Fighting Ancylostomiasis (hookworm infection) in Southern Brazil: Cooperation between the Rockefeller Foundation and the Government of the State of Rio Grande do Sul (1919-1923)

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Brazil was the country that received the greatest appropriations from the Rockefeller Foundation (RF) throughout Latin America. Out of approximately 13 million dollars invested in sanitation and education programs in countries on the continent between 1914 and 1949, practically half (7 million) was directed at the development of medical education, scientific research and sanitary campaigns in Brazil.[1] As regards fighting hookworm infection[2], our particular interest here, Brazil was also the country that received the largest funding.[3] The same is true for scholarships awarded between 1917 and 1962: Brazil received 443 scholarships, while the country that placed second, México, received 359.[4]

The history of this cooperation between the RF and the federal and state governments of Brazil began in 1916 when a medical commission from the RF's International Health Board (IHB) arrived in Brazil, comprised of physicians Richard M. Pearce, Professor of Research Medicine, University of Pennsylvania, Chairman, John A. Ferrell, Assistant Director General, International Health Commission, and Major Bailey K. Ashford, United States Army, Medical Corps.[5] This commission was established to study health and medical education conditions in Brazil, between the months of February and May, 1916. Its members had contact with physicians, public men and teachers from Brazilian medical schools, and visited health care

institutions and medical schools. In Rio Grande do Sul, the southernmost state of Brazil, the commission visited Pelotas, Rio Grande and Porto Alegre, the state capital. Besides Rio Grande do Sul, the commission went to Minas Gerais, Rio de Janeiro, São Paulo, Bahia, Paraná and Santa Catarina.[6] In Minas Gerais, the commission, which brought medications and equipment, treated ancylostomiasis (hookworm) patients for the first time. [7]

Medical Commission to Brazil (February to May, 1916)[8]

After initial contacts between the RF and the Brazilian state governments, cooperation agreements were established, by invitation of the interested states, to develop sanitary campaigns and scientific research. According to Marcos Cueto, "the first contact of the RF with hookworm in South America occurred as part of a survey made in Brazil in 1916. The survey included dispensary demonstrations on hookworm in several rural localities…. As a result of these demonstrations as well as another visit by an RF officer in 1917, the RF initiated a two-fold program in Brazil: the teaching of hygiene and pathology at the University of São Paulo and a

hookworm campaign."[9] Relations between the RF and the state of São Paulo have been studied by Lina Faria[10], Heloísa Helena Pimenta Rocha[11] and Maria Gabriela Marinho[12], but the cooperation agreements between the RF and several Brazilian states to fight endemic rural diseases require further investigation.

My thesis project aimed at contributing to discussions on the presence and action of the RF in Brazil, especially as regards fighting hookworm infection in the second half of the decade of 1910 and during the first years of the 1920s. The sources consulted at the Rockefeller Archive Center (RAC) were essential for this purpose.[13] In my project I discuss the international cooperation agreements signed between the RF and the state government of Rio Grande do Sul, by initiative of the latter, for work with rural care and prophylaxis (fighting hookworm), in municipalities such as Torres, Conceição do Arroio, Montenegro, São Sebastião do Caí and São Leopoldo between 1919 and 1923.

The interests involved in this cooperation, the field work performed in Rio Grande do Sul municipalities, and the results and consequences of joint work against hookworm are some of the points of my analysis. Another issue to be discussed is training public health professionals based on scholarships given by the RF. Besides the rural care and prophylaxis activities, an assistant physician of the Board (*Diretoria*) of Hygiene of Rio Grande do Sul, Dr. Fernando de Freitas e Castro, received a scholarship from the RF for further studies at Johns Hopkins University between 1922 and 1923. Dr. Freitas e Castro was appointed General Director of the Health Services of Rio Grande do Sul in 1929, the year when he proposed to reorganize sanitary services in the state.

