped 400,000.²

While the allegory of the polity as sick organism was common in the Latin American social essay and novel of the era, its appearance in Cuba was surprising, contrasting as it did with two decades of positive evaluations of the island’s progress in hygiene and pub-

lic health starting with the first U.S. occupation.³ Even during the national crisis years at the beginning of the 1920s there was no lack of voices extolling those advances in hygiene and health and noting how they differed from the state of things in other administrative domains. In 1923, discussing indicators of Cuba's regression since 1906, bibliographer and historian Carlos Trelles noted that there was "little to criticize" about the Department of Sanitation.⁴ Whether to certify the decadence of the republic inaugurated in 1902 or to show one successful side of it, medico-sanitary activity and science in general became protagonists of the first order in narratives of the country's social transformation.

The birth of industrial society came with growing urbanization, which in turn demanded a search for solutions to serious sanitary problems that large cities created. Yet there are few works on the Cuban capital that emphasize the role of science and technology on the changes that took place between the last years of Spanish rule and the first decades of the republic.⁵ Most of those that touch on the question focus on urban expansion, architecture, political conflict, and the lifestyles of distinct social sectors.⁶ To use a current metaphor, we know more about the "software" than about the "hardware" of the transformations during this period, though of course any such separation is arbitrary, since both dimensions are reciprocally determining.⁷

Science and technology were vital in modifying living conditions in Havana in the late nineteenth and early twentieth centuries. We start by making reference to the general question of sanitation and public hygiene according to evaluations made by leading scientific actors of the day. Initially they emphasized the positive changes that were reflected in statistics on, for example, the reduction in mortality and the standard of living of the poorest social sectors. Nevertheless, in the 1920s new criticism emerged among scientists concerning the state of health and hygiene, and it became an important part of the enumeration of symptoms of republican decadence. The valuations using medical symptomatology to demonstrate the sickness of the republican organism centered principally on Havana, its sanitary regression seen as the most obvious symbol of a capital city that had been unable to maintain the "civilizing" impulse after the island acquired sovereignty. From this perspective, the degeneration was a consequence as much of biological and social heritage or the influence of climate as it was of political corruption, bad public administration, and control over national resources by foreign interests. It was frequently asserted that the colony remained alive in the republic—an analogy that was congruent with the evolutionary and social Darwinist conceptions of many scientists and other intellectuals.

Regardless of how the urban transformation of Havana was read at the beginning of the twentieth century, the replacement of animals by automotive vehicles and the simultaneous mechanization and industrialization of products of animal origin destined for public consumption played central roles. Science and technology were determinant in promoting and implanting practices and habits that came to symbolize the life of modern cities, marked by new urbanistic conceptions, the advance of electrification, improvements in the supply of water, and new means of transport and communication. What happened with slaughterhouses and milk consumption are excellent examples of socio-environmental change in modern societies.⁸ The need to feed growing urban populations not connected to the direct production of food arose alongside greater productivity facilitated by mechanization as well as the greater need and ability to extend and perfect sanitary vigilance over growing consumption.

In this context, public administrators, physicians, and veterinarians pondered the public health and hygiene implications of slaughterhouses and dairies. Veterinarians in particular were members of a profession that began to have greater presence in Cuba starting with the founding in 1907 of the Free Veterinary School, which shortly afterward became part of the University of Havana.⁹ As Stefania Gallini shows for the case of Colombia, the study of veterinarians proves to be fundamental to writing a cultural and environmental history of the production and consumption of meat—a criterion that could be equally well applied to diverse aspects related to milk.¹⁰ Both issues are addressed in the following analysis of public debates on Cuban decadence and are shown to be indicators of the complexity of a society in motion and influenced by rapid transformations made possible by the application of techno-scientific innovations. While the discussion of meat and milk production coincided in some ways with the politicized narrative of the sick-to-healthy-to-sick republic, the chapter proposes that these were more concrete issues within the overall problematic of hygiene and health, in which objective transformations and their limits can be observed beside great discourses about the advancement and regress of the republic or conjunctural statistics. As one of the symbols of the lack of hygiene during the colonial period, slaughterhouse reform and the increase in consumption of sanitary milk became without a doubt emblems of a new era.

Hygienic Modern Capital

In the late nineteenth century, physicians and scientists exercised greater protagonism in their areas of expertise, in the capital as well as in other cities.

The Royal Academy of Medical, Physical, and Natural Sciences of Havana, founded in 1861, and other scientific societies created after 1879, took on the principal problems of health and hygiene that affected colonial society.¹¹ The most alarming issue was yellow fever. In 1893 the physician Diego Tamayo estimated that yellow fever had killed more than forty thousand in Havana over the previous thirty years, not to mention the great mortality from other diseases like tuberculosis, typhoid fever, diphtheria, enteritis, and tetanus. He also concluded that 60 percent of these deaths could have been prevented had it not been for a lack of urban planning, deficient drainage, the accumulation of waste, and the adulteration of food. Above all, though, was the lack of initiative to achieve change and the absence of “a general plan of sanitary reform that would tend to guarantee the health of the land in which we live.”¹²

Tamayo was joined by others such as the engineer Herminio Leyva, who blamed the poor initiative and scarce resources of Havana’s city authorities for problems like the presence of stables in populated areas, the state of the plazas near markets and slaughterhouses, the contamination of the harbor (a major cause of disease in the opinion of many sanitary experts of the day), and the “reckless, near criminal, lack of concern” about quarantine.¹³ Spanish military doctors added their voice to the clamor over the capital’s hygiene, including Cesáreo Fernández, who addressed the Royal Academy of Sciences in 1896 on the subject.¹⁴ The growing number of medico-scientific journals became platforms for specialized debate, including *La Higiene*, the flagship journal of Havana’s Society of Hygiene between 1891 and 1895.¹⁵ These efforts, of course, have to be understood against the backdrop of the great advances in hygiene, medicine, science, and technology that characterized the second half of the nineteenth century in Europe and the United States. This was a context that promoted, for example, the creation in 1887 of the Histobacteriological and Anti-rabies Vaccine Institute of the *Crónica Médico-Quirúrgica de la Habana* at approximately the same time that the Pasteur Institute was established in Paris. The institute became a local reference point for complaints over sanitary deficiencies. In the opinion of creole *higienistas*, desires to reproduce such sanitary progress were blocked by the interference of the colonial authorities, adverse socioeconomic conditions, a lack of backing by wealthy creoles, and scarce general concern about hygiene. The outbreak of the 1895 war of independence and, after 1896, Spanish General Valeriano Weyler’s military strategy of *Reconcentración* (forced removal of the rural population to urban concentration camps) caused mortality rates in Havana to soar from 32.4 per 1,000 in 1895 to 89.2 per 1,000 in 1898.¹⁶

U.S. military intervention came in the midst of this crisis. The hygiene

and sanitary improvement work during the four years the island was occupied are considered one of the most successful facets of the intervention. Ever since the participation of a U.S. delegation in an 1879 study of Havana's yellow fever problem, U.S. sanitary experts had been convinced that the insalubrious nature of the port city was a major local and international public health concern. They outlined a number of necessary reforms, among them provision of safe drinking water to all social sectors, elimination of swamps, the replacement of existing sewerage with modern systems, widening and maintaining the cleanliness of streets, covering toilets, removing stables from the urban areas, cleaning up the harbor shore, and modifying the customs of the "lower orders." Many local sanitarians agreed, although some like Herminio Leyva were critical of proposals to tear down the majority of houses or widen the streets.¹⁷

True to form, one of the first measures of the U.S. military occupation government was to form a corps of medical inspectors, as well as clean streets and public places. Regulations were promulgated on quarantine, obligatory vaccination, immigration, prostitution, glanders, infectious diseases, slaughterhouses, markets, veterinary measures, pavement of the streets, construction of a seawall (the famous *malecón*), and provision of water. The assistance of the local medical community was key in making these initiatives work, and many of their representatives occupied high public posts. The most significant of these was Tamayo, who became minister of the interior.

