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# From the “dirty port” to the Disinfection Service of the Port of Rio de Janeiro (1893-1911)

**Thiago Mantuano**

Department of Philosophy and Human Sciences, Universidade Estadual de Santa Cruz, Brazil

tvmfonseca@uesc.br

**Abstract:** This article demonstrates how sanitation was one of the many issues that led to the heavy opposition to the operation of the Port of Rio de Janeiro, at the end of the nineteenth century. Aside from the historiographical framework that centers on the movement of people and objects through ports as a threat to public health at that time, the aim was to clarify how the port itself and its infrastructures were considered hazardous and unsanitary and how the sanitation defense procedures were found to be inadequate and ineffective. The evidence presented here points to the destruction-construction of the Port of Rio de Janeiro, in the early twentieth century, as a solution to radically transform its infrastructure. The port under construction was consonant with the full technical-technological implementation of the “disinfection” service, which both supported its new operation and helped solve the public health issues afflicting the city.

**Keywords:** Rio de Janeiro; Port; Health; Disinfection; Construction

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## Introduction

Four decades after the first International Sanitary Conference (Paris, 1851), few consensuses among public health doctors and national builders of new public health government bodies around the world have become so deep-rooted regarding the need to monitor, control and intervene in infrastructures, flows and environment of ports, especially maritime ports. In the second half of the century, the great growth in the international and transoceanic movement of goods, people and vessels, combined with the persistent and varied epidemics seriously observed in port cities, began to be seen as possible threats to human life.

Scientists from all over the world began to dedicate themselves to the health challenges posed by port cities, but also by ports, experimenting, developing theories and practicing their intervention in public policies. At the end of the nineteenth century, Brazilian doctors went from being apprentices to foreign scientists to becoming renowned specialists with notoriety abroad.[1] At that time, both the opportunity foreigners had of accessing higher education programs in European and North American centers, and the trips of famous experts in European and North American medicine to the Southern Hemisphere, fed back into the various international scientific meetings being held, namely at the Pan-American level. These exchanges favored the circulation of ideas, information, practical projections, techniques, materials and equipment that renewed the area of hygiene and medicine, seeking to tackle etiologically and epidemiologically poorly known diseases from innovative perspectives.[2]

Maritime and urban public health were united as a health problem in ports. National health defense procedures had become insufficient, as most of the world's largest ports were considered "infected" by doctors that were increasingly relevant to international debates.[3] In this context, the obvious disastrous consequences of diseases such as yellow fever, cholera morbus and bubonic plague in port cities forced national states to draw up *international hygiene* agreements.[4]

Only in the 1880s did the importance of international epidemiological surveillance activities result in joint measures fully integrated by consortiums of national states, through sanitary-diplomatic treaties and conventions.[5] However, powerful business interests challenged the regulation of the movement of people, goods and shipments, often officially expressly through

[1] Jaime Benchimol, *Dos Micróbios aos Mosquitos: Febre Amarela e Revolução Pasteuriana no Brasil* (Rio de Janeiro: Editora FIOCRUZ/Editora UFRJ, 1999).

[2] Alexandra Minna Stern and Howard Markel, "International Efforts to Control Infectious Diseases, 1851 to the Present," *JAMA* 292, no. 12 (2004): 1474-9.

[3] World Health Organization (WHO), *Scientific Background of the International Sanitary Conferences, 1851-1938* (Geneva: Stationery Office. Books, 1975).

[4] Emphasis my own.

[5] Marcos Cueto, *O Valor da Saúde: História da Organização Pan-Americana da Saúde* (Rio de Janeiro: Ed. Fiocruz, 2007).

quarantine laws or disease clauses in immigration laws. Quarantine was a fundamental mechanism through which the authority and territoriality of modern nation-states were asserted and made meaningful but came to encounter strong contestation over their effectiveness.[6]

Doctors influenced by microbial theories claimed that the ports' sanitary services did not lack strictness, but needed rather a clear, consistent and integrated reform with the rest of the port's infrastructure and activities. To this end, throughout the world, the fumigation technique was reappropriated and reinvented based on the adoption of sulfur gas as a disinfection practice that aimed to disinfect environments, applying perfectly to ports and shipments, and thus replacing the location of quarantines in the health defense of ports.[7]

The advent of the Republic did not strip Rio de Janeiro of its status as the largest port in Brazil. However, some factors unrelated to the city and the port showed that even before the beginning of timeframe discussed in this paper and reinforced in this period, the characteristics of the goods received and shipped through the port had generally and proportionally changed. Moreover, the flow of people commuting, working, and living in its surrounding areas increased significantly, especially due to the unprecedented wave of immigration in Brazil. In the 1890s, the Port of Santos replaced the Port of Rio de Janeiro as the leading and undisputed exporter of coffee in Brazil due to the rapid growth of coffee cultivation in the state of São Paulo, where Santos is located, the decline of coffee cultivation in the state of Rio de Janeiro and other parts of the of the Paraíba do Sul river basin, and, above all, the construction of railways connecting the port of Santos to the coffee-producing areas in the state of São Paulo. However, Rio de Janeiro remained a great importer, considering it was the federal capital, the largest city in Brazil, the hub of decision-making, commerce, finance, and industry, both locally and for the vast hinterland it supplied through the older railway network, which began and ended at the city's terminals, and the busiest cabotage terminal in Brazil. Notably, in Latin America, it was during this period that Rio de Janeiro was unseated by the Port of Buenos Aires, a process closely observed by Brazilian politicians and businesspersons. To all the observers, it soon became clear, by the end of construction of the new Buenos Aires port, in 1897, that the new port had surpassed the Port of Rio de Janeiro in terms of cargo, passengers and, especially, revenue.

By the end of the nineteenth century, the port of Rio de Janeiro had lost capacity and proportionally decreased its national relevance and status. Clearly, the predominating port operation, in many ways, was fully or partially responsible for its decline. Although there is no

[6] Alison Bashford, *Quarantine: Local and Global Histories* (Basingstoke: Palgrave, 2016).

[7] Lukas Engelmann and Christos Lynteris, *Sulphuric Utopias: A History of Maritime Fumigation* (Cambridge: MIT Press, 2020).

evidence of "total disorder" as some sources claim,[8] the established order was detrimental to the flow of goods and people that passed through the port. In reality, port operations were subjected to an increasing degree of dysfunctionality and degradation, in addition to a questionable institutional framework. Although these issues did not prevent the port from functioning, they demanded extra time and costs, caused material and human losses, and inevitably triggered growing public debates regarding its physical and material existence and operation.

There were concrete, real, palpable, tangible, observable, and calculable reasons to reach a broad political and social consensus—including among the dominated classes—against the port operation in Rio de Janeiro. The complaints varied depending on the critic. At the turn of the nineteenth century to the twentieth century, however, the very struggle against these obstacles that prevented better port operations in Rio de Janeiro caused the bottlenecks that were translated as exhaustion of the operations due to the proliferation of warehouse facilities between Morro de São Bento and Ponta do Caju.[9]

The historiography, in which my previous work is included, as well as the other authors cited in this article, have focused excessively on the issues and limitations of the movement of people and cargo. Deservedly, due to the sources addressed here, the various factors involving port traffic and the functioning of port operations were considered central to understanding the broad consensus regarding the constant inadequacy and increasing dysfunctionality of port production. From a historical perspective, *port operations* are described as the interweaving and amalgamation of multiple means to fully satisfy the various purposes of a port.[10] Therefore, port operations are not limited to the services of loading/unloading goods and embarking/disembarking passengers; reducing port operations to these services is to minimize the issue.