After the Republic of Brazil was proclaimed in 1889, public health matters began to be handled in a decentralized manner according to the Constitution of 1891 that established the autonomy of the states. The states were in charge of sanitary services, and they transferred issues

pertaining to hygiene to the municipalities. Only the Federal District and port surveillance remained under the responsibility of the Federal Government. Health problems were considered regional, and unforeseen federal interventions might have been interpreted as doubts regarding the federative pact. During the First Republic of Brazil (1889-1930) legislation concerning health underwent changes, but it should be emphasized that the health care of the population was within the purview of local government during this period.[14]

This "autonomization" of regional practices enabled the government of Rio Grande do Sul, which was oriented by Positivism,[15] to adopt a different attitude regarding health, for instance establishing the principle of professional freedom. According to state legislation, any person could practice the art of curing. All that was required was to register at the Department of Hygiene by paying a fee. This perspective, adopted only in Rio Grande do Sul, caused several conflicts among practical physicians and physicians who had a medical degree, and between the latter and the state government.[16]

During the decade of the 1910s, a movement to reform health care and provide rural sanitation began in Brazil. Four events are considered significant in the founding of the Brazilian sanitation movement: a speech by Miguel Couto, professor of the Medical School of Rio de Janeiro, in 1916, characterizing the country as a huge hospital; the impact caused by a publication of the report of the 1912 medical-scientific expedition of Oswaldo Cruz Institute to the Interior, also in 1916; the foundation of the Pro-Sanitation League of Brazil, in 1918; and the repercussion of articles written by Belisário Penna on health and sanitation, collected in a publication in 1918, under the title *Saneamento do Brasil* (Sanitation in Brazil).[17]

The advocates of the Brazilian sanitation movement denounced the very poor health conditions of most of the Brazilian population and, according to men like the sanitation physician Belisário Penna, the states and municipalities alone were not competent enough to

solve their sanitary problems effectively. Public actions in the field of health had to be unified and centralized to become efficient, a process that began at the end of the 1910s, and was intensified by the founding of the Departamento Nacional de Saúde Pública (DNSP) (National Department of Public Health) in 1920.[18]

The seriousness of the problem presented by endemic rural diseases – hookworm, malaria and Chagas Disease – was widely highlighted by the Brazilian sanitation movement. Considered "avoidable" diseases, caused by the way in which much of the Brazilian population was neglected, endemic rural diseases would account for the lack of productivity of Brazilians, who in discussions about the possibilities for the future and progress of Brazil, appeared in this context as patients who had to be cured, treated by the State and by medicine.

The Rural Prophylaxis Service was created in 1918. This organization made it possible to celebrate the first agreements between the Federal Government (*União*) and some states that now receive more regular material and financial support from the Federal Government. These agreements, which established a division of costs to fight endemic diseases between the Federal Government and the states, meant however, the loss of autonomy of the states in health issues, since the Federal Government would be appointing the director of rural prophylaxis for the state and would, for instance, control the financial resources.

In 1920, when the DNSP was created, including a Board of Sanitation and Rural Prophylaxis, other agreements were established between the Federal Government and the Brazilian states to fight hookworm and other diseases. Reinforcing the aspect of the extent of federal interference in states and municipalities, based on the agreements, Gilberto Hochman states that, "the extensive regulation of DNSP, from 1920 and that of 1923 (that lasted until the end of the decade) and the sanitary legislation, gave Public Power freedom to intervene in many aspects of social life and in a great number of economic activities."[19]

As regards the states joining the agreements for federal rural sanitation services, up to 1920 Paraná, Maranhão and Minas Gerais had already made agreements with the central government. By 1924 all the other states, except São Paulo, Goiás and Rio Grande do Sul, had already signed agreements for sanitation and rural prophylaxis with the DNSP. In the mid-1920s, only São Paulo and Rio Grande do Sul did not have the presence of the federal sanitary authority.[20] The cooperation agreements between the RF and the Brazilian states, in this context, complemented the services performed by the Federal Government in the states that had also made agreements with the Federal Government. In the states that had not signed agreements with the central government, such as Rio Grande do Sul, the agreements with the RF were an option in lieu of the presence of the Federal Government.