The most notable breakthrough, of course, was the eradication of yellow fever, which the United States was able to achieve, after a number of fruitless initial attempts concentrating on disinfecting streets and water supplies, by applying the theory and method that the Cuban physician Carlos Finlay had been working with since 1881. Proof that a biological vector, the mosquito, was responsible for transmitting the disease meant that effective prophylactic measures could be carried out. General Leonard Wood, the U.S. military governor and a physician by training, maintained that "the confirmation of Finlay's doctrines is the greatest step taken in medical science since the discovery of the smallpox vaccine by Jenner and by itself makes the war with Spain worth it."¹⁸ It has been proposed that the struggle against yellow fever in Havana gave birth to a colonial U.S. public health apparatus oriented to safeguarding its commercial interests, protecting its troops and labor force, and justifying domination.¹⁹

Sanitation became a kind of guarantee of the island's ability to acquire independent statehood. In fact, among the restrictions on national sovereignty codified in the Platt Amendment, appended to the Cuban constitu-

tion by fiat of the U.S. occupying power, was Article 5: “The government of Cuba will execute, and as far as necessary extend, the plans already devised or other plans to be mutually agreed upon, for the sanitation of the cities of the island, to the end that a recurrence of epidemic and infectious diseases may be prevented, thereby assuring protection to the people and commerce of Cuba, as well as to the commerce of the southern ports of the United States and the people residing therein.” Failure to do so would be legal justification for further intervention by the United States, something that Cuban sanitary leaders were immediately attuned to. Juan Santos Fernández, in his capacity as president of the Academy of Sciences of Havana, referred to the obligation in the first session of the body that followed Cuban independence in May 1902, with Wood and the president-elect of Cuba, Tomás Estrada Palma, in the audience. “The exigencies of sanitation in the Island of Cuba are an issue of international interest and have to be placed above all political questions . . . because one would have to be blind not to comprehend that we will not have a *patria* if we do not maintain public health at the level established by the United States government during its military occupation, to the astonishment of locals and foreigners.”²⁰

The warning did not go unheard, if one is to judge by the progress in the area of public health over the following years. Of particular note were the sanitary ordinances; the improvement of the quarantine service; health inspection in the area of immigration; the building of leper asylums, sanitariums, and hospitals; and the laying of modern sewerage and paving of roads in Havana and other cities.²¹ One striking event was the creation in 1909 of the Ministry of Health and Welfare, the first of its kind in the world.²² The physician and public hygiene specialist Enrique Barnet reiterated before the academy in 1913 the favorable image of Cuba’s sanitary state. In his judgment, as a small people spinning “like a satellite in the orbit of a star of the first magnitude,” the republic could not tolerate “quarantinable diseases” that would compromise health in other territories. Fortunately, however, the situation in the island was so satisfactory that its mortality index placed it “beside the most privileged nations.” In 1912 the country had 12.89 deaths per 1,000 inhabitants, and Havana 16.97, while in Washington the figure was 17.4 per 1,000. There was still work to be done on a number of fronts: alongside the usual suspects was a need to build sanitary housing for the lower classes as well as public bathing and washing facilities. Public parks were needed to serve as the city’s “lungs.” Once in place, according to Barnet, Havana would stand alongside the world’s healthiest cities, “and its astonishing and rapid growth and spread, far from being a motive of sanitary alarm,

will be more like those of a healthy and vigorous organism that is developing without setback or stumble.” The same advances were being made in other areas of the island, thanks to the “centralization and nationalization of sanitary services.”²³

The Sick Republic

In the 1920s, in contrast to these optimistic appreciations and in keeping with a growing unease about “Cuban decadence,” the republic’s sanitary state also became the object of criticism.²⁴ The principal points of reference were increases in the general mortality rate and in the incidence of diseases that had seemed under control. In the case of Havana, the theme of the harbor came up again, with Antonio González Curquejo characterizing it in 1921 as “a petrie dish of pathological microbes, and because of its stink a true pigsty.”²⁵ After praising the gains made during the U.S. intervention and the work of the Ministry of Health, he argued that since 1916 the country had “moved backward in hygiene.” Part of the explanation he attributed to immigration from the Antilles, seen negatively by many scientists who argued that it introduced diseases that had been eliminated from Cuba, like smallpox and malaria.²⁶ Among the internal causes, González Curquejo underlined scarce and contaminated drinking water as well as deficient street cleaning, rat infestations, and potholes and breaks in streets, especially those in the outlying barrios, that were sites of infection. Troubling was the fact that public health had regressed most rapidly at the very time during the First World War when the national treasury was in good shape and individual salaries were high. The decadence, in other words, was occurring despite the Ministry of Health’s efforts, which were colliding with the established system and the administrative mechanisms in place.

More exhaustive was a 1925 study read at the University of Havana by Juan Antonio Cosculluela, a professor of hydraulics in the School of Engineering.²⁷ It was predicated on the idea that the modern city was distinct from the old city because it was “a product of steam and electricity.” Its growth had been contributed to, moreover, by the great discoveries of biology, which along with progress in science and technical knowledge had allowed for improvement in urban health. The fundamental characteristic of the modern city was its “continuous, incessant, violent growth” and the intense influx from rural areas, which created the grave problem of depopulation in the countryside.²⁸

Cosculluela underlined that civilization came with an irremediable consequence: the complete contamination of the environment, such that even

the most modern and progressive cities claimed more victims than would be found on a battlefield. He gave the example of New York where, despite the efficiency of the public services, one in every seven inhabitants suffered from tuberculosis and 25 percent of infants died before the age of five. In the case of Havana, statistics showed an alarming increase in mortality from infectious disease, to the point that it was on the road to becoming one of the least healthy cities in the Americas. Its mortality index was 20 per 1,000, while Montevideo's stood at 12 per 1,000, Buenos Aires at 16 per 1,000, and Rio de Janeiro at 19 per 1,000. Havana's sanitary decadence was manifest in a natural population growth that was essentially zero, with natality dropping from 4.16 between 1905 and 1910 to only 1.13 between 1920 and 1924. The growth of almost 45 percent in population in the previous twenty-four years was due to immigration from rural areas and foreign countries. In the first instance, the influx from the interior to the capital meant that the Cuban peasant could no longer be found in the fields but rather in the populated centers, especially Havana, "where he is found working as a peon for a bricklayer or in modest clerical posts." On top of this was the allowing of Antillean immigration, which he qualified as undesirable and dangerous due to the reintroduction of diseases that had been extirpated from Cuba.

