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PAPERS

The institutionalization of *Escola Superior de Agricultura e Veterinária de Viçosa* on the basis of hygiene in the countryside (1920-1927)[1]

A institucionalização da Escola Superior de Agricultura e Veterinária de Viçosa sobre bases da higiene no campo (1920-1927)

La institucionalización de la *Escola Superior de Agricultura e Veterinária de Viçosa* sobre la base de la higiene en el campo (1920-1927)

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Abstract

The *Escola Superior de Agricultura e Veterinária de Viçosa* was one of the pioneers in Brazilian agricultural education. Its creation was decreed by Arthur da Silva Bernardes, a native of Viçosa and the President of the state of Minas Gerais, during a period of nationalist debates aimed at national progress. In this debate, hygienic knowledge gained prominence in the organization and remodeling of rural spaces. This study aims to analyze the construction and hygienic organization of the *Escola Superior de Agricultura e Veterinária de Viçosa* during its founding period (1920-1927). To this end, institutional documents stored by the *Acervo Histórico Central da Universidade Federal de Viçosa* (ACH-UFV) and by the University of Florida, in its digital repository (UFDC), were investigated. The results indicate that engineer Belo Lisboa acted from a sanitation perspective in the constructions, in order to allow hygiene to become a pillar of support for the ESAV, characterizing a modern environment for the School in the countryside.

Keywords: Sanitation; Sanitary engineer; Hygiene

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Resumo

A Escola Superior de Agricultura e Veterinária de Viçosa foi uma das pioneiras no ensino agrícola brasileiro. Sua criação foi decretada pelo viçosense e Presidente do estado de Minas Gerais, Arthur da Silva Bernardes, em um período de interposição de debates nacionalistas visando o progresso nacional. Nesse debate, os saberes higienistas ganham destaque na organização e remodelação dos espaços rurais. Esse estudo objetiva analisar a construção e organização higiênica da Escola Superior de Agricultura e Veterinária de Viçosa no seu período de fundação (1920-1927). Para isso, foram investigados documentos institucionais guardados pelo Acervo Histórico Central da Universidade Federal de Viçosa (ACH-UFV) e pela *University of Florida*, em seu repositório digital (UFDC). Os resultados apontam que o engenheiro Belo Lisboa atuou por um viés sanitarista nas construções, de forma a permitir que a higiene se tornasse um pilar de sustentação da ESAV, caracterizando uma ambiência moderna da Escola no campo.

Palavras-chave: Sanitarização; Engenheiro-sanitário; Higiene.

Resumen

La Escola Superior de Agricultura e Veterinaria de Viçosa fue una de las pioneras en la enseñanza agrícola brasileña, y su creación, por el viçosense, gobernador del estado de Minas Gerais, Arthur Bernardes, se da en un período de debates nacionalistas en busca del progreso nacional. En ese debate, los conocimientos higienistas ganan destaque en la organización y remodelación de los espacios rurales. Este estudio tiene como objetivo analizar la construcción y organización higiénica de la Escola Superior de Agricultura e Veterinaria de Viçosa, en su período de fundación (1920-1927). Para esto, se investigaron documentos institucionales guardados por el Acervo Histórico Central de la Universidad de Viçosa (ACH-UFV) y por la Universidad de Florida, en su repositorio digital (UFDC). Los resultados mostraron que el trabajo del ingeniero Belo Lisboa en la sanitización hizo de la higiene un pilar de apoyo para la Escuela, caracterizando un ambiente moderno en la ESAV.

Palavras clave: Saneamiento; Ingeniero sanitario; Higiene.

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Introduction

This article analyzes the construction and hygienic organization of the *Escola Superior de Agricultura e Veterinária de Viçosa* (ESAV) during its founding period (1920-1927). The school was one of the pioneers in Brazilian agricultural education, establishing itself as an isolated higher education institution.

The period in which the institution was founded, in the early 1920s, saw fundamental changes in the national scenario for Brazilian social development. In that context, the problem of the backwardness of the population in the interior of the country was called into question, since the investments made by hygienists to identify serious health problems "had never [...] been so radically elaborated and so clearly exposed and presented to Brazilian society" (HOCHMAN, 2009, [n.p.]). Thus, by carrying out expeditions to the interior of the country and the dramatic dissemination of the national health situation, hygienists promoted, in the 1910s, an intense political, social and educational mobilization for the recovery of the Brazilian hinterlands through hygiene (FONSECA, 2018; HOCHMAN, 2012; 2009).