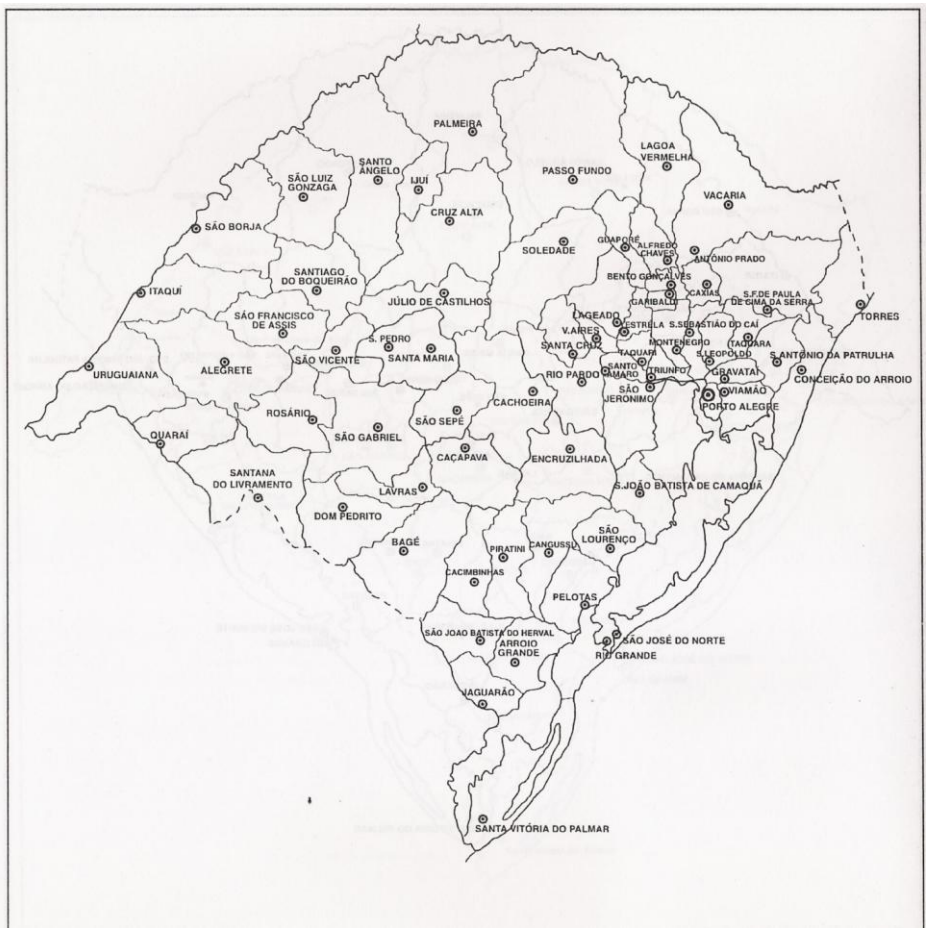
I will now discuss some aspects of the campaign against hookworm infection in the state of Rio Grande do Sul. In June 1919, Dr. Ricardo Machado, then Rio Grande do Sul State Director of Hygiene, officially invited the IHB of RF, at the time represented in Brazil by Dr. Lewis W. Hackett, to survey the situation of hookworm infection in the state.[21] When the invitation was officially extended by the state of Rio Grande do Sul, the RF was already active in Rio de Janeiro – the first state to have a dispensary to treat the disease, in 1917 – and in the states of São Paulo, Minas Gerais, Paraná, Maranhão, Santa Catarina and Bahia.

Lewis Hackett, wrote about the invitation from Rio Grande do Sul, in a letter to Wickliffe Rose in August 1919, and mentioned the absence of the Federal Government in fighting the disease in the state, "I may [sic] add that this invitation is particularly gratifying to me, since the above State has consistently refused to accept the co-operation of the Federal Government in its public health affairs."[22] As noted, Rio Grande do Sul waived the presence of the Federal Government to fight hookworm for political and ideological reasons.