According to Cosculluela, the contagious diseases that best demonstrated this decadent sanitary state were tuberculosis, malaria, and typhoid fever. The first was linked to street cleaning, the accumulation of waste, and empty lots that had been converted into dumps. Malaria, in frank resurgence, had to do with the lack of "petrolization" of stagnant waters and the abandonment of the war on the mosquito. But it was typhoid fever that represented the greatest evidence of the sanitary crisis, since mortality from this cause had a determinant role on health indicators for the city. The statistics for Havana showed that mortality had dropped dramatically from 1900 to 1910, from 30.6 to 20.3 per 100,000, before beginning to rise alarmingly and steadily, reaching 51.92 per 100,000 in 1924. This last constituted without doubt an epidemic of hydrological origin, "provoked by the contamination of the public water supply, by its direct mixing with the untreated water of the Rio Almendares." This, in turn, was due to the state of abandonment of the aqueduct, "a fecund fount of fraud and irregularity." So, among modern capitals, Havana occupied an inferior position "due to the complete relaxation of hygiene and sanitary practices in necessary public services." One of the most alarming indicators of this was infant mortality, which had surpassed 15,000 age 0 to 1 between 1919 and 1923.

Cosculluela saw two phases in the urban health indicators of Havana,

one of improvement between 1900 and 1915 and one of decline from that point onward. Modern life was not possible without efficient public services like potable water and proper sewerage, “services that must be controlled by competent hygiene and sanitary engineers.” Nevertheless, Havana was subject to a degree of fraud and corruption “more intense than any country has ever suffered.” This decadence in urban salubrity was part of a context of “general regress suffered by the country in every area of life, since everything is contaminated, everything is infected, to the point that the purest and most honest souls are sick with it.” Meanwhile, the sanitary bureaucrats tried to demonstrate, as a consolation, the efficiency of public hygiene by comparing the mortality statistics of Havana with statistics from the colonial period. For Cosculluela this meant that “if the indices of health measure the degree of progress and civilization in the cities, the fact that Havana’s are so poor . . . is related very closely with the certain and demonstrated cultural regression that all of Cuban society is suffering at present, in each and every one of its cultural manifestations.”²⁹ In this pessimistic evaluation, Cubans had always remained behind civilized peoples until external factors allowed them to overcome inertia. He cited the taking of Havana by the English in 1762 and the French immigration to the island following the revolution in Haiti as examples, and ended with the U.S. intervention that “provided the greatest and most efficient civilizing impulse.” But within ten or twelve years of that impulse, given over once again to its own forces, “the decadence in all our institutions” commenced anew. Not coincidentally Cosculluela invoked the specter of the Platt Amendment, by showing his hopes in new changes: “The geographic fatality of Cuba’s proximity to the United States means that we must take care of urban health if we want to maintain our mistreated sovereignty and leave behind these embarrassing periods of pillage and corruption in hopes of better times. . . . That will have to come quickly.”

This summation of Havana’s state of health was part of a broad national debate that took shape as the republic neared its first quarter century of existence. The most radical analyses pointed to the interference of U.S. imperialism and its growing control of economic and political interests to explain the country’s ills. But other visions concentrated more on determining symptoms than deep causes. In the latter cases, biological, climatic, and medical metaphors were commonly used. One example of such a reading was that of the physician and writer Miguel del Carrión, whose analysis broached issues like the lack of “ethnic unity” and the absence of a spirit of association (organizations of civil society), of discipline, and of hierarchical order. He was particularly concerned with the poverty experienced by Cubans in their own

land, in contrast to the opulent living of foreigners, leaving nationals only the option of cultivating a political career to garner resources and influence. He blamed the forming of the people's character "in the narrow confines of a colonial regime; lulled into the inactive sleep of an easy life in an enervating climate."³⁰

In spite of this, for Carrión the republican slate was not all negative. Despite its deficiencies, Cuban society had progressed in part thanks to the effect of sanitary policies. "Our compatriots have learned to live better, more hygienically, with an order of comfort in their houses and their towns." There were isolated areas and even important towns where the peasantry remained on the margins of "the new cultural currents introduced into the country," but from every town there radiated "beneficent waves" that would permit a metamorphosis. There remained great challenges, like that of "fabricating" citizens in order to change an evolutionary trajectory "strictly controlled by the laws of biology" and to awaken public interest. The Cuban state, in his estimation, was an essentially hypothetical entity, since Cuban society itself did not exist per se. The "de facto" governments of the republic, therefore, had exercised over the country "a doctor's oversight at the bedside of patients attacked by a long illness." This was not something that could be achieved in a single generation. It was only possible through the reconquest of economic wealth. Carrión warned that those in government could not afford to lose sight of the fact that "peoples who do not control the sources of wealth in their own land sooner or later must become slaves." A simple program of government was required to guarantee public hygiene, easy communication, access to schools for all, and a treasury without deficit.

Using terminology familiar to all his colleagues, habituated to the language of science and technology, the writer spoke of the need to establish solid supports for the dangerous bridge connecting this era with the future. Cuba was a republic in its infancy, and it could not be corrected only with laws, since these did not serve "as orthopedic apparatuses on the malformed limbs of the collective body." This was the personified nation as unsteady and immature convalescent that Carrión saw himself leading along the edge of an abyss. "Let us pray to the god of children, and of countries that are beginning to venture their first steps on the slippery slope of Liberty, to preserve us from an untimely fall."³¹

Slaughterhouses of Havana

The great narrative of sanitation, health, and hygiene in the young nation was conjured metaphorically to imagine the state of political independence,

institutional integrity, biological destiny, and cultural potency. To what degree was it echoed by evaluations of the state of health and hygiene in everyday life, especially in mundane areas like meat and milk production that were beneath the limelight of epidemics and gross statistics at the heart of debates over the island's health? The two levels did coincide, as for example in Barnet's 1913 address to the academy, where he insisted that, along with a litany of other sanitary measures, the island's well-being required guaranteeing the purity of milk and impeding the adulteration of its food supply. And yet, if we look more closely at the concrete attempts to guarantee that purity and impede that adulteration, we will find a different set of actors and narratives with distinct arcs.

Havana's scientific community had long been concerned with the condition of the capital city's slaughterhouses, and it was a common topic in the discourses and practices related to the modernization of urban life in the process of industrialization.³² Without going back too far, we might start with physician Ambrosio González del Valle's 1870 demand that they be transferred to the edges of the Rio Almendares. In his judgment this was the most appropriate place because of its topography and the abundance of water for eliminating waste, which could also be used to produce fertilizer if the proper precautions were taken.³³ Ten years later, another physician, Eduardo Plá, reiterated the need to move slaughterhouses, which he saw as true foci of physical and moral infection, to the city's outskirts.³⁴ Among a number of problems, he mentioned their location in more populous and impoverished barrios to the south, which meant that the bad odors covered the city when the wind blew in a certain direction, as well as the absence of water to carry off the detritus and the contamination of the harbor. The buildings were of primitive construction, without the space they needed and in a state of ruin, with scenes like the washing of intestines in the principal entryway being common. Other criticisms were directed to the lack of a veterinarian to inspect the cattle before their slaughter and the barbarous manner in which the killing was carried out.³⁵

In 1889 the Spanish governor, Manuel Salamanca, tried to promote a packet of sanitary measures. The *Crónica Médico-Quirúrgica de La Habana* identified the most important one as the project to build a new slaughterhouse, given that the existing ones were permanent concentrations of infection so bad they kept the necessary influx of immigrants from the island. The banks of the Almendares were considered more appropriate because the river course would permit the cleaning of the enclosure and the washing out to sea of all matter that could not be used for fertilizer and other industrial

ends.³⁶ It was noted that such establishments had attained a maximum state of perfection in more advanced nations, and the Havana municipal government asked the Academy of Sciences to evaluate the project. In 1894 the new municipal slaughterhouse was finally inaugurated, with the financial backing of thirty meat wholesalers.