This paper argues that the sanitary conditions, inspection, and defense of a port are part of its full operation. Furthermore, they are correlated and must be understood holistically, together with sea and land transport and the movement of goods and people. Other aspects that should be considered are security in navigation, tax, police, and labor, among others, and all bureaucratic, commercial, industrial, financial and, especially, urban and land-related factors that comprised port operations during the selected timeframe. It is not possible to consider the physical, material, and environmental factors without including public and personal health. In this regard, the historiography has provided us with a vast literature that demonstrates its

[8] Cezar Honorato and Thiago Mantuano, *Escritos Sobre História Urbano-Portuária do Rio de Janeiro* (Niterói: PPGH-UFF/POLIS-UFF, 2024).

[9] For a better idea of the geography of the port of Rio de Janeiro in the nineteenth century, see Thiago Mantuano, "Porto do Rio de Janeiro: Um Panorama da sua Operação no Século XIX," *Revista do Arquivo Geral da Cidade do Rio de Janeiro* 2 (2017): 589-618.

[10] Thiago Mantuano, "As Operações Portuárias Pré-capitalistas no Brasil," *Análise Social* 59, no. 250 (2024): 56–84. Emphasis my own.

critical importance for the evolution of public health, especially of hygienism and sanitarianism, when addressing the issues of sanitation, disinfection, and inspection in ports. It is necessary to address how the institutional reconstruction of the General Health Inspectorate of Ports was the subject of disputes and its performance, as well as the derived results, was recurrently questioned for reasons beyond its legal scope. The institutional, technical-scientific and technological sophistication of the Disinfection Service of the Port of Rio de Janeiro cannot be recorded without considering the construction of the Port of Rio de Janeiro, at the start of the twentieth century, as they both coincide in time.

## Sanitary reasons for the degradation of Rio de Janeiro's port operations

The sanitary dimension was undoubtedly one of the most critical dimensions with widespread negative repercussions for the port operations of Rio de Janeiro. Rio de Janeiro was known in many regions as a "dirty port," not without reason. The sanitary conditions of the vessels it received, the sick passengers, the cargo itself and the port infrastructure inflated the stigma of "pestilence." It threatened the lives of people and the conditions for the city's expansion by driving away part of the cargo movement and, above all, the attraction of business from other capital cities and immigrants to the Brazilian capital.

According to Odair Franco,[11]

> the eradication of yellow fever in the Brazilian capital was a critical issue in terms of sanitation, the economy, and society. It was a disgrace and an embarrassment. Posters were fixed to the wall of foreign ships that docked in Rio warning passengers not to go ashore. And they were right. The unfortunate events caused by yellow fever were numerous and often of painful international repercussions.[12]

This negative advertising was not unfounded since reports of diseases among foreigners were real and vivid and involved quarantines that frightened passengers, captains, and shipping companies alike. The crews would rather suffer the privation of remaining in their navigational tribulation than descend to Rio, for many believed that to touch the city was tantamount to suicide.

This period saw the paradigmatic decline of the various theories based on the existence of "miasmas" and the rise of microbe theories, meaning that a consensus had not yet been

[11] Doctor and researcher in Health History at the Brazilian Ministry of Health.

[12] Odair Franco, *História da Febre Amarela no Brasil* (Rio de Janeiro: Ministério da Saúde, 1969), 84. All translations are the author's unless otherwise stated.

established.[13] In both cases, the analysis of port infrastructure and its own functioning were under heavy scrutiny. To some extent, both paradigms resulted in final evaluations and very similar sanitary and hygiene recommendations, which directly affected port operations nationwide.[14]

For those who were still convinced about miasmas, the problems were the "stagnant waters, the welled water, and the mangroves" that exuded "putrid odors." Other problems included vessels full of degrading objects, with molds and extruding strong smells, and tanks of dirty, stagnated water, which released hazardous gases. The experts however, sought to identify these microorganisms and learn which vectors hosted and transmitted the derived diseases. In this context, the abundant mosquitoes, rats, fleas, and contaminated water in ports became the targets of investigation and were readily available in the Port of Rio Janeiro.

As early as 1890, Didimo Agapito da Veiga[15] published a study on the environmental conditions for the spread of infectious diseases in Rio de Janeiro. The expert stressed that the coastal environment occupied by the bulk of port operations produced fertile ground for the epidemic contagion that raged in maritime parishes:

> the beach of Sacco and especially those of Gamboa and Saúde, which have almost no uncovered portion, and which are shaded by the bridges and warehouses where there are no piers, present numerous cases of infection in all the epidemics that have occurred.[16]

After finishing his basic training, Oswaldo Cruz, the main exponent of Brazilian public health in the twentieth century,[17] dedicated to researching the potential health hazards of the nature and functioning of ports. Cruz was particularly concerned with the port waters that served as a means of reproduction of "pathogenic germs" and "microbes." As he stated in his PhD thesis:

> In port waters, in nature, the germ can be kept alive for a long time and can even multiply above 15°C and 17°C. . . . As shown in this entire study, seawater can

[13] Jaime Larry Benchimol, "A Instituição da Microbiologia e a História da Saúde Pública no Brasil," *Ciência e Saúde Coletiva Revista da Associação Brasileira de Pós-Graduação Em Saúde Coletiva* 5, no. 1 (2000): 265-292.

[14] Fernanda Rebelo, "Entre o Carlo R. e o Orleannais: A Saude Pública e a Profilaxia Maritima no Relato de Dois Casos de Navios de Imigrantes no Porto do Rio de Janeiro, 1893-1907," *História, Ciências, Saúde-Manguinhos*, 20, no. 1 (2013): 765-796.

[15] A lawyer and writer, Didimo Agapito da Veiga made it to the judiciary and was a member of the Federal Court of Auditors for twenty-five years. For more information on his biography: Alzira Alves de Abreu, ed., *Dicionário Histórico-biográfico da Primeira República (1889-1930)* (Rio de Janeiro: Ed. FGV, 2015).

[16] Dídimo Agapito da Veiga, "O Corte do Mangue," *Boletim da União Médica* March, no. 3 (1890): 98, Hemeroteca Digital, Biblioteca Nacional do Brasil.

[17] Oswaldo Cruz was a famous public health doctor and director of the General Directorate of Public Health in the first decade of the twentieth century. Abreu, *Dicionário Histórico-biográfico*.

> be contaminated by all sorts of pathogenic germs, especially considering almost all the rivers that snake on the surface of the soil and carrying the wide range of pathogenic microbes, for which it has earned the well-deserved name from the wise Miquel the name of 'great tomb of microbes'. Under identical conditions, salt water is a better habitat for pathogenic microbes than freshwater, or in general than non-salty terrestrial waters.[18]

The careful observations of Torquato Xavier Monteiro Tapajós[19] also provide a valuable record of the sudden evils that attacked visitors arriving through the port of the capital:

> They sink the ships. The stagnant air that surrounds them is so unhealthy, putrid, that after a short delay, the crew is suddenly struck by episodes of violent vomiting, cephalalgia, delirium. Two or three days of discomfort reduce the organism to such an advanced state of disorganization that blood emerges from every pore. . . With a bay and port in these conditions, what to say of the city?[20]

The final ruling of Tapajós leads to the question: to what extent was there a relationship of vice and disease between the port and the city? To answer this, we need to understand how port operations, which were fully coherent and integrated into the then-existing city, reinforced this process and endangered the lives of all those involved in port operations, especially travelers and workers.

This is an evident case for the construction of a medical discourse on the sanitary conditions of the port and indicated solutions were the target of studies and disputes. In the different scientific areas of medicine and the various verifiable non-expert sources and non-specialized health statistics,[21], the expression is the same. That is, Rio de Janeiro has the fame of being a "dirty port," which derived from the mostly "dirty" bills of health[22] of the vessels entering the

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[18] Oswaldo Gonçalves Cruz, *These do Dr. Oswaldo Gonçalves Cruz* (Rio de Janeiro: Typographia da Papelaria e Impressora, 1893), 76.