The survey was performed between March and July 1920, by Dr. Zenha Machado and three microscopists. The survey report presented general information about the state and discussed its geographic, economic and social aspects. Rio Grande do Sul was described as "a large state in the temperate zone, mainly pastoral in the occupation of its 2,000,000 inhabitants, with a littoral under [sic] increasing agricultural development."[23] During this first survey of hookworm infection in the state, 4,220 inhabitants of twelve municipalities were examined, eight near the coast and four inland. The municipalities located inland represented the lowest incidence of the disease in Brazil. Bento Gonçalves, for instance, a municipality in the mountain region of Rio Grande do Sul, only had a 2.3% rate of contamination. The municipalities located close to the coast, on the other hand, presented very high numbers: Conceição do Arroio (now called Osório) 84.7%, Ilha dos Marinheiros 66.6%, Montenegro 65.4% and Torres 77.1%. Seeking to explain this difference, Dr. Zenha Machado saw the climate and occupation of the population as possible facts to be considered.

In September 1920, a few months after the survey was completed, the RF and the state government negotiated conditions for an intensive campaign against the disease, to be implemented in 1920 and 1921, at basically three dispensaries: Montenegro, Torres and Conceição do Arroio. Despite these indications about the period and the municipalities where the dispensaries were to be installed, cooperation between the RF and the state government lasted until 1923, and the residents of Ilha dos Marinheiros, São Sebastião do Caí, São Leopoldo, Gravataí, Cachoeira and Taquara were also treated. It should be mentioned that the states where the Federal Government was not present to fight endemic rural disease, such as Rio Grande do Sul and São Paulo, these were the last ones in which the cooperation contracts ended.

Rio Grande do Sul, Brazil (1912)[24]



The campaign was carried out as part of the public health activities developed by the state government which carried 60% of the costs, with the RF paying other 40%. The dispensaries were run by local doctors and staff, but were under a North American State Director and in the end under the director of the IHB for Brazil.

To reveal some of the data on the activities performed in the state, I will highlight figures on the work done at the Montenegro, Torres, Conceição do Arroio and São Sebastião do Caí dispensaries until February 1922. RF data indicates that until the end of that month, 18,564 people were examined, 15,270 of them presenting positive results for hookworm. Since the rates of contamination were quite high in these municipalities, the tests were discontinued in three of them – Montenegro, Torres and Conceição do Arroio – and the population was systematically

treated. Thus, 37,896 people received the initial treatment with chenopodium oil from the beginning of work at the dispensaries until February 1922.[25]

The use of chenopodium oil to treat hookworm led to controversy in Brazil, because it caused some deaths, especially in children under the age of 10 years. Besides medical treatment, the records produced by the RF on the state campaign indicate that sanitary education work was carried out with talks, visits to schools and distribution of pamphlets that discussed the symptoms and how the disease could be avoided. The campaign in the state also enabled studies on hookworm, for example, Nelson C. Davis and the physician Waldemar Rocha studied 458 people on Ilha dos Marinheiros, close to the city of Rio Grande. Davis reported their results in an article entitled, *Hookworm Infection as Influenced by the Wearing of Shoes*, published in The American Journal of Tropical Medicine in 1925. [26]

The cooperation between the RF and the state government of Rio Grande do Sul to fight hookworm infection ended in 1923, but state government records indicate that the rural prophylaxis dispensaries, according to the "model" proposed by the RF, continued to function at the end of the 1920s.[27] As emphasized before, my aim is to highlight some aspects of the campaign against hookworm infection in the state of Rio Grande do Sul based on documents available at RAC concerning the cooperation between the State Government and the RF. However, only the comparison of the sources produced by the RF with others, such as the state government reports and local medical publications, for example, will allow a more detailed analysis of the campaign against hookworm infection in Rio Grande do Sul, and also the relations established not only between the RF and the state government, but also between these agents and the Federal Government to fight endemic rural diseases, and on broader issues of public health.