For Hochman (2012), from 1918 onwards, health mobilizations were intensified, however, they encountered difficulties in implementing a central body to coordinate actions throughout the country. In this context, an appeal was made to the states to invest in health reforms, finding strong support in Minas Gerais, with the Arthur Bernardes' government. (HOCHMAN, 2012).

The President[2] of Minas Gerais promoted the opening of the state to investments from the Union, committing to institute actions in favor of the sanitation of rural areas (HOCHMAN, 2012). Thus, the Bernardes government led the implementation of a set of health policies for the recovery of rural areas (CARVALHO, 2016; ABREU, 2010), and, within this framework of policies, ESAV was created. The core of the institution's creation was not to combat diseases in the backlands, but aligned with hygienist principles, it aimed to recover rural areas by improving production and the living conditions of agricultural workers, a proposal that was in line with the ideas of the rural and hygienist interlocutor, Alberto Torres (GÓIS JUNIOR, 2014).

Like the hygienists, the rural movement of those decades, supported by educational debates, considered agricultural education as a factor for national progress. According to Azevedo (2005), reflections and proposals were developed aiming at the dissemination of new knowledge and agricultural techniques through rural education, with modern intentions. These developments were combined with the rise of a process of industrial, urban and demographic expansion in the country, a fact that resulted in the significant growth of higher education schools of Agriculture and Veterinary Medicine between the 1910s and 1920s. Among them was ESAV (AZEVEDO, 2005; CAPDEVILLE, 1991).

Thus, the creation of ESAV by Arthur Bernardes took place during a period of nationalist debates aimed at national progress. They focused on agricultural fields, with hygienist knowledge standing out in the organization and remodeling of rural spaces. To investigate the presence of hygiene in construction and organization work, institutional documents stored by the Central Historical Collection of the Federal University of Viçosa (ACH-UFV) and by the University of Florida Digital Collections (UFDC) in their digital repository[3] were separated, gathered and analyzed. The historical period from 1920 to 1927 was outlined, which corresponds to the announcement of the creation of the School and the completion of the construction of the main building, when teaching activities began.

[2] The position of State President, held by Arthur Bernardes in Minas Gerais, is today equivalent to that of state governor.

[3] Available at: https://ufdc.ufl.edu/. Accessed on: January 31, 2023.

Modern, scientific and hygienic: laying the foundations of the Agricultural School

The conception and construction of ESAV, established in the interior of the state of Minas Gerais, was permeated by the interests of different individuals who were involved in its creation. In common, they shared the urgency of introducing new knowledge and practices in rural areas. The first movement for the creation of the School was mobilized by the statesman Arthur Bernardes, while president of the state of Minas Gerais. Through its creation, Bernardes sought to direct a modernization project to the countryside that would foster the economic development of the state, overcoming traditional production and care techniques in agriculture and livestock (SOUZA, 2017).

In a message to the Minas Gerais Congress on June 15, 1920, Bernardes (1920, p. 6) announced the need to create an "improved and modern" agricultural education institution in a "large area" to provide "more system and accuracy to rural work" and to contribute "to making our efforts in working the land more conscious and productive." His intention was to increase the state's agricultural production and, consequently, its economy by creating the establishment.

Thus, on September 6, 1920, Law No. 761 was published, which defined the objective of the School "[...] to provide practical and theoretical teaching in Agriculture and Veterinary Medicine and also to carry out experimental studies that contribute to the development of such sciences in the State of Minas Gerais" (MINAS GERAIS, 1920). The provision of practical and theoretical teaching would aim to bring the School closer to the demands present in agricultural spaces. As stated by Arthur Bernardes, the creation of the institution allowed the transposition of agricultural primitivism to the introduction of new processes in working with the land and in the care of plants, trees and animals (BERNARDES, 1952 apud. BORGES; SABIONI; MAGALHÃES, 2000). Thus, the agricultural worker would become the target of educational practices to overcome rough technical and make possible working conditions that would allow greater productivity in the field.