The slaughterhouse question was one of the first to be addressed as part of the sanitary measures for the city undertaken during the U.S. intervention. On July 24, 1899, the municipal government passed the Regulation of Slaughterhouses, followed later on August 31 by rules governing markets and another on October 10 regarding stables.³⁷ At the end of the same year Tomás Mederos wrote a report on his efforts for the year while filling the office of slaughterhouse deputy. In his opinion, these were establishments that gave the city “a great deal of unwanted notoriety and its most repulsive aspect” because they stood out for their absence of hygiene and morality. In the one dedicated to larger livestock (cows, horses, and mules), the refuse could be seen strewn about in every direction and the heaps of manure and other residual products were an affront to the environment. Many sorts of waste were tossed into the river, which was covered with organic matter as it flowed into the harbor. The picture was even worse in the abattoir for lesser livestock (pigs, sheep, and goats) — an old and broken-down building, “a true pigsty” where meat was mixed ceaselessly with the garbage covering the ground. In each place, the slaughtermen, “drunk with such disorder,” were prone to forget all social consideration and humanitarianism and show themselves “cruel to the animals and shameless with one another.”

Mederos claimed that from the first he understood that the situation required enormous remedial transformation that “could not be the work of a single day or a single man.” For this reason he required the assistance of two physicians on a commission charged with evaluating the slaughterhouses and their implications for health, hygiene, morality, and popular consumption. They had been able to show the poor state of the buildings in some cases and in others the way in which the waste clogged up a pipe from which water was taken to clean hooves and intestines. The adjacent river was grotesque and nauseating, with “heaping amounts of intestinal bits” and the water colored greenish black from putrefaction and thick layers of flies. Inspection of the cattle was deplorable, with the veterinarian responsible barred from doing his job scientifically, “to the point of being forced to declare healthy and fat the majority of those cows who were banded up, skinny, and sick.”

The work undertaken according to the recommendations of the commission quickly transformed this panorama. In the site for larger livestock

the central pavilion was covered with planks and flumes, and basins were installed to manage the water. Solid waste and excrement were deposited in iron tanks and taken to a disposal site in metal vehicles, part of a business run by two men from the United States. According to Mederos, the site soon became the best-run establishment of those under municipal administration. “The pestilent and repulsive buildings, the mountains of garbage, the sludge, the small trench filled with the area’s drainage—all have disappeared and the site has been converted into clean and manageable terrain ready for setting up gardens that will provide a certain poesy to a place that used to be famously sinister.” Moreover, the river was dredged and its banks disinfected, to the great benefit of those who lived on its course.³⁸

Despite these improvements, much was still required to leave the large cattle abattoir in perfect condition. In order to achieve that, the privileges inherited from the colonial era would have to disappear, and for the same to be achieved for the abattoir for pigs, sheep, and goats, which was an affront to “all sense of hygiene and progress,” the solution was its complete demolition and combination with the slaughterhouse for larger cattle where a crematory oven needed to be installed to process the waste. Some of the city government’s dispositions allowed a glimpse of new horizons, like the suppression of some of the rights and privileges to slaughter animals unimpeded that were enjoyed by the heirs of a Havana aristocrat, Count O’Reilly, or those acquired by the wholesalers who had founded the abattoir for large livestock. Mederos concluded that all such prerogatives should be eliminated, “converting those establishments into property of the municipality which would put them at the disposition of the public,” showing neither the favoritism nor the arbitrariness that undermines public order and raises the price of meat. He also requested limits on the activities of the numerous intermediaries in the meat business.

Another of the changes had to do with the reform of the slaughtermen themselves who, once “stripped of vices and bad customs,” would carry out their work with good order and economy. The new administrator of abattoirs, Miguel Zaldivar, promised to dedicate himself to this and other improvements. In the meantime, the veterinarians Valdivielso and Etchetgoyen deserved the credit for the fact that meat was clean and nutritious. Their work demonstrated that the fall in the city’s mortality rate was due in great part to the rigorous and scientific inspection of slaughterhouse meat. Mederos’s report ended with a reference to three deaths from anthrax in the corrals of the slaughterhouse for large livestock. The blood of the cows was sent to the Histobacteriological Laboratory, where the experienced micro-

biologists and physicians Juan Dávalos and Enrique Acosta confirmed the diagnosis. In response, the municipality decided immediately to establish a laboratory in the abattoir to assess the cattle and to purchase a “splendid microscope.” Among other measures, it was determined to take the temperature and blood samples of suspect beasts, as well as from 10 percent of the healthy ones.

In 1909 one of the expert professionals who worked in Havana’s municipal slaughterhouse, the physician Manuel Ruiz Casabó, presented a study to the Academy of Sciences.³⁹ Aside from assessing the facility in which he had worked for ten years, the study also looked at the other two facilities in the city, the Luyanó Slaughterhouse and the Industrial Abattoir. In regard to the Luyanó Slaughterhouse, Ruiz Casabó mentioned that due to complaints from the Cuban Humanitarian Society, two holding apparatuses to avoid mistreatment of the cattle prior to slaughter were built for the corral, and the method of killing was modified. Basically operations relied on the strength of five hundred workers, though the end result was an improvement on the former situation, which had been the subject of “mockery and ridicule around Havana at the time.” The facility at Luyanó, founded in 1907, had an electric motor and steam machinery to move the equipment for hanging the beef and weighing or transporting the meat. Electricity allowed the complete service to operate with only twenty-four workers. On the other hand, its corrals left much to be desired. A purpose-built pipe eliminated water after traveling a great distance to the inlet at Guanabacoa, while the waste products were used by industrial entrepreneurs who maintained crematoria nearby to transform them into fertilizer.

The industrial abattoir was the most recent and important for its magnificence, extension, machinery, processes, elegance, and investment. It was the property of a private company, located at the back of the harbor on the edge of the Atarés inlet. Ruiz Casabó regretted the choice of the site, since he felt it was likely the place where Havana’s notoriously fetid bay showed the greatest concentration of “microbial fermentations.” The plant possessed an enormous refrigerated room and floors for different derivatives of the slaughter, areas for worker hygiene including showers and toilets, as well as metal and wood shops. Huge Westinghouse dynamos generated power for the machines in each department. In sum, everything there was “grand and magnificent.” The killing methods were very advanced, especially those for pigs, done by an “original and ingenious machine.” All derivatives were used at this slaughterhouse, yet it still had difficulties due to the lack of sufficient water for its operations.