ENDNOTES:

[1] Castro, Santos, Luiz Antonio and Lina Rodrigues de Faria. *A reforma sanitária no Brasil*: *ecos da Primeira República.* Bragança Paulista: EDUSF, 2003, p. 67.

[2] Ancylostomiasis or hookworm disease is caused by parasitic worms. These worms were known to cause severe anemia, weakness and circulatory disorders. Campaigns against the disease were made by the Rockefeller Sanitary Commission in the American South since 1909. To know more about the disease, see Palmer, Steven. "Migrant Clinics and Hookworm Science: Peripheral Origins of International Health, 1840-1920." *Bulletin of the History of Medicine* 83 (2009), p. 676-709.

[3] Cueto, Marcos. "The Cycles of Eradication: The Rockefeller Foundation and Latin American Public Health, 1918-1940." In *International Health Organizations and Movements, 1918-1939*, edited by Paul Weindling. Massachusetts: Cambridge University Press, 1995, p. 231.

[4] Cueto, Marcos, editor, *Missionaries of Science*: *The Rockefeller Foundation and Latin America.* Bloomington: Indiana University Press, 1994, p. 11.

[5] According to Lina Faria (2003), a first commission, consisting of bacteriologist William Henry Welch and Wickliffe Rose traveled to São Paulo in 1915, paving the way for the arrival of that commission in 1916. January 21, 1916, Folder 434, Box 28, Series 1, Sub-series 2, RG 5, Rockefeller Foundation Archives, RAC. To know more about the Rockefeller Foundation´s International Health Board (International Health Commission from 1913 to 1916, International Health Board from1916 to 1927 and International Health Division from 1927 to 1951), see Farley, John. *To Cast Out Disease*: *A History of the International Health Division of the Rockefeller Foundation (1913-1951).* New York: Oxford University Press, 2004.

[6] Alphabetical list of cards, people interviewed, etc., during a visit of the Medical Commission to Brazil, January 22, 1916 through May 6, 1916, Folder 434, Box 28, Series 1, Sub-series 2, RG 5, Rockefeller Foundation Archives, RAC and Doctor Bailey K. Ashford´s Report of the Medical Expedition to Brazil in 1916, and the official diary kept during the course of the investigation, Folder 15, Box 2, Series 305 – Brazil, Sub-series A, Medical Sciences, RG 1.1, Rockefeller Foundation Archives, RAC.

[7] In regard to the first treatments in Minas Gerais, see Marques, Rita de Cássia. "A filantropia científica nos tempos da romanização: a Fundação Rockefeller em Minas Gerais (1916-1928)." *Horizontes* 22: 2, (July-December 2004), p. 175-189.

[8] Medical Commission to Brazil (February to May, 1916), RG 1.1, Folder 1483, Box 66, Series 305 H – Brazil, Rockefeller Foundation Archives, RAC.

[9] Cueto, Marcos, 1995, p. 223-224.

[10] Faria, Lina. *Saúde e Política*: *a Fundação Rockefeller e seus parceiros em São Paulo.* Rio de Janeiro, Brazil: Editora Fiocruz, 2007.

[11] Rocha, Heloísa Helena Pimenta. *A higienização dos costumes*: *educação escolar e saúde no projeto do Instituto de Hygiene de São Paulo (1918-1925).* Campinas, São Paulo, Brazil: Mercado de Letras; São Paulo, Brazil: Fapesp, 2003.

[12] Marinho, Maria Gabriela S. M. C. *Norte-americanos no Brasil*: *uma história da Fundação Rockefeller na Universidade de São Paulo (1934-1952).* Campinas, São Paulo, Brazil: Autores Associados; São Paulo, Brazil: Universidade São Francisco, 2001.

[13] Between the months of September and October 2010, I had the opportunity of researching the records concerning my project at the Rockefeller Archive Center. Among the vast amount of documents I consulted, I would like to especially emphasize the importance of the documents that I found in RG 5, Series 3, Sub-series 305H – Brazil, and the correspondence in RG 1.1, Series 305H and in RG 5 (IHB/D), Series 1, Sub-series 2. I found a wealth of information there.