In order to carry out the state president's intentions, the US government was asked to nominate a specialist capable of founding, organizing and directing a Modern Agricultural Education institution, a fact that culminated in the hiring of Peter Henry Rolfs. According to Borges, Sabioni and Magalhães (2000), since 1891, P. H. Rolfs had already been successfully working in scientific activities at different US colleges, gaining experience in botany, bacteriology, mycology and phytopathology, in addition to activities with subtropical plants. Due to this scientific mark in his professional constitution, close to the Natural Sciences, P. H. Rolfs demonstrated appreciation for the hygienist Oswaldo Cruz, who was sometimes highlighted in his records as a notable Brazilian scientist. Likewise, he believed that science applied to health and agriculture would equally be the key to national prosperity (ROLFS, [undated]).

It is worth remembering that, at the end of the 19th century, hygienists were promoting important findings in the Natural Sciences and, especially, in what was known about small organisms and the spread of diseases. Coming mainly from Europe and the United States, the new discoveries were disseminated in Brazil and incorporated by hygienists in a convenient way into local debates. In those large countries, the findings made by microbiology stood out, more specifically in bacteriology, which inaugurated a new concept of body care and the living conditions of the population (GOIS JUNIOR, 2003; VIGARELLO, 1996).

In that context, the movement of subjects was characterized as one of the important factors for the circulation of scientific knowledge, a fact that was perceived with the arrival of

P. H. Rolfs in Brazil. In February 1921, he arrived with his family in Belo Horizonte to sign the contract with the State and begin the work. During his visit, he enjoyed the title of prestigious scientist of the United States, a credential with which he was presented to Arthur Bernardes by the US ambassador to Brazil. The contract signed by P. H. Rolfs assigned him the role of being a member of the committee to choose the site for the foundation of the School and to present the construction plans and general teaching programs to the government, in addition to becoming the first director of the institution (GOMIDE, 1996).

On February 25 of that same year, the committee responsible for choosing the construction site set off for the Zona da Mata Mineira region to visit points in the cities of Ubá, Rio Branco, Viçosa and Ponte Nova. During the trip, which lasted until March 8, P. H. Rolfs observed the climate and soil conditions, as well as the possible lands for the construction of the future School, and listed the factors that should guide the choice of the site. Among the points highlighted were healthiness, suitable land, location, publicity, general community feeling, distance from the population center, crops and water. The American warned that, in the absence of these, it would be almost impossible, if not impossible, to establish an agricultural school (ROLFS, 1921b).

Emphasizing the sanitary and hygienic conditions to be considered in the selection, the American advocated that healthiness "is of first importance in any enterprise" (ROLFS, 1921a, p. 1). The location of the foundation, depending on the healthiness conditions, could produce frequent illnesses among the students and hinder the efforts of instruction. Thus, it was necessary to observe not only the healthiness of the location, but also the availability of "clear, pure water free from impure organisms" to meet the hygiene and care needs of the students, teachers and staff of the institution (ROLFS, 1921a, p. 1).

Among the places visited, P. H. Rolfs noted that Viçosa had land suitable for the construction of the future School and "a general air of cleanliness and prosperity" (ROLFS, 1921a, p. 11). The American visited two educational institutions and an isolation hospital in the city, certifying their good location, the service and construction of these establishments, thus confirming the existence of favorable conditions for the installation of the Agricultural School in Viçosa.

The adoption of scientific assumptions for a technical choice, supported by the knowledge of modern science, is announced by the American as the criterion adopted for his choice. They should guide the construction of an establishment from the moment the location for its foundation is chosen. The purpose of the hygienic criteria was preventive, since "if the students, during the first five to ten years, had the misfortune of contracting diseases such as malaria, hookworm, or yellow fever, this bad reputation will last in the establishment for decades" (ROLFS, 1933, p. 2).

The P. H. Rolfs's orientation for the purchase of a large tract of land far from the city aimed to establish an establishment with rural characteristics. This composition would allow the students to experience a 'real agricultural life', in addition to serving as an example to farmers on how to manage their farms. Therefore, technical and scientific investments should be made to promote the cleaning of the space and lay the foundations of the institution, inspiring the organization of the farms.

Once the land had been chosen, the construction plans and the initial plan were presented to Arthur Bernardes and made official by means of Decree No. 5,806, of December 30, 1921. From then on, actions were initiated to expropriate the land for the construction of the School (Figure 1)

Figure 1 – Land acquired for the construction of ESAV, in 1921. Record made during Rolfs' second trip to Viçosa, before the purchase of the land.

Source: University of Florida Digital Collections.