[19] An engineer, he devoted himself mainly to sanitary engineering, publishing projects and memoirs on public hygiene and sewage management in various Brazilian cities. Abreu, *Dicionário Histórico-biográfico*.

[20] Torquato Xavier Monteiro Tapajós, *Estudos de Hygiene: A Cidade do Rio de Janeiro. Primeira Parte: Terras, Águas e Ares* (Rio de Janeiro: Imprensa Nacional, 1895), 230.

[21] Alfredo Lisboa, *Portos do Brasil* (Rio de Janeiro: O Norte, 1922).

[22] The bill of health was a document issued to merchant and war vessels by the sanitation authority of a particular port of entry. In the case of international navigation, the bill was signed by the diplomatic authority of the ports in which a given vessel would moor. That is, all vessels coming from other ports were required to present the bills of health of each of these ports and receive the most recent bills of the port of departure. These bills could be "clean," when there was no recent or contagious epidemic at the port of departure, or dirty, when the opposite was public knowledge, proven, and registered by the diplomatic authorities of the docking port countries. Originally, the bill of health was signed by the diplomatic authorities (consulate), but national regulations changed at the end of the nineteenth century and early twentieth century, and many countries increasingly accepted bills of health produced by other authorities.

port that were both based on reality and on ostentatious and social recognition. However, this condition had not yet been systematically and scientifically established.

A medical discourse about the port's poor sanitary conditions clearly emerged, as well as a debate about the solution to this problem. In fact, although the conditions of the port had not yet been systematically established, in the various sources on collective health, although not specialized in ports, and based on health statistics from that period, Rio de Janeiro was treated as a "dirty port." It was understood in this way mainly because of the "dirty" health certificates of the ships that entered the port. This perception was based on reality and widely accepted in society, but it was limited, because, as we will see, the port's infrastructure itself was offensive to human life, in sanitary terms.

A curious operational fact is that the Port of Rio had the worst water supply system to ships in the whole country. The water supply was considered slow, dirty, and expensive and came through the Rio do Ouro Railroad.[23] Many foreign ships avoided the supply in Rio de Janeiro, especially after the crew learned they could be infected with *cholera morbus* by drinking contaminated water.

The historiography has rightly focused on ships, immigrants, goods, and luggage that arrived from abroad to study the sanitation issues and measures that affected Brazil's ports.[24] It has shown that the control, inspection, and fight against imported diseases became initially relevant for contemporaries at the end of the nineteenth century. The issue was carefully viewed from a broader perspective both by sanitation doctors who emerged in the public debate and those interested in port operations. Their logical conclusion was simple: if the facilities of the port region were condemned in terms of sanitation, the port infrastructure was threatened.

They believed it was unwise to inspect and fight the "disturbances" found in port navigation if the port itself was not sanitized. The complaints were consistent: "Each warehouse is a *slum*. From every stable emerge legions of rats that would frighten armies of tigers!"[25] It was not possible to disinfect the cargo unloaded to the warehouses if these facilities hosted thousands of vectors and failed to provide minimal sanitary conditions to prevent health hazards.

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[23] Antonio Martins de Azevedo Pimentel, *Subsidios para o Estudo de Hygiene do Rio de Janeiro* (Rio de Janeiro: Typ. Lith. de Carlos Gaspar da Silva, 1890).

[24] Jaime Larry Benchimol, *Pereira Passos: Um Haussmann Tropical. A Renovação Urbana do Rio de Janeiro no Início do Século XX* (Rio de Janeiro: Secretaria Municipal de Cultura, Turismo e Esporte, Departamento Geral de Documentação e Informação Cultural, 1990); Ana Luce Girão Soares de Lima, "A Bordo do República: Diário Pessoal da Expedição de Oswaldo Cruz aos Portos Marítimos e Fluviais do Brasil," *História, Ciências, Saúde-Manguinhos* 4, no.1, (1997): 159-167; Fernanda Rebelo, *A Travessia: Adoecer, Viver e Morrer na Marcha Imigratória para o Brasil (1890-1926)* (Rio de Janeiro: Editora Multifoco, 2017).

[25] N.t., *A Imprensa*, 2 December, 1899, 2, Hemeroteca Digital, Biblioteca Nacional do Brasil.

The evident solution would be to transform the material appearance of the port, its operations, and the nature of the seaport of Rio de Janeiro and, thus, ensure the sanitary control of the city and curtail the arrival and spread of infectious diseases. British diplomacy stressed the dual operational and sanitary value of the proposals for "improvements" of the port of Rio de Janeiro:

> The scheme proposed has much to recommend it both from a commercial and a sanitary point of view, as it would not only improve facilities and decrease expenses in handling cargoes, but would remove what is probably one of the worst sources of fever infection in the city by filing in a large extent of foul muddy shore-front.[26]

In Washington, at the Sanitary Convention of the American Republics, in 1900, the representatives of Uruguay stated:

> The permanent existence of yellow fever in Rio de Janeiro and increased proliferation in the summer is a threat to our country given the speed of the journeys (three days in general) and increasing frequency. This threat forces us to maintain the lazarets open every year for the vessels coming from the port of Rio de Janeiro.[27]

This issue did not merely involve inspections to prevent the "import" of diseases, but also preventing the spread of diseases through the city from the recognized foci, one of which was the port itself. The situation reached a point where Rio de Janeiro became the most widely mentioned example of an infected port, and there was no shortage of positive examples. In the Senate gallery, Barata Ribeiro, former mayor of the Federal District, despite being against the burdens imposed on the population of Rio due to port construction and urban reforms, did not fail to recognize the sanitation-related relevance of the construction of the Port of Santos. The senator drew parallels between the case of São Paulo and the challenges of the Federal District, while demanding such works in reference to the Santos regime:

> None will forget that Santos was the great storehouse of the germs of the most devastating and deadly epidemics that usually devastated the rich state of São Paulo, such as typhoid, yellow fever, smallpox, measles, etc. and the works of the port of that city embellished it, sanitized it without imposing sacrifices on the federal or state Treasury, nor burdening its population with the encumbrance of indirect taxes, which, in such a way, is required of all social classes, taxing all with equal sacrifices.[28]

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[26] Great Britain, *Brazil - Matters on Commercial Intelligence Relating to Brazil - 510 Annual Series* (London: Harrison and Sons, 1899), 23.

[27] United States Of America, *Senate (doc. 169). International Union of the American Republics. Pan American Sanitary Conference. Transactions of the first general international sanitary convention of the American Republics* (Washington: Government Priting Office, 1903), 305.

[28] Brasil, Congresso Nacional, *Annaes do Senado Federal* (Rio de Janeiro: Imprensa Nacional, 1903), 116.

Moreover, while the infrastructure of ports was being recognized as a public health hazard, the procedural measures to avoid importing new diseases became increasingly harsh, since, once docked, the disease tended to proliferate very easily. Since the 1880s, with the regulation of the International Sanitary Convention between Brazil, Argentina, and Uruguay, the ports began to suffer the procedural imposition of two health inspections (internal and external); moreover, if any health threat was identified, the adopted measure was either observation quarantine or strict quarantine.[29] These measures added time and costs, in addition to other factors of port operations. [30]

These health inspections and quarantines soon became the target of protests from shipping companies, port service companies, and freight consignors. The government did not ignore these complaints but claimed there was nothing to be done.