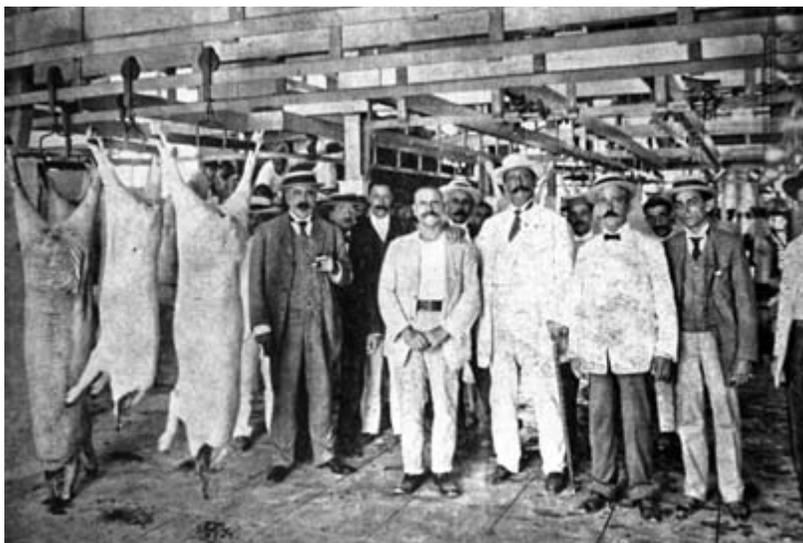


Figure 4.1 Industrial abattoir, area for slaughtering pigs. *El Figaro*, no. 39 (September 26, 1909): 491.

An article published in the magazine *El Figaro*, also in 1909, stressed that the industrial abattoir satisfied a need in the city deeply felt for over half a century, since meat processing had been quite deficient in comparison with progressive capital cities. In terms of sanitation and hygiene, the new installation—a veritable “industrial palace”—was in keeping with the new standards being realized in the country. Moreover, they noted the potential it had to make Havana the meat supplier for the entire republic, the way Chicago was in the United States, and even allow exports to the United States at certain times of the year. The abattoir was, in sum, one of the activities that could consolidate Cuban nationality and a symbol of work, strength, and civilization.⁴⁰

Despite these advances, Ruíz Casadó denounced the fact that the three slaughterhouses were poor in terms of the sanitary inspection of cattle destined for public consumption. In the municipal facility, there were daily protests from merchants who felt disadvantaged by the sanitary regulations. Of the 150 cows that died in its corrals during the ten years he worked there, 115 had had anthrax, and many other cases might have been detected had their slaughter been delayed slightly. The situation was worsened by the naming of unqualified personnel to the inspector positions—for example, a medical doctor who had no knowledge of bacteriological work with a microscope. The author likewise decried the fact that the machinery in the municipal

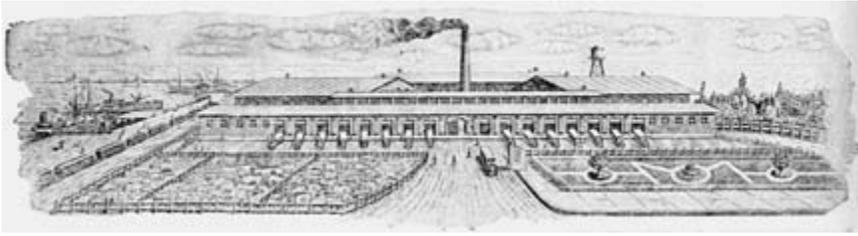


Figure 4.2 Drawing of the Industrial Abattoir, Havana. *Source:* Carlos de la Torre y Alfredo Aguayo, *Geografía de Cuba* (Havana: Cultural S.A., 1928).

abattoir for transforming organic residuals did not do their job and that much waste was thrown into the harbor or mixed into the earth of a neighboring piece of land. In its favor, the facility had one professional inspector for large livestock and another for small, whereas in the rest a single veterinarian was in charge of inspecting live animals, meat, and viscera. Nevertheless, no facility really guaranteed the quality of meat consumed in the city.

A critical perspective on the inspection of slaughterhouses was reiterated in 1925 by a veterinarian, Ricardo Gómez Murillo, in his inaugural discourse as a member of the Academy of Sciences. In his opinion, the peculiar organization of these facilities and of the markets was a serious danger for those charged with inspecting the animals and the meats at the moment they tried to gain compliance based on the inspection outcome. One veterinarian, Lutgardo de la Torre, was assassinated upon leaving the industrial abattoir after such an incident. Gómez Murillo denounced the fact that “it seems that science in the markets and slaughterhouses of Havana has turned back the clock fifty years and today, as then, all that is needed to guarantee the cleanliness of food of animal origin is a quick and summary examination with the naked eye.”⁴¹ He attributed this “inexplicable” backwardness in food inspection, in part, to the fact that it was a municipal jurisdiction, and he advocated nationalizing the service and transferring it to the Ministry of Health.

Milk Production and Consumption

The gradual expansion and perfecting of the dairy industry is another of the great symbols of urbanized industrial society, thanks to the advances in bacteriology, refrigeration, and transport. In this context, milk began to assume the category of the most perfect of foods, as Melanie Dupuis has nicely illustrated in her study of the U.S. experience with this product.⁴² Toward the end of the nineteenth century, the distribution and consumption of milk in Havana occurred on a reduced scale and in rudimentary conditions. At



Figure 4.3 System for milk delivery in Cuba, beginning of the twentieth century. *Cuba Review & Bulletin*, April 1906.

the time, the Spanish military physician Fernández Losada noted the high indexes of infant deaths in Havana from the consumption of contaminated milk, given the lack of real organization of a municipal hygiene laboratory to perform services like the analysis of adulterated foods.⁴³

At the outset of the twentieth century, the consumption of milk in Havana was constantly climbing. A coachman of the era, Luis Adrián Betancourt, relates how many stables were dedicated to cows, and the city filled up with dairies. Between 4 and 5 A.M., people would head to the milking sites with jars in search of fresh milk, or the milk was sold from horses carrying containers. According to the coachman, around 1910 the health authorities made war on the milk producers on the grounds that the presence of cows in the city caused diseases and huge quantities of flies. Because of this they ordered the creation of carts made of galvanized zinc and painted yellow, a color that identified the milk vendors, and they began to inspect milking sites and bottling the milk with seals from the Ministry of Health to avoid the watering down or adulteration of the product.⁴⁴

The growing importance of milk as a foodstuff was related to progress in bacteriology and its effect on the improvement of public health, as well as with the appearance of new techniques for dairy production, processing, and distribution. More than thirty-five articles in the Sanitary Ordinances of 1906 were dedicated to different aspects linked to the consumption of milk, and in 1913 new norms were added following proposals by a commission made up of

academicians Alonso Cuadrado, Barnet, and Coronado. Among their stipulations was that to be distributed milk had to be duly bottled, covered, and sealed; that its sale from stables was prohibited; that licenses for dairies had to be renewed annually or be rescinded indefinitely for those in contravention; that certificates of health had to be secured every six months; and that the milkers had to have well-washed hands. They also recommended fixing the proportions of sugar in condensed milk and that the tins come with dates of manufacture and expiration.⁴⁵

The milk question was relevant not only in terms of food but also in terms of its close connection to distinct diseases. A 1923 article in the *Bulletin of the Panamerican Union* made reference to both dimensions.⁴⁶ The departure point was that it was one of the cheapest foods in proportion to the energy supplied in its production and one of the most desirable for rich and poor alike. But despite these qualities it was also a dangerous foodstuff because each year thousands of children died from diseases transmitted in impure milk like typhoid, Malta fever, scarlet fever, tuberculosis, diarrhea and enteritis, diphtheria, and diseases of the throat.

To prevent such disease, the entry of harmful bacteria into the milk had to be avoided by ensuring cleanliness, healthy animals, careful milkers, special covered vessels, sterilized receptacles, and refrigeration. One advantage was that modern vehicles were faster, but the product containers had to be well covered and not left in the sun. To be sold, milk had to be bottled, as was demanded in “progressive” cities. In a number of such cities a dairy inspection service had been created under the departments of health that covered the entire process from the farms to the consumer. The article particularly exhorted pasteurizing the milk, a procedure that was most extensive in the United States and through which a healthier and sanitized product was secured, though it did not discount other measures such as boiling the milk, a method more widely used in Europe and Latin America.