[14] Hochman, Gilberto. *A era do saneamento*: *as bases da política de Saúde Pública no Brasil.* São Paulo, Brazil: Hucitec/Anpocs, 1998.
[15] According to *Dicionário do Brasil Imperial (1822 – 1889)*, "the ensemble of philosophical ideas called Positivism by its own founder, Frenchman Auguste Comte (1798-1857), from France, gained ground and followers in Brazil in the last decades of the 19th century. The military, medical, engineering and law academies were the intellectual venues where theses began to be advocated based on the theoretical assumptions of Comte. Auguste Comte (Isidore Auguste Marie François Xavier) was born in Montpellier, France, in 1798, and died in Paris in 1857. Positivism in general has as its basic assumption, an unshakeable belief in science and in the primacy of reason." Zeni, Maurício. "Positivismo." In Ronaldo Vainfas, editor, *Dicionário do Brasil Imperial (1822 – 1889)*. Rio de Janeiro, Brazil: Objetiva, 2002, p. 585-586.
[16]For an analysis of health in Rio Grande do Sul between 1889 and 1928, and about the influence of Positivism, see Weber, Beatriz Teixeira. *As artes de curar*: *Medicina, Religião, Magia e Positivismo na República Rio-Grandense – 1889-1928.* Santa Maria, Rio Grande do Sul, Brazil: Ed. da UFSM; Bauru, São Paulo, Brazil: EDUSC – Editora da Universidade do Sagrado Coração, 1999.
[17] Lima, Nísia Trindade and Gilberto. "Pouca Saúde e Muita Saúva": sanitarismo, interpretações do país e ciências sociais." In Gilberto Hochman and Diego Armus, editors, *Cuidar, controlar, curar: ensaios históricos sobre saúde e doença na América Latina e Caribe.* Rio de Janeiro, Brazil: Editora Fiocruz, 2004.
[18] Hochman, 1998.
[19] Ibidem, p. 191-192.
[20] Ibidem, p. 184.
[21]Appendices – third quarterly report for 1919, Folder 1435, Box 112, Series 3, Sub-series 305H – Brazil, RG 5, Rockefeller Foundation Archives, RAC.
[22] Hackett to Rose, August 1, 1919, Folder 1110, Box 78, Series 1, Sub-series 2, RG 5, Rockefeller Foundation Archives, RAC.
[23] Report on hookworm infection survey of the state of Rio Grande do Sul, Brazil, from March 21, 1920 to July 16, 1920, Folder 149, Box 25, Series 2, Sub-series 305H – Brazil, RG 5, Rockefeller Foundation Archives, RAC.
[24] Felizardo, Júlia, Editor. *Evolução administrativa do Rio Grande do Sul. (Criação dos municípios).* Porto Alegre, Rio Grande do Sul, Brazil: Instituto Gaúcho de Reforma Agrária (IRGA), Divisão de Geografia e Estatística apud; Felix, Loiva Otero. *Coronelismo, borgismo e cooptação política*. 2, editor rev. ampl. Porto Alegre, Rio Grande do Sul, Brazil: Editora da Universidade/UFRGS, 1996, anexo (annex) 5.
[25] List of papers accumulated at each dispensary from the beginning of the Service until February 1922, Folder 212, Box 23, Series 6.2 – 6.6, RG Special Collection – Lewis Hackett Biographical Information, Rockefeller Foundation Archives, RAC.
[26] Davis, Nelson C. *Hookworm Infection as Influenced by the Wearing of Shoes.* New York: Collected Papers by Members of the Staff of the International Health Board II (1925), p. 81-85, RAC.
[27] Rio Grande Do Sul. "Relatório da Secretaria de Estado dos Negócios do Interior e Exterior do Rio Grande do Sul." 28 (de agosto de [August] 1929) I, p. 220-221, Arquivo Histórico do Rio Grande do Sul (AHRS).