Quarantines were not merely a local encumbrance. International treaties stipulated that if the reported cases of a certain contagious disease increased in a port, its bill of health would become dirty and the vessels that entered the port would be subjected to sanctions in the form of quarantines in other ports. Therefore, the sanitation dimension and the resulting measures to prevent diseases and combat epidemics multiplied the time and costs of shipping companies in the infected port and all subsequent ports. This was one of the most pressing reasons why shipping companies began to reduce the number of vessels visiting Rio de Janeiro on regular lines and continued their journey to Argentinian ports.

These events occurred precisely during the period under study in this paper, since Argentina declared the Port of Rio de Janeiro infected by yellow fever for more than six months between December 25, 1893 and July 6, 1894. Later Argentina repeated the claim for eight months during the outbreak of bubonic plague, in 1901, and declared its suspicions regarding the port in January 1903.[31]

As a response, the Brazilian government attempted to put in place a political-administrative organization of health in the ports. This organization ranged from the decentralization in maritime districts of the General Health Inspectorate of Ports,[32] to transferring the command of

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[29] Brasil, *Coleção das Leis da República do Brasil, Decreto 10.319* (Rio de Janeiro: Imprensa Nacional, 1889); Cueto, *O Valor da Saúde*.

[30] Fernanda Rebelo, "O Princípio do Fim: O 'Torna-Viagem', a Imigração e a Saúde Pública no Porto do Rio de Janeiro em Tempos de Cólera," *Estudos Historicos (Rio de Janeiro)* 24, no. 1 (2011): 69-87, on 79.

[31] República Argentina, *Boletín Oficial,* 7 July, 1894 (Buenos Aires: Boletín Oficial, 1894), 945; República Argentina, *Boletín Oficial,* 9 March, 1902 (Buenos Aires: Boletín Oficial, 1902), 6297; República Argentina, *Boletín Oficial,* 16 January, 1903 (Buenos Aires: Boletín Oficial, 1903), 10435.

[32] Brasil, *Coleção das Leis da República do Brasil,* Decreto 1.558 (Rio de Janeiro: Imprensa Nacional, 1893).

these ports to the General Directorate of Public Health.[33] For a decade, the federal inspectorate was held responsible for the sanitary conditions of the port in terms of policing matters, prophylaxis and international inspection for sanitary defense, thus leaving the responsibility for health conditions in the port itself to the states and the Federal District. Subsequently, taking over the health prerogatives of municipal and state authorities, the federal government tackled the issue in a hesitant manner, aware of its seriousness.

The regulations, with ports maintained in the same deteriorated material conditions and deteriorating functioning, began to rely on the more powerful restriction on operational departures for port cargo and passenger movement. In the regulation of 1893, the health inspector of each port was responsible for "granting or denying licenses, on the occasion of an epidemic or its imminence, for vessels mooring to docks, bridges, and warehouses, in accordance with the Customs Inspectorate, with the right to appeal to the government in case of divergence."[34]

The establishment and regulation of the General Directorate of Public Health, which centralized regulations, coordination, and execution in the Port Health Service, created new procedures that slowed port movement and curtailed the increasingly rare opportunities for accelerating the port production process. The Sanitation Police of Ships and Anchorages, which was subordinated to this health service, was created, among other goals, "to ascertain the health status of the vessel crews at anchor; the hygiene conditions of the vessels; and the hygiene of the anchorages and mooring points."[35]

Certainly, quarantines were the most extreme measure that these services could determine and were mostly applied on large immigrant passenger vessels. Due to the greater intensity of immigration flow in our timeframe, it became necessary to standardize the transoceanic and international port areas and, consequently, make significant changes to the port operations of Rio de Janeiro. In a time when the federal government sought to "attract support," sanitary credibility with other international authorities was essential. Maritime prophylaxis transformed the port sanitation services into laboratories for testing scientific theories in vogue.

Rio de Janeiro reached a critical health hazard status and failed to comply with internationally agreed procedures, on a large scale, which, according to Benchimol, caused the federal authorities to request that the flow of immigrants be directed to other ports.[36] This issue was

[33] Brasil, *Coleção das Leis da República do Brasil,* Decreto 1.151 (Rio de Janeiro: Imprensa Nacional, 1904).
[34] Brasil, *Coleção das Leis da República do Brasil,* Decreto 1.558 (Rio de Janeiro: Imprensa Nacional, 1893), 17.
[35] Brasil, *Coleção das Leis da República do Brasil,* Decreto 2.458 (Rio de Janeiro: Imprensa Nacional, 1897), 9.
[36] Benchimol, *Pereira Passos: Um Haussmann Tropical*, 181.

so serious that the authorities recognized that the health service, subjected to its identified material conditions and pressured by the current port operations, would simply be ineffective. As Rebelo reports:

> The news shows that there were breaches in the system of reception and inspection of ships and passengers in the port of Rio de Janeiro. The most widely used prevention model, quarantine, had been criticized. Traditional maritime prophylaxis began to be perceived as a set of arbitrary, disconnected, authoritarian measures, as a protectionist mechanism, and a source of recriminations and grudges between nations. The popular ability to circumvent the system with bribes, clandestine trips, commanders who denied the occurrence of disease on board, hiding places for goods and travelers, port authorities who covered up signs and epidemics demonstrated the inefficiency of the adopted prevention model based on the belief of contagion.[37]

A reasonable proportion of immigrants simply docked in the capital, but went inland or sought cabotage, especially to São Paulo. Rio had thus become not just a local, but also a national threat.

Regarding the epidemic of bubonic plague, according to Cury, "the report of the years 1900-1901 confirms the appearance of the plague in the capital, which was officially declared by the government on May 21, 1900, with indications of appropriate measures so it did not continue to spread to other ports in the country."[38] This whole process caused not only the decrease of immigrants entering the country but also resulted in the lowest ever recorded number of these immigrants in Rio de Janeiro. In 1896, 63.2 percent of the immigrants entering the country arrived through the capital. However, this number dropped radically and reached only 16 percent in 1901. It remains to be questioned whether the massive and proportionately high entry of immigrants was a risk factor for the emergence of epidemics andor whether, on the contrary, observation of the health conditions of the port and the city, popularly known as "dirty port," reduced the entry of immigration to Brazil by the port of Rio de Janeiro at the turn of the twentieth century.

[37] Rebelo, "Entre o Carlo R. e o Orleannais," 772.

[38] Bruno da Silva Mussa Cury, "Combatendo Ratos, Mosquitos e Pessoas: Oswaldo Cruz e a Saúde Pública na Reforma da Capital do Brasil (1902-1904)" (Master's thesis, Federal University of the State of Rio de Janeiro, 2012), 38.

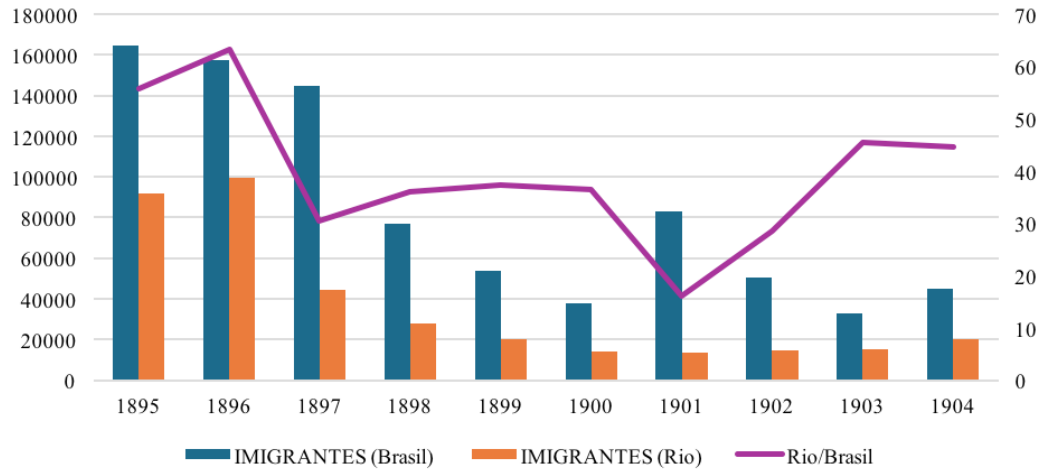



Table 1: Immigrants entering Brazil and Rio de Janeiro (1895-1904). Brasil, Instituto Brasileiro de Geografia e Estatística, *Estatísticas Históricas do Brasil, Séries Econômicas, Demográficas e Sociais de 1550 a 1988* (Rio de Janeiro: IBGE, 1990); Brasil, Ministério da Justiça e Negócios Interiores, Diretoria Geral de Saúde Pública, *Relatório* (Rio de Janeiro: Tipografia Nacional, 1896-1905).