Cuban physicians and sanitary authorities were aware of these calls to increase milk consumption without converting it into a route for disease transmission. In 1914 the eminent medical scientist Aristides Agramonte presented a study to the Academy of Sciences in which he recounted his visits to pasteurization plants in Europe and the United States. His departure point was that milk was the basis for the artificial feeding of infants, so its production and distribution required the oversight of sanitary institutions in civilized countries. One way to achieve this objective was pasteurized milk, which was the kind most consumed in populous cities of the United States and Germany (Berlin, for example). Years earlier Agramonte had been able

to visit Berlin's Bolle dairy and facilities in New York. In the latter city, two large companies dominated the market and "in heated and tireless but peaceful competition" extended and improved their installations to the benefit of the public and their shareholders. The Sheffield Farms-Slawson Decker Co. plant in Manhattan could produce sixty thousand liters in four hours thanks to its semiautomatic bottling machinery. The employees, dressed in sterilized, white work clothes, had only to supervise operations to remove cracked bottles while others were taken out for random bacteriological analysis. In sum, with a workforce of only fifty-eight, one thousand liters per worker could be pasteurized. In accord with this experience he recommended that Cuba "get our health authorities to set up something of this nature, since it is still impossible to hope for anything from private initiative." If milk treated in this way could be sold at a normal price, "and given out free to the poor, setting up for this purpose many depots in such neighborhoods throughout the city," Agramonte was "sure that the results would not be long in showing themselves, and we would feel immediate benefits in lower infant morbidity, which more than mortality is what should be concerning us."⁴⁷

Agramonte's comments encouraged another academician, Leonel Plasencia, to present a more extensive study to show that Havana's milk was of good quality but was bacteriologically unclean due to deficient handling.⁴⁸ In his estimation, the idea that the milk from Cuban cows was poor had its origins in national pessimism, the tendency "to consider that everything we have is bad and that we are less capable than any other inhabitants of the globe." The problem was in the milking and in the washing of vessels in rural dairies and urban stables where little attention was given to dairy cattle and neither the udders nor the hands of the milkers (who in many cases were children) were washed. Likewise transport was beset by delays and other obstacles. Urban stables were relatively cleaner due to the direct oversight of the health authorities, but they still had sources of infection like "the crowding around the milking by those who want to drink pure milk straight from the cow, who go even in the clothes they've been using to take care of sick people." They also got a lot of germs from the streets, and it was only due to the immunity acquired when the cows "ate papers" ("pastaban papeles") in the streets or the safeguarding habit of many families of boiling the milk that more damage was not done. Another grave danger was the watering down of milk without taking care that the diluting water was sterilized.⁴⁹

The veterinarian José Simpson took up the topic of milk in the academy in 1922.⁵⁰ He claimed that it was the food of greatest importance to humanity and of greatest rank from the point of view of physiology, as well as a product

that constituted the principal wealth of a number of countries that had dedicated their industrial and agricultural energy and initiative to its production. Nevertheless, despite the fact that Cuba had propitious climate and soil conditions to become one of the most important producer countries, its dairy industry did not have adequate hygienic or industrial methods. In tours of the rural areas of the province of Havana, as chief of the Dairy Supply Inspection Service, he had observed that a primitive system was still in effect. Milking was done beneath a leafy tree, on filthy and foul-smelling soil, by a Cuban *guajiro* who rarely felt the “refreshing splash” of clear, clean water on his hands, making it impossible to apply the milk regulations in the ranches of the interior.

Simpson himself and Domingo Ramos, a university professor, shared the work of channeling the supply of milk to Havana and proposed setting up a school on the El Dique farm, which was the property of the state, to show ranchhands how to milk properly (the farm in question was in an area that could be called “dairy alley,” on the road to Güines). Moreover, agronomy experts should visit the dairy farms or groups of dairy workers in their places of work, programs that should not wait for the initiative of foreigners. Just as in England, Holland, and the United States, schools should be set up for adult and child dairy workers. One example invoked was the school in Guelph, Canada, whose fame was such that thousands of interested people with interests in the industry visited annually.

Simpson estimated that Havana needed some 200,000 liters of milk per day, a figure distant from what was then being produced. England’s inhabitants had access to 650 cc each per day, Switzerland’s 700, those in Brussels 800, in Paris 460, in Canada 450, and in Munich 600 cc. By contrast, those in the Cuban capital barely had access to 150 cc per day, despite the fact that its inhabitants not only ate dairy with breakfast, but also had milk products in their afternoon snacks and meals. Having mentioned statistics on consumption in cities like New York, Paris, and Berlin and the number of cows that produced it, the author intoned: “The rivers of milk produced in these countries that stand at the head of civilization still are not enough, however, to satisfy the feeding of the poor in the great cities, where the weak children of the proletariat cannot get enough to eat proper portions. What can we say about the poor of Havana, whose milk sells at the fantastic price of a luxury good?”⁵¹ The Ministry of Agriculture should devote preferential attention to the dairy industry. Along with special schools and conferences in dairy regions, fairs and competitions could be promoted. The *guajiros* would have to be taught how to make silos for dried products, how to select cows to create

new creole breeds, how to establish a good feeding system based on pasturage and other feed supplements, and how to prepare stables with abundant water for proper milking. Cows as well as milkers had to be clean, the former with tests for tuberculosis and the latter with white clothing and caps, disinfected hands, and training in using the milking machines.

Like other authors, Simpson underlined the importance of pasteurization and refrigeration. Fortunately, the regulations on dairy supply in Havana had produced results in terms of the adulteration of products. Based on his experience he affirmed that the ranchers of Havana did not add substances like flakes of yucca or yam, which he considered a popular myth. But they did become “unconscious criminals by producing an impure food of poor nutritional value,” and he criticized their poor techniques—for example, the custom of choosing the best cow in the stable for constant milking. Simpson proposed collaboration with the university, the faculties of medicine and pharmacy, and its professors of medical chemistry and special analysis in an effort to intensify studies on the chemistry of milk. He also proposed that every pharmacy should be ready to provide the public with milk for formula as well as for medicinal purposes, meaning that they would be “equipped to satisfy the need and facilitate the scientific artificial feeding of babies, which is not widespread in our country.”⁵²

In spite of the limitations outlined in these studies, the nascent dairy industry showed progress over the first decades of the republic. The pages of *The Book of Cuba (El Libro de Cuba)*, published in 1925, feature four businesses devoted to dairy commerce.⁵³ The largest of these was the Havana Dairy Supply Company (Compañía abastecedora de la leche de La Habana), founded in 1908. Among the novelties it introduced was the substitution of animal hauling from the countryside with specialized trucks, which allowed for better hygiene and more regular distribution. The system of direct boiling with wood fires was replaced by an expensive steam machine which, along with refrigeration and machines for the rinsing and sterilization of receptacles (the only one in the city), put this factory “at the level of the most perfect in Europe and the United States.” The company had acquired properties with large dairy ranches and purchased an ice factory with a capacity of forty tons per day that was later expanded to a hundred tons, a fundamental element for conserving milk over long distances and distributing it via a deluxe truck service.