In 1922, the State President Arthur Bernardes issued Decree No. 6,053, on March 30, which allowed the creation of ESAV. A little over two months later, on June 10, the cornerstone of the main building was laid, constituting a milestone in the founding of the School. In addition to the modern aspect of the establishment, valued by Arthur Bernardes, for Oliver and Figuerôa (2007), the scientific tradition, with an emphasis on research, strongly marked the School in Viçosa, being important for the opposition of agriculture to nature. Nature was considered incomprehensible, obscure and disorderly, and, therefore, should be dominated by agriculture, for the good of the nation (OLIVER; FIGUERÔA, 2007).

With this, the interests of Arthur Bernardes, in creating an establishment that would overcome the rudimentary technical aspects of the field, and of P. H. Rolfs, in adopting scientific and modern assumptions to guide the School, established the first pillars of the institution. These aspirations signaled the emergence of a suitable space for the application of modern and specialized knowledge and practices in the field, with hygiene having an important place in the thinking of the founder of the School. At that time, hygienic assumptions were in vogue in the debates driven by the sanitation campaign in the Brazilian backlands and assumed a rhetoric of modern science (HOCHMAN, 2012; GONDRA, 2003). Despite this, they were only realized in the construction of the ESAV with the presence of the engineer João Carlos Belo Lisboa, who was hired in August 1922 by the State Government to work on the works.

Belo Lisboa: “The right man in the right place”

João Carlos Belo Lisboa was born on August 18, 1892, in the city of Vassouras, in the interior of the state of Rio de Janeiro. According to Borges, Sabioni and Magalhães (2000) and Camisasca (2012), his father was orphaned in his first year of life and he lived a poor childhood in a village near Juiz de Fora, Minas Gerais, where he completed his schooling. In addition to his studies, he worked hard to educate his seven siblings, the offspring of his mother’s second marriage (BORGES; SABIONI; MAGALHÃES, 2000). The city in Minas Gerais where Belo Lisboa lived until the mid-1910s achieved significant hygienic improvements in the early 20th century, mainly inspired by the cleaning and modernization policies that were taking place in

the federal capital (NARCISO, 2016). It was possibly through his educational experience in the city of Juiz de Fora that Belo Lisboa had his first contact with the knowledge and practices of hygiene that were emerging on the national and local scene[4].

Before arriving at ESAV and investing his ideas in the organization of the School, Belo Lisboa left Juiz de Fora to complete his professional training. He traveled through the states of São Paulo and Rio de Janeiro, which allowed him to get closer to the current debates on hygiene. He began his training in Civil Engineering at the *Escola de Engenharia de São Palo* and completed it at the *Escola Politécnica do Rio de Janeiro* in 1919. However, a year earlier, he graduated in Industrial, Mechanical and Electronic Engineering, and only later completed his training in Civil Engineering (CAMISASCA, 2012). According to Borges, Sabioni and Magalhães (2000), Belo Lisboa's change of itinerary from São Paulo to Rio de Janeiro was motivated by health problems. However, this displacement allowed him to establish contact with actors who played a leading role in the medical-sanitary scenario of the Federal District.

In April 1918, Belo Lisboa was invited by the psychiatrist Dr. Rodrigues Caldas[5] to be the secretary of a study commission interested in fibrous plants and textile industries, having traveled to the United States, China, Japan, India and countries in South Africa (CAMISASCA, 2012; BORGES; SABIONI; MAGALHÃES, 2000; GOMIDE, 1993). We do not know the purpose of the studies; however, according to Borges, Sabioni and Magalhães (2000), the trip was headed by Dr. Rodrigues Caldas. At the time, the latter was the general director of the *Colônia dos Alienados da Ilha do Governador*, in Rio de Janeiro, and was one of the central figures in the establishment of the *Colônia Agrícola* of Jacarepaguá/RJ, between 1912 and 1924. Thus, the study trip led by Belo Lisboa may have had some relation to the establishment of the *Colônia Agrícola*, which was intended to serve as a model for the internment and treatment of mentally ill patients in Brazil (CLAPER, 2016).