However, in time, the federal government and the sanitation challenges of the port of Rio de Janeiro began to be treated as surmountable based on the projected association between science and engineering. The evaluation of Rodrigues Alves in his first message to the National Congress demonstrates that this improvement could only be achieved through additional efforts in the joint and harmonious transformation of the health service and port operations, which would result in gains for both. Moreover, he stated that "the maritime health service also needs to be reformed on a more liberal basis, which does not entail useless vexations to commerce. . . . by making disinfection and health inspection measures profitable, they can reduce the detention periods of ships to a minimum."[39]

As shown here, the port was considered dirty for specific reasons. In that period, the port operations reiterated the vicious cycle and hindered the potential benefits of sanitation procedures that, in turn, only aggravated the operational crisis of the port.

## Sanitation measures for the port of Rio de Janeiro

Understanding the 1891 Constitution is essential to explaining how the first national formulations for public health policies of the Republic pushed for radical infrastructural changes in the port. From this point onwards, the division of powers, the pact for federation,

[39] Brasil, Presidência da República, *Mensagem Apresentada ao Congresso Nacional na Abertura da Legislatura* (Rio de Janeiro: Imprensa Nacional, 1903), 25.

the administrative rites to be obeyed and the mechanisms for resolving political conflicts were elaborated in a way that was unprecedented in Brazil, but clearly inspired by the United States. The political and legal solutions for organizing the production, exploitation, control and distribution of wealth were largely transferred to the federal states.[40] This did not mean discarding the Union, but rather that national policy would have to take into account regional peculiarities and the demands of the dominant classes, which resulted in public policies in dispute, but generally aimed at the "big interests."[41]

This power game revealed the contradictory nature of the regime that had been established: in order to devise national policies, especially economic ones, but also health ones, which affected all the states, though in an unequal way, the state leaders—who gained prestige with the new tax base and had stronger coercion powers—had to be taken into account and, to some extent, were in charge of their implementation, or intervened via local powers.[42]

At the turn of the century, a lively academic and political debate regarding the origin and contagion of infectious diseases between the entrenched miasma theory and the ascendant microbiology, with their many shades of gray, produced a radical shift in the possibilities of preventing and combating some diseases. The well-known story that led to the creation of the Vaccinogenic Institute of São Paulo, in 1892, and the Federal Serotherapeutic Institute, in 1900,[43] was the question of the hour when Emilio Ribas, Vital Brazil, Oswaldo Cruz, Pacheco Leão, Jayme Silvado,[44] and other experts were able to expose to politicians the observable results in health campaigns around the world. Thus, for example, they reached the command of the nascent institutions and public health agencies in Brazil.

Also based on the example of the federal capital and the state of São Paulo, attempts were made to create national public health policies. As the campaigns unfolded in São Paulo and Rio de Janeiro, the atmosphere was one of confusion and controversy. During the first two decades of the Republic, the focus was entirely on the port cities. The struggle for national

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[40] Wanderley Guilherme dos Santos, "O Sistema Oligárquico Representativo da Primeira República," *Revista Dados* 56, no. 1 (2013): 9-37.

[41] Emilia Viotti, *Da Monarquia à República: Momentos Decisivos* (São Paulo: Editora UNESP, 1999).

[42] Sonia Regina de Mendonça, "Estado e Sociedade: A Consolidação da República Oligárquica," in *História Geral do Brasil,* ed. Maria Yedda Linhares (Rio de Janeiro: Elsevier, 2000),327-350.

[43] The Vaccinogenic Institute of São Paulo, created in 1892, had the goal of producing vaccines and emerged as a solution to contain smallpox epidemics. Initially created by the city of Distrito Federal with the aim of producing serums and vaccines against bubonic plague, the Federal Sorotherapic Institute (Instituto Soroterápico Federal) was incorporated into the federal public administration in 1900. Part of the structure of the Ministry of Justice and Internal Affairs, the Federal Sorotherapic Institute came under the General Directorate of Public Health, as did the Yellow Fever Prophylaxis Inspectorate, the Isolation and Disinfection Inspectorate and the isolation hospitals, lazarets and disinfection stations. For more information see Jaime Benchimol, *Dos Micróbios aos Mosquitos*.

[44] For more information on these medical biographies, see Abreu, *Dicionário Histórico-biográfico*.

policies arose from this experimentation in public health in the states of São Paulo and in the federal capital, especially with regard to its ports—Santos and Rio de Janeiro —so that in the following decade, various initiatives to internalize the ordering and intervening action of public health policies were outlined. Subordinated to the dominant class in the nascent Republic and seeking to make it aware of the need for a process of collectivization and nationalization of public health, the public health professionals demanded actions that increased the state's capacity for coercive action, guaranteeing increasing infrastructural penetration in the national territory, with increased central control of the federal government, giving them political power to intervene and give their opinion on issues and decisions that, apparently, had no relation to public health.[45]

Under the leadership of Oswaldo Cruz, new knowledge revealed the port's infrastructural and technological problems that prevented the full adoption of the measures proposed by medical experts. The hunt for microorganisms—especially pathogens—placed new theories in medical science at the center of solutions for the epidemics that particularly afflicted large port cities. This was especially true of the urban landscape and was largely addressed by historiography.[46] However, this study addresses the strong association between the focus on vectors, health inspections, and the radical transformation of the urban-port environment for port sanitation. The theoretical triad led to a systematic application of measures in a pilot port, the main and most challenging in the country: the port of the capital. The measures were consistent with scientific research and the supporting theory, and consisted of the following: observance of personal and collective hygiene, strict disinfection of objects and infrastructures and extermination of urban pests; inspection, screening, and strict monitoring of the traffic of means of transport, objects, and people through the port, if necessary, isolation and quarantine; and, finally, the radical transformation of the environment, material, and infrastructure of the port.

The effect of these measures on port operations was, initially, the non-recurrence of quarantines, which was ideal for those interested in speeding up work processes, production, inspection, security, and control in ports. Subsequently, however, disinfection and measures to create resistance to infections "through the environment" forced significant changes in port operations.

> The Brazilian health regulations of 1904 prioritized the *sanitation of the environment, the port and the city*, with the aim of creating stronger resistance to infection in these places. In order for the quarantine to no longer be applied, however, a larger contingent of technical staff was needed to vaccinate and monitor passengers; in addition to reorganizing the city and port, exterminating the places considered to be hotbeds of epidemics: tenements and popular housing with crowds of people.[47]

[45] Gilberto Hochman, *A Era do Saneamento: As Bases da Política de Saúde Pública no Brasil* (São Paulo: Hucitec, 1998).

[46] Benchimol, *Pereira Passos: Um Haussmann Tropical.*

[47] Rebelo, "Entre o Carlo R. e o Orleannais," 779. Emphasis my own.