These improvements raised sales from 5,000 to 30,000 liters a day, alongside the raising of an ice cream factory with the most modern machinery. Sanitary regulations were scrupulously followed during the entire process,

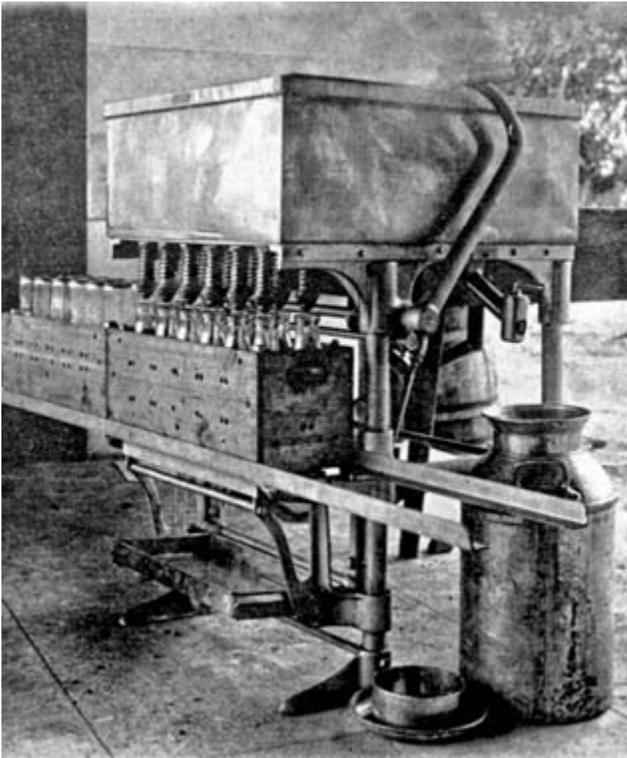


Figure 4.4
Machine for filling and capping milk jugs in a model dairy facility, Havana. *Revista de Agricultura, Comercio y Trabajo*, March 1918.

with constant inspections by the Department of Health and without use of artificial coloring, which produced milk “of an admirable purity and hygienic character,” preferred in the majority of cafés, both private and state-run. By 1925 the company had become a commercial and industrial force of the first order, with thirty-five dairy outlets around the city. It was followed in importance by the Palacio de la Leche (Milk Palace), founded in 1900, and by 1925 with an electrified refrigeration plant with the capacity to preserve twenty thousand liters of milk per day and ice cream. Milk was received by rail and transported in eight large trucks for distribution in the city, with four more for ice cream. The company had twenty-four outlets, and its daily sales reached fourteen thousand liters.⁵⁴ Two other dairy merchants were Modesto Suárez y Hno (Modesto Suarez & Bro.) and Sixto Abreu. The first was established in 1907 as a business specializing in milk transport, receiving it from the train and transporting it in ten-ton trucks. Its fleet of large and small trucks distributed six thousand liters per day of a milk described as pure and supremely hygienic. By 1925 the company had inaugurated a building that conformed to the most modern methods of hygiene. Abreu’s business, for



Figure 4.5 Milk delivery vans of the firm Modesto Suárez y Hno. *Libro de Cuba*, 1925.

its part, was a stable in Vedado for the distribution of milk “according to the strictest sanitary observance.”⁵⁵

The sales of all four businesses put together did not surpass fifty thousand liters per day. Though an indeterminate quantity from other smaller establishments could be added to the total, they did not come close to supplying half the potential demand of the city. Together with the criticism on the deficiencies that persisted in the production, distribution, and inspection of milk, this shows that the system was far from meeting the degree of development aspired to by physicians and veterinarians. The wide margin that existed for criticism allowed for calls to solve the problems of hygiene and public health in an era in which techno-industrial advances in relation to food and successes in the control of diseases accompanied the quick rise of big cities.

Years later, in 1938, the veterinarian Idelfonso Pérez Viguera regretted that the services his profession could add to the dairy sector had been dispensed with. The only assistance vets supplied the industry had to do with the deficient inspection of ranches. He noted that there remained diverse problems that required veterinary science. Pasteurization was insufficient, since there was a large underground sale of untreated milk, and the technique did not apply to milk that went to the smaller towns. There was also a large consumption of fresh cheese made with raw milk and therefore prone to contamination. Even with pasteurized milk there remained the problem of whether or not it came from healthy cows, which could only be determined

by competent veterinarians. Moreover, the large companies that did pasteurize their milk were able to impose a very low purchasing price on producers and resell the milk at prices prohibitive to the poor.⁵⁶

Meat, Milk, and the Sick Republic

In Cuba's transition from colony to republic, the theme of hygiene and public health occupied a place of great relevance. Various factors made this the case, from the prior tradition of a solid medical community that had been capable of producing notable science—the supreme example being Finlay's work on the existence of a biological vector of yellow fever transmission—to the interest of the U.S. military occupation government in showing rapid results in this domain that would cement its economic and political influence as well as its superiority over the old Spanish colonial regime. It is not an accident that the defense of sanitary policies became essential to the discourse on the viability of the republic and the independence of Cuba.

As seen at the outset of this chapter, there was initially strong agreement on the positive march of the country in the area of sanitation, but this image was quickly turned upside down when the signs of “Cuban decadence” began to appear in other domains of national life. In that context, scientists, physicians, and other intellectuals used their arsenal of scientific terms to describe the pathologies of the republic in the political, economic, and social arenas, as though it were a sick patient that required urgent treatment, which itself depended to a great extent on the intervention of technocrats and scientific experts. This rise and fall narrative was not reproduced in the area of discourses on meat and dairy production. Instead, scientific assessments of each industry remained relatively optimistic, centered on the need for improvement (and especially the incorporation of more competent experts) while insisting that core sanitary objectives had been reached or were within reach.

Nevertheless, it would be inexact to attribute the relative success in each endeavor to a change in sovereign status or political system. Although these were not without effect, in reality such changes corresponded to wider transformations like the rise of bacteriology at the end of the nineteenth century and its practical application to areas like the quality of food, the beginnings of automotive transportation, the improvements in industrial technique and assembly line production, the development of veterinary science, and incipient types of mass consumption as the great urban centers expanded. In all these areas the role of science and technology would be ever more influential.

In closing we might make reference to the meaning that Fernando Ortiz gave to the consumption of milk in modern society in the middle of the twen-

tieth century, in a 1947 essay on the Good Neighbor Policy, U.S. imperialism, and pan-Americanism. In his opinion, in the realm of the possible created by science there had appeared the metaphorical ideal of Henry A. Wallace, “to distribute each morning a ration of sterilized and nutritious milk to each inhabitant of the globe.” In advocating the need for an Inter-American New Deal—a “Renew Deal”—that would bring to all peoples of the Americas a plethora of food, mines, machinery, laboratories, schools, universities, and civic and cultural institutions, he could think of no better allegory than the following: “Ah! And jugs of good milk at the dawn of each day.”⁵⁷