However, it was through contact with the professor and director of the *Escola Politécnica*, André Gustavo Paulo de Frontin[6], while he was a student, that Belo Lisboa initiated the first movements that would culminate in his arrival at ESAV, in Viçosa. Borges, Sabioni and Magalhães (2000) point out that, at the time of Belo Lisboa's graduation, Paulo Frontin recommended him to the mayor's office of Ponte Nova so that he could work on urban reforms in the city. The recommendation, which, for the authors, is art of a successful trajectory of Belo

[4] Juiz de Fora was located near the federal capital and, according to Narciso (2016), was influenced by the modernization process and hygienist ideas coming from Rio de Janeiro. The city had the presence of the Juiz de Fora Society of Medicine and Surgery, which since 1889 was in tune with the national and international agenda of discussions on bacteriology, diseases and prophylaxis, actively contributing to discussions in the city and its penetration in schools (NARCISO, 2016). The poor population was the target of hygiene policies, having been reached through school institutions. According to Narciso (2016), from 1907, with the creation of the first school groups, doctors and dentists began to intervene with students through medical inspections and prophylaxis in schools, in addition to installing dental offices in the groups, contributing to the spread of medical-hygienic power among poor families.

[5] Doctor João Augusto Rodrigues Caldas (18??-1926) was a psychiatrist who actively contributed to changes in the way the mentally ill were treated, relieving the excess of patients at the *Hospital Nacional de Alienados* and transforming the colony into spaces for treatment and agricultural production (CLAPER, 2016).

[6] André Gustavo de Paulo Frontin (1860-1933) was born in Petrópolis, Rio de Janeiro. During his studies, he attended schools in both his hometown and the state capital, including *Colégio Dom Pedro II*. In 1879, he graduated in Civil Engineering from the *Escola Politécnica do Rio de Janeiro* and later obtained the degrees of mining engineer, a bachelor's degree in Physical Sciences and Mathematics from the same institution, and a doctorate in Philosophy from the *Faculdade de Filosofia do Rio de Janeiro*. In 1880, he began teaching at the Polytechnic School of Rio de Janeiro, assuming the post of professor of Mechanics Applied to Machines. Paulo Frontin was intensely involved in politics, founding the Republican Alliance (AR) in 1917, and having been a senator from 1917 to 1918 and from 1921 to 1930; mayor of the Federal District from January to July 1919; and federal deputy from 1919 to 1920. His biography highlights his work involving sanitation in water supply reforms and construction of avenues, with emphasis on *Avenida Central*, in addition to the construction of popular housing (HOFFBAUER; PESSOA, 2018; ALVES, 2013).

Lisboa in the "firm determination to be someone in life" (BORGES; SABIONI; MAGALHÃES, 2000, p. 37), intersects with the existence of a broader scenario at that time, in which a mobilization for the sanitation campaign of the Brazilian backlands was gaining strength, with reception in the state of Minas Gerais, which appealed to engineers to spread hygiene in the interior of the country (HOCHMAN, 2012). His sanitary contributions to the campaign would be favored by his training at the *Escola Politécnica* of Rio de Janeiro, which was influenced by medical-sanitary knowledge (ALMEIDA; SANTOS, 2019).

Belo Lisboa was appointed to serve as mayor of the Minas Gerais municipality of Ponte Nova by an engineer who had been actively involved in urban reforms on *Avenida Central* in Rio de Janeiro in 1904. This place was one of the main expressions of the hygienist reforms in Brazilian urban spaces, which, according to Hochman (2012), initiated, in a more intense way, the hygienist policies in the country. Alves (2013) indicates that Paulo Frontin was the mentor of the works on *Avenida Central* and the person who faced the greatest opposition from newspapers opposed to the hygienist reforms at the time, a movement that erupted in the Vaccine Revolt[7] at the end of 1904. In 1919, the same engineer appeared at the head of the city hall of the Federal District, implementing a vast program of works in the rural areas of the city, with emphasis on the creation and widening of avenues (HOFFBAUER; PESSOA, 2018).

Actors like this, who once worked on implementing hygiene policies in large urban centers, would later contribute to the expansion of hygiene practices to the interior of the country, at a time when the sanitation movement in the hinterlands was on the rise. Belo Lisboa, formed in 1919, was part of this historical scenario of individuals living in a space of conflicts and disputes for national progress, with a strong political and social influence from medical-hygienic thinking (FONSECA, 2018; GÓIS JUNIOR, 2014; HOCHMAN, 2012).