Curiously, the author identifies the need for transforming the environment to "reorganize the city and port," but when referring to the foci of epidemics, she only mentions residential buildings. In reality, this is a punctual and decisive distortion that has become the legacy of the historiography. Since the 1980s, historians have discussed the plans and measures put in place to transform the environment for sanitary reasons in urban areas while analytically separating the city from the port.

Benchimol rightly recognizes that the "modernization" of the port was the axis of the achievements initiated in that period. However, he credits this change solely and exclusively to the need to adapt the port to the required movement of vessels, railways, cargo, and people.

> The modernization of the Port of Rio de Janeiro—often considered one of the key achievements of that period—entailed the destruction of hundreds of old warehouses, bridges, and piers, the demolition of numerous blocks in the unhealthy proletarian neighborhoods of Saúde's beachfront, Gamboa, and others, and the embankment of the small coves and inlets that cut it. These works would provide an extensive surface of wharves where ships could now berth directly and where cargoes could be moved by electric cranes, transported through road and rail terminals, and stored in ample warehouses.[48]

In reality, this division did not exist since the city and the port were amalgamated. Therefore, the sanitary reasons for radically altering the environment that justified the destruction of low-income housing were also applied to the storage facilities, warehouses, and even some factories. The destruction of the port, the mischaracterization of its port operations, and the construction of new infrastructures, which introduced a qualitatively different and more sophisticated port operation, were the results of a complex and multifactorial historical process that involved different sets of reasons. Sanitary issues were one of those reasons.

A fundamental milestone for this process was the participation of Brazil, in 1903, in the Paris International Conference, which brought together the signatory countries of the Venice Convention, in 1897. At this conference, new hygiene technologies that could benefit the ports were promoted, especially the Clayton gas apparatus and the barge for disinfecting vessels, cargo, and objects with the promise of eliminating any type of vector (rat, flea, mosquito, etc.) and their respective microbes.[49] According to Silvado,

> Clayton gas, a product of burning sulfur in a closed and mechanically ventilated compartment, differs from the gas obtained by combusting the same sulfur in the open air. The sulfuric anhydride, which appears in the product provided by the Clayton apparatus gives this same product high toxic properties. When present in

[48] Benchimol, *Pereira Passos: Um Haussmann Tropical*, 316-317.

[49] Norman Howard-Jones, *The Scientific Background of the International Sanitary Conferences (1851–1938)* (Geneva: World Health Organization, 1975); Engelmann and Lynteris, *Sulphuric Utopias*.

the air, Clayton gas produces thick vapors indicative of the existence of sulfuric anhydride.[50]

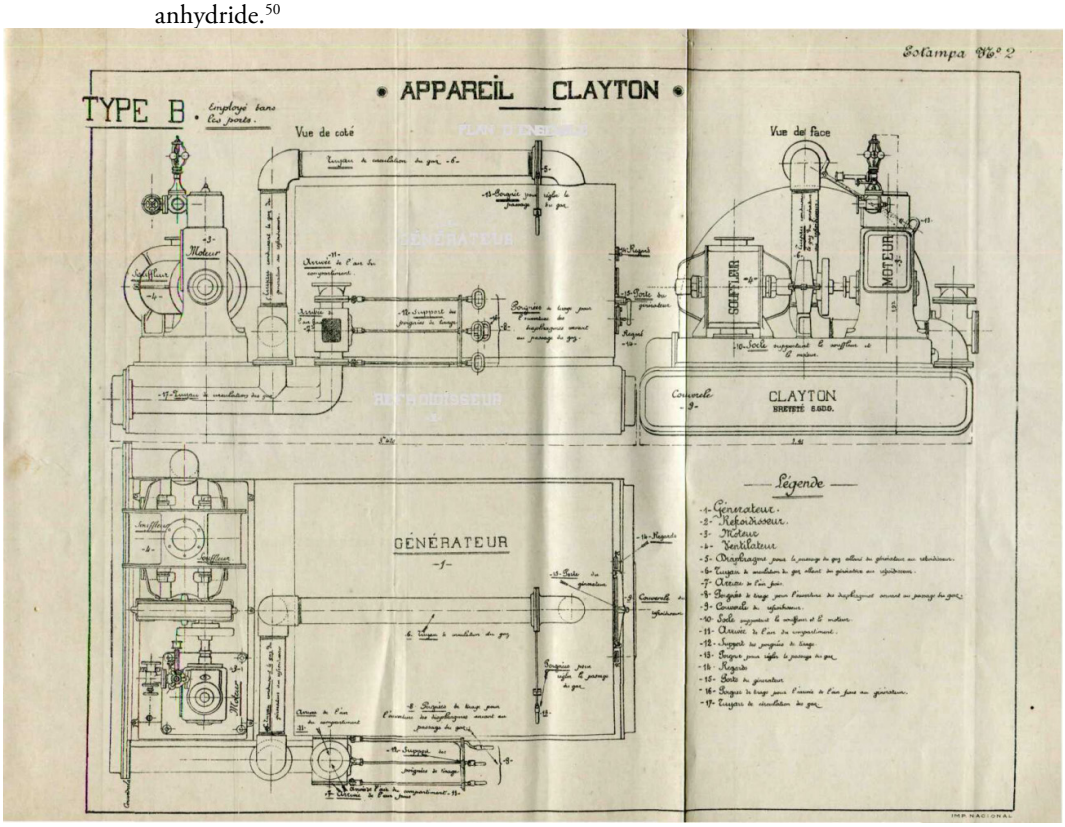



Figure 1: Operating Diagram of Clayton Gas Fumigating Apparatus. In: Jayme Silvado, Desinfecções e Apparelho "Clayton" no Porto do Rio de Janeiro (Rio de Janeiro: Imprensa Nacional, 1908), 7.

In 1903, the use of this gas made it possible to embark/disembark and embark/disembark passengers with a lower risk of exposure to various diseases, due to the prior extermination of the vectors that swarmed in the port. As well as being installed on the Pasteur steamer, the Clayton device was used in Oswaldo Cruz's campaign, mainly in public areas of the city of Rio de Janeiro, especially in sewage and wastewater pipes. Invented by engineer Thomas A. Clayton, from New Orleans, this device was used in maritime prophylaxis to put out fires on ships in order to exterminate rats and insects related to the transmission of bubonic plague and yellow fever, by introducing sulphur dioxide into environments.[51]

At the International Conference in Rio de Janeiro in 1904, the measures typically associated with miasma theories were abolished, especially quarantines without clear criteria and minimally

[50] Jayme Silvado, *Desinfecções e Apparelho "Clayton" no Porto do Rio de Janeiro* (Rio de Janeiro: Imprensa Nacional, 1908), 4.

[51] Jaime Benchimol, "Febre Amarela e Epidemias: Configurações do Problema ao Longo do Tempo," *Revista do NUPEM* 13 (2021): 36-71.

useful methods of disinfecting the sick. During the period in which Oswaldo Cruz oversaw the General Directorate of Public Health, his adherence to the concept of transmission of yellow fever, the major health issue of that time, by mosquitoes, led him to vigorously defend, internally and externally, the uselessness of quarantines for this problem. There was a move from a generic approach to specific approaches informed by knowledge of the etiologies and modes of transmission of many diseases. The positions supported by Oswaldo Cruz prevailed. As a signatory to international conventions, Brazil undertook to carry out an administrative reform that centralized the sanitation policy of ports in the federal government.[52]

In the joint report of the General Directorate of Public Health (DGSP) and the newly created Disinfection Service of the Port of Rio de Janeiro (SDPRJ), Oswaldo Cruz and Jayme Silvado stated the following:

> In this regard, it is implicit that one of the greatest *desiderata* of the current administration of the federal hygiene bureau is the organization of a comprehensive maritime defense service, which will consist of the establishment of disinfection stations and isolation hospitals in the main ports of the Republic, abolishing the archaic use of quarantines, which will be replaced by the sanitary treatment of ships and the medical inspection of passengers.[53]

The new DGSP regulation intensified control, diversified the lines of action and enhanced the procedures that, contrary to common perception, slowed down the current port operations, which further degraded the still deeply engrained situation with the port works. The issue was simple: the new sanitary guidelines were created according to a projection of new port operations that would be established following the construction of an entirely different port.[54]

The Health Inspectorate of the Port of Rio de Janeiro did not exactly lose powers but became subordinate to the disinfection service in practice. This new order reveals that the notion of defense should not only go beyond inspection and control, but intervene in matters and infrastructures, as well as monitor and, if necessary, isolate and treat humans.