Notes

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1. Carrión, “Desenvolvimiento social de Cuba en los últimos veinte años,” 27.
2. “Palpitaciones de la vida nacional: La República enferma,” *Cuba Contemporánea* 35, no. 140 (August 1924): 349–52.
3. On the use of this metaphor by intellectuals in the region, see Guerra Vilaboy, *Cinco siglos de historiografía latinoamericana*, esp. chap. 3, “La historiografía latinoamericana de fines del siglo XIX y principios del XX,” 111–43. Some well-known examples are Zúmeta, *El continente enfermo*, and Arguedas, *Pueblo enfermo* (on Bolivia).
4. Trelles, “El progreso y el retroceso de la República de Cuba,” 352–53.
5. Among studies that tackle the issue are Altshuler y González, *Una luz que llegó para quedarse*, and García et al., *Una obra maestra*. For an evaluation of the problem of Havana’s urban environment, see the essays in Segre, *Lectura crítica del entorno cubano*.
6. Some recent works are Scarpaci, Segre, and Coyula, *Havana*, and Gómez Díaz, *De Forestier a Sert*.
7. Toledo y González de Molina, “El metabolismo social,” 101.
8. On both these antecedents prior to 1868, see Sarmiento, *Cuba: Entre la opulencia y la pobreza*.
9. Mohar, *La escuela de medicina veterinaria de La Habana*. Sources on the evolution of Cuban veterinary science can be found in the electronic journal REDVET, <http://www.veterinaria.org/revistas/redvet>.
10. Gallini, “De razas y de carne,” 291–337. A recent article about the beginnings of veterinary services in a Caribbean country is Pemberton, “Animal Disease and Veterinary Administration in Trinidad and Tobago, 1879–1962,” 163–79.
11. Pruna, *La Real Academia de Ciencias de La Habana*; Funes, *El despertar del Asociacionismo Científico en Cuba*.
12. Tamayo, *Reflexiones sociológicas sobre las causas de la mortalidad en La Habana*, 8–11.
13. Leyva, *Saneamiento de la ciudad de La Habana*, 8–9. With 1 death for every 34 in-

habitants, Havana was below London (1:38), Lisbon (1:42), and Paris (1:35), but above Brussels (1:27), Madrid and Berlín (1:25), and St. Petersburg and Vienna (1:24). Paradelá, “Examen de los orígenes de insalubridad que se atribuyen al puerto de La Habana e influencia de aquellos en la salud pública,” no. 27: 713–36 and no. 28: 108–37, 242–48. Wilson, *El problema urgente*.

14. Fernández, *Consideraciones higiénicas sobre la ciudad de La Habana*.

15. González Curquejo, *Datos para la Historia*.

16. Le Roy y Cassá, *Desenvolvimiento de la sanidad en Cuba durante los últimos 50 años*, 72–77.

17. Leyva, *Sanearamiento de la ciudad de La Habana*, 46–49.

18. The citation is from the discourse of Juan Santos Fernández in the session of December 3, 1908 in homage to Carlos J. Finlay, *Anales* 45 (1908): 350.

19. Espinosa, *Epidemic Invasions*, 10.

20. Santos Fernández, “Discurso leído en la sesión solemne celebrada el día 15 de mayo de 1902,” 10.

21. República de Cuba, Secretaría de Gobernación, *Ordenanzas sanitarias para el régimen de los ayuntamientos de la República*.

22. Rodríguez Expósito, “La primera secretaría de sanidad del mundo se creó en Cuba,” 13. This was “exclusively Cuban” and “a radical innovation for its time.”

23. Barnet, “Consideraciones sobre el estado sanitario de Cuba,” 7. The favorable views on Cuba’s sanitary state did not come only from local physicians. Charles Berchon, from the Society of Geography of Paris, wrote after a 1910 visit that the island enjoyed a healthy atmosphere “due to preventive hygiene measures.” As a result, yellow fever had disappeared and tuberculosis was “each day closer to abdicating its devastator role.” In his opinion, the wise measures taken were due to a “notable administration” and to great fiscal sacrifices by the Cuban state. He noted that the country had ever lesser need of its thirty hospitals and that its powerful private mutualist societies and their *casas de salud* (health clinics) had also played a positive role. Berchon, *A través de Cuba*, 23–26.

24. See the 1924 text by Ortiz, “La decadencia cubana,” 69–80.

25. González Curquejo, *La insalubridad de la bahía de La Habana*.

26. On the scientific debates concerning immigration and racism, see García y Álvarez, *En busca de la raza perfecta*, 466–84, and *Las trampas del poder*, 189–204. Also see Mcleod, “Undesirable Aliens,” 599–623.

27. Cosculluela, *La Salubridad Urbana*.

28. An example given was the United States, where inhabitants of cities had gone from 3.35 percent of the population in 1790 to 58 percent in 1924. At the time the urban population of Germany and England were 80 percent and 90 percent, respectively.

29. Cosculluela, *La Salubridad Urbana*, 17.

30. Carrión, “Desenvolvimiento social de Cuba en los últimos veinte años,” 5–27.

31. Carrión, “Desenvolvimiento social de Cuba en los últimos veinte años,” 27.

32. Lee, *Meat, Modernity, and the Rise of the Slaughterhouse*. A Latin American case study is Pilcher, *The Sausage Rebellion*.

33. González del Valle, *Rastros*.
34. Plá, “Mataderos de La Habana,” 199–202.
35. Plá, “Mataderos de La Habana,” 201.
36. “El nuevo matadero de La Habana,” *CMQH* 15 (1889): 213–15.
37. López del Valle, *Desarrollo de la Sanidad y la Beneficencia en Cuba durante los últimos diez y seis años (1899–1914)*.
38. Mederos, *La gestión municipal en los mataderos de La Habana*, 10.
39. Ruiz Casabó, “Los mataderos de La Habana,” 300–329.
40. “Los progresos de Cuba: Compañía anónima Matadero Industrial,” *El Figaro*, no. 39 (September 26, 1909): 483–92. References to the Chicago slaughterhouses were usual in Cuba starting in the nineteenth century. Dominic A. Pacyga, “Chicago: Slaughterhouse to the World,” 153–66.
41. Gómez Murillo, “La medicina veterinaria cubana,” 621.
42. DuPuis, *Nature’s Perfect Food*.
43. Fernández, *Consideraciones higiénicas sobre la ciudad de La Habana*, 58.
44. Betancourt, *Cochero*, 89–91.
45. “Reparos a las ordenanzas sanitarias,” *Anales*, no. 50 (1913–14): 236–38. En sesión del 29 de agosto de 1913.
46. “Leche pura: importante problema en la alimentación,” *Boletín de la Unión Panamericana* (July 1923): 43–56.
47. Agramonte, “Notas acerca de la pasteurización de la leche,” 906.
48. Plasencia, “Le leche que se consume en La Habana, por su composición es buena,” 921–57.
49. Plasencia undertook the bacterial counting in three types of stables. The first had frequent cleaning, including of the udders and the hands of the milkers; the second had regular cleanings that did not include udders and hands; and the others had deficient cleaning. The evidence gathered allowed him to argue that infectious material in milk increased in the absence of cleanliness during milking. In the first group he obtained an average of eight bacterial colonies per cm², in the second twenty bacterial colonies per cm², and in the third fifty-two colonies per cm².
50. Simpson, “La leche en Cuba,” 34–73.
51. Simpson, “La leche en Cuba,” 42.
52. Simpson, “La leche en Cuba,” 73.
53. República de Cuba, *El libro de Cuba*, 1925, 797.
54. República de Cuba, *El libro de Cuba*, 1925, 800.
55. República de Cuba, *El libro de Cuba*, 1925, 828, 834.
56. Pérez Viguera, “Funciones del veterinario en la higiene pública y en la industria pecuaria y nacional,” 528–36.
57. “¡Ah! Y jarros de buena leche al alba de cada día.” Ortiz, “Imperialismo y buena vecindad,” 314, 318.