After being nominated, Belo Lisboa was appointed to the position of director of public works in Ponte Nova by Mayor Custódio Silva. Under the technical guidance of the newly graduated engineer, Custódio Silva's administration stood out for its urban reforms, with the improvement and widening of streets and thoroughfares, in addition to the opening of an important avenue in the city (undated). Soon, Belo Lisboa was favored by the urban reforms promoted in the inland municipality of Minas Gerais[8] — Ponte Nova —, carrying out works that were convenient to the hygienist demands, such as urban paving and electricity supply (BORGES; SABIONI; MAGALHÃES, 2000). According to Gomide (1993), due to the good services provided to the city of Ponte Nova, Paulo Frontin recommended Belo Lisboa to the president of Minas Gerais, Arthur Bernardes, so that he could work as an auxiliary engineer in the construction work of the ESAV.

Thus, in August 1922, Belo Lisboa was hired to work on the construction of the School. In December of the same year, the engineer was honored with the position of chief engineer and, with this, was able to institute reforms in the work regime of rural workers and use his authority to modify the construction plans proposed by the American.

Belo Lisboa worked intensely to intervene in the course of the works, bringing them closer to his hygienic aspirations. The construction plan had been drawn up by P. H. Rolfs and delivered to the State Government in 1921, with the American being appointed responsible for supervising

[7] The Vaccine Revolt was a popular movement in the Federal District opposing mandatory vaccination, which was carried out in an authoritarian manner and in a context of costly modernization for the working classes. The mandatory vaccination was mobilized by the "*General Mata-Mosquitos*", Oswaldo Cruz, who headed the General Directorate of Public Health (DGSP). As director, he promoted, in addition to demolitions for sanitation reasons, compulsory vaccination practices that even included the invasion of homes by directorate employees. The trigger for the revolt was the approval of the bill reinstating mandatory vaccination and revaccination against smallpox throughout the capital on October 31, 1904, causing a major riot in the city (BENCHIMOL, 2003). For a better understanding of the revolt, see Sevcenko (2018).

[8] According to Borges, Sabioni and Magalhães (2000), in 1921, Belo Lisboa was honored with a medal and a watch, both made of gold, for his successful work in the city.

the works. Despite this, Belo Lisboa acted autonomously and made several modifications to the plan, overriding the authority granted to P. H. Rolfs, which created bureaucratic obstacles. As Azevedo (2005) explains, the American had established a contractual obligation to submit the plans for approval by the Government of Minas Gerais; however, those drawn up by Belo Lisboa were rejected because they were not provided for in the agreement, generating conflicts.

The modifications proposed by the chief engineer had the connivance of P. H. Rolfs, who considered them positive and recognized Belo Lisboa as "the right man in the right place" (ROLFS, 1923, p. 8). Thus, so that the works could proceed as planned by Belo Lisboa, the functions were redistributed. The engineer was responsible for the construction and the American for the machines and the first agricultural work camps (AZEVEDO, 2005).

Figure 2 - P. H. Rolfs (center) and Belo Lisboa (right) during the construction of the School, accompanied by a worker (left), ([n/d]). The contrast in clothing and footwear between the directors and the worker can be seen.

Source: Lócus UFV.

In this way, Belo Lisboa was able to establish a direct dialogue with the State Government to promote changes in the construction plan. This allowed for the hygienic construction of the space to receive due attention. As we will see, the works undertaken made it possible to address P. H. Rolfs' concerns about installing sanitary structures to supply drinking water and ensure the health of the School's grounds. As a result, the hygienic mark gained prominence in the engineer's work, who promoted interventions in the health conditions of the workers, in the watercourses on the grounds and in the institution's plan, favoring the cleanliness of the ESAV.

The hygienic construction of the ESAV: sanitary structure and soil cleaning

The construction work of the ESAV began in the same year that the cornerstone of the central building was laid, and was beset by numerous obstacles. In addition to those of a political nature, such as the delay in releasing funds, there was difficulty in obtaining basic materials. As a result, efforts were made to obtain stone by building a quarry on the land and producing planks and bricks. Due to the costly work involved, Belo Lisboa emphasized the need to take action on the health and education of the workers (LISBOA, 1929).

Under Belo Lisboa's leadership, fecal examinations were carried out on all workers, which revealed a 100% infection rate, and medical treatment was provided. In addition, a highly successful social project[9] was created, with health services and elementary education for the employees and their families, in addition to the creation of a workers' band. Complementing the