The first experiences in the SDPRJ served as the basis to nationalize these procedures and later led to a reorganization of port health services nationwide.[55] The new regulations put into practice the systematization resulting from the knowledge about diseases first applied in Rio de Janeiro. In this regard, quarantines became residual, but the disinfection of allegedly

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[52] Lima, "A Bordo do República."

[53] Brasil, Ministério da Justiça e Negócios Interiores, Diretoria Geral de Saúde Pública, *Relatório* (Rio de Janeiro: Tipografia Nacional, 1904), 42.

[54] Brasil, *Coleção das Leis da República do Brasil,* Decreto 5.156 (Rio de Janeiro: Imprensa Nacional, 1904), 2.

[55] Joaquim Sardinha, *Hygiene* Pública: Apontamentos para a História da Saúde Pública no Brasil (Rio de Janeiro: Imprensa Nacional, 1922), 35.

contaminated objects was widespread, as well as closer inspection and observation of sick or suspicious passengers.[56]

> The Platina Convention of 1904 established specific prophylactic measures for bubonic plague, cholera, and yellow fever, and ratified the practices of isolation of the sick, sanitation inspections of the healthy, disinfection of the ship, baggage, clothing, and personal belongings and preventive vaccination. The new legislation dictated changes that addressed new scientific assumptions related to the understanding of insect vectors in disease transmission.[57]

The disinfection was seen as necessary by different contemporaries, since the infrastructure of the Port of Rio de Janeiro was known for the profusion of rats and the clouds of mosquitoes that accompanied the small transfer vessels transporting the vectors between the ships anchored offshore and the loading/unloading, embarking/disembarking points in the port. Fleas also inhabited the port infrastructures, which received live animals in transit to the city's slaughterhouse.

Years later, Oswaldo Cruz acknowledged this state of affairs to *The Times*:

> The annual repetition of this terrible state of things, which could not be hidden from the eyes of the strangers within our gates, had launched an interdict against the entrance to our beautiful port; the foreigner en route did not dare to land, and was obliged to restrict himself to admiring the enchanting panorama of our city from afar, in obedience to the notice posted by captains when passing the bar of Rio de Janeiro: 'Passengers are warned not to go on shore as yellow fever is prevalent in the city.' Foreign trade was unnerved, and the port sheltered only a few ships, the crews of which were willing to brave death on shore.[58]

The reality was complex, similar to the days of quarantines, with various agents interacting in port operations and creating difficulties for the authorities. The application of regulatory procedures was circumvented, especially due to the lack of material and personal structure of the SDPRJ and the Health Inspectorate, which was under the supervision of that specially implemented service. The case of the national steamer *União*, reported by Silvado, shows that captains and shipowners ridiculed the disinfections and tried to escape the action of the port's sanitation service.

> The most important work we have done is that of *União*. This steamer had arrived from the north with a cargo of cotton and sugar. When the bales deposited on the

[56] Joaquim Sardinha, *Hygiene* Pública: Apontamentos para a História da *Repartição de Saúde do Porto do Rio de Janeiro Offerecidos ao Instituto Histórico Geográfico Brasileiro* (Rio de Janeiro: Imprensa Nacional, 1916).

[57] Rebelo, "Entre o Carlo R. e o Orleannais," 784.

[58] "The Sanitation of Rio," *The Times*, 28 December, 1909, 2, British Newspaper Archive, The British Library.

> deck were removed, dead rats were found in huge numbers. The captain paid no attention and finished unloading his ship.[59]

The conclusion is simply that disinfections were more frequent than quarantines. Although they caused more inconveniences when they occurred, they covered a greater number of vessels with procedures that, even if faster, were more rigorous and were gradually becoming widespread.

Intent on increasing the capabilities of the SDPRJ, Cruz and Silvado joined Rodrigues Alves to obtain the resources to purchase a complete disinfection vessel.[60] Commissioned from an English shipyard, the popular Pasteur steamship arrived the following year and managed to turn around the DGSP's intervention capacity in maritime navigation and port production units. The vessel was faster and could carry two Clayton gas disinfection apparatus and a Geneste & Herscher gutter furnace. In Silvado's words, the Pasteur "allowed for faster fumigation and is more proficient of the vessels than the possibilities of the old barque."[61]




Figure 2: Pasteur Steamboat ("Vapor Pasteur"). In: Theophilo Torres, *La Campagne Sanitaire au Brésil* (Paris: Société Générale d'Impression, 1913).

The historiography has rightly pointed out that the end of quarantines was an old demand of shipowners who visited Rio de Janeiro. The nineteenth century prophylaxis based on quarantines affected a small proportion of vessels entering the port and coming from ports

[59] Brasil, Ministério da Justiça e Negócios Interiores, Diretoria Geral de Saúde Pública, *Relatório* (Rio de Janeiro: Tipografia Nacional, 1904), 44.
[60] Ibid., 16.
[61] Ibid., 3.

temporarily with "dirty" bills of health. The new inspection, control, and intervention measures affected all vessels directly or indirectly, thus reducing the impact of prophylactic measures and sharing them more widely, even if quarantines and isolations were reduced. The ideal scenario, according to Jayme Silvado, was to disinfect all vessels entering the port. Moreover, in the same year of this assessment, orders would be given to disinfect bridges, pontoons, and other materials used in the loading and unloading of goods and the embarking and disembarking of passengers and crew.[62]

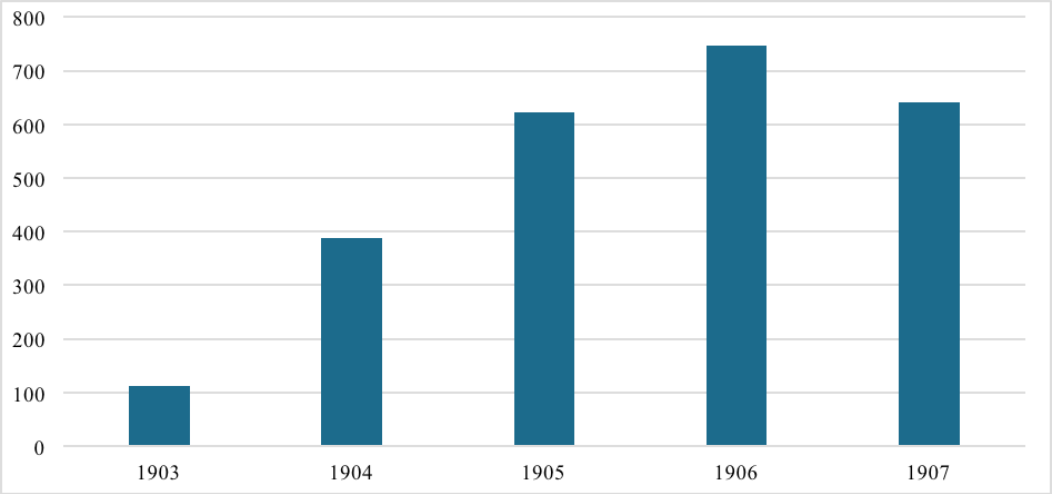



Table 2: Clayton Gas Disinfections in the Port of Rio de Janeiro (1903-1907).
Source: Brasil, Ministério da Justiça e Negócios Interiores, Diretoria Geral de Saúde Pública, *Relatório* (Rio de Janeiro: Tipografia Nacional, 1904-1908).

The DGSP report lists the disinfections performed in the Port of Rio de Janeiro and, as noted in Table 2, these disinfections increased and accompanied the works to demolish the infrastructures condemned by the SDPRJ. However, although the fight against diseases and health inspection progressed, the inadequacies of the port operations hindered the work of the disinfection service of the Port of Rio de Janeiro. Silvado was especially concerned about the difficulties of vessels visiting Rio de Janeiro when trying to obtain clean water, either because of a shortage or because the transfer to the vessels anchored in the bay—via service boats with water tanks—simply contaminated the water and lacked inspection.[63]

[62] Brasil, Ministério da Justiça e Negócios Interiores, Diretoria Geral de Saúde Pública, *Relatório* (Rio de Janeiro: Tipografia Nacional, 1907), 4.
[63] Brasil, Ministério da Justiça e Negócios Interiores, Diretoria Geral de Saúde Pública, *Relatório* (Rio de Janeiro: Tipografia Nacional, 1906), 5.

During the first inspection trip of Oswaldo Cruz to the other ports of the Republic, he used his experience with the measures applied in the Port of Rio de Janeiro to observe other urban-port scenarios, while remaining attentive to the sanitary conditions of the port of the capital. The sanitarian was especially aware of the material needs for mass disinfections in the Republic's main port. When informed that the sanitation procedures were delayed due to problems in the "Clayton apparatus" of the main disinfection boat, he immediately sent correspondence to his peer, Pacheco Leão, to order its repair or prompt replacement.[64]

Oswaldo Cruz demonstrated a great propensity to demand increasingly frequent and larger-scale disinfections. Most interestingly for the timeframe under analysis in this paper are the inspection, disinfection, monitoring, control and quarantine procedures carried out in port production units, such as the frequent disinfections requested in storehouses and warehouses, even during port works. In December 1908, Cruz ordered the health inspector of Porto, Graça Couto, to disinfect the old customs luggage storehouse:

> 19 - XII - 08
>
> Dr. Graça Couto, rua Paysandú
>
> I ask you to make arrangements for the rigorous disinfection tomorrow of the luggage of immigrants arriving on the steamer "Born" tomorrow, and the luggage deposited in the customs storehouse, which would also be convenient to disinfect. The ship had human losses on board that were attributed to diphtheria. Greetings.
>
> Gonçalves Cruz[65]

The famous sanitarian did not limit his actions to the local transformations he planned and carried out in Brazil: he was also relevant at the international level. In fact, the international dimension of Oswaldo Cruz's action is extremely relevant to the aim of this paper. He had been one of the main facilitators of the new International Sanitary Convention between Brazil, Argentina, and Uruguay, which updated the provisions of the previous convention. In October 1905, he sent correspondence to the minister of Justice and Interior Affairs, José Joaquim Seabra, requesting that he intercede with the minister Rio Branco to ensure he took notice of the Convention and obtained the signature of the President of the Republic.[66]

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[64] Correspondence from Oswaldo Cruz to Pacheco Leão, 12 October, 1905, Série Correspondências, COC-COR, PA 01/01, f. 18, Archives of the Fundação Oswaldo Cruz (AFOC), Casa de Oswaldo Cruz, Rio de Janeiro.

[65] Correspondence from Oswaldo Cruz to Graça Couto, 19 December, 1908, Série Correspondências, COC-COR, PA 04/01, f. 58, AFOC.

[66] Correspondence from Oswaldo Cruz to José Joaquim Seabra, 20 October, 1905, Série Correspondências, COC-COR, PA 01/01, f. 16, AFOC.

The disputes and cross protests among the signatories of this Convention led the director of Public Health to send a note to the minister of Foreign Affairs, the Baron of Rio Branco, showing him the crude reality of the progress in maritime prophylaxis and health inspection in the main Brazilian ports, especially in Rio de Janeiro. Oswaldo Cruz demonstrated the possible censures to Argentine ports, especially the Port of Rosario, and drew attention to Brazil's strict compliance with the Convention:

> Brazil has faithfully complied with the provisions of the Sanitary Convention. With the occurrence of some cases of plague (which do not constitute an epidemic), all necessary measures have been taken, both on land and at sea. The vessels treated with the Clayton apparatus are examined before departure (1). The proof that this service is performed with practical benefits is that, until the present moment, no complaints have been submitted by the signatory nations of the Convention, related to the aquatic transport of the plague. . . . *Therefore, there is no reason why we should be advised to apply the Sanitary Conv., rather it seems to us that we should ask the Argentines to do what we are loyally doing and what they separately do not do*, i.e., proceed in accordance with the Sanitary Convention.[67]

At the Third International Sanitary Convention, held in Mexico City in 1907, Oswaldo Cruz spoke for the Brazilian delegation and made the most forceful speech in favor of the construction of ports, confirming the hypothesis that, at the same time, there was the perception that port engineering works contributed to the sanitation of ports. The sanitary medical discourse was at its peak and supported engineering in the dispute over the fate not only of the city but also of its port. As stated by the sanitarian, "[a]s for the great works of engineering that have a *dual commercial and sanitary importance*, the ports of Brazil have deserved special care. . . . The works of the Port of Rio de Janeiro are active and ongoing and 500 meters of pier have already been inaugurated."[68]

## Final considerations

This article proposes that health-related issues were one of the existing set of reasons for the broad consensus regarding the decline of port operations in Rio de Janeiro, already under construction for an extended period and firmly established at the end of the nineteenth century. It is necessary to improve the debate accumulated by historiography on the inspection and disinfection of means of transport, people and objects that circulate through ports. Historians ended up obfuscating the social and scientific construction of the health need for

[67] Correspondence from Oswaldo Cruz to the Barão do Rio Branco, 1907, Série Correspondências, COC-COR, PA 02/02, f. 60, AFOC. Emphasis my own.

[68] Oswaldo Cruz, *Resumo da Memoria Apresentada Pelo Delegado do Brazil a 3ª Convenção Sanitaria Internacional Reunida na Cidade do México de 2 a 7 de dezembro de 1907* (Washington: W. F. Roberts Co., 1907), 6. Emphasis my own.

radical transformation of the infrastructure and environment on which the port was based for centuries.

Differently, the port operations then in force were an obstacle to the sanitation of the city and the port itself. According to the new assumptions of the rising discipline of microbiology, the material existence, the natural environment, and the very functioning of the port, in their present conditions, were hazardous to public and personal health—both to the health of those who transited and those who worked in the port or lived in its vicinity. In summary, port sanitation began to be considered doubly relevant both in holistic coherence integrating the projected radical transformation of its port operations and as an inescapable factor for effectively fighting the epidemic diseases that proliferated in the capital and all Brazilian and foreign cities in maritime and land contact with Rio de Janeiro.

Destroying what was there—landfilling the mangroves and the old beaches covered by bridges, for example—was a fundamental requirement in the sanitation model outlined by the sanitarians at the turn of the century. Moreover, this movement implied the construction of a new type of port, not simply a reformed one, but a port that would perfectly comply with the required sanitary standards for the goods and people that transit through it as well as for its own infrastructures.

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## Competing interests

The author has declared that no competing interests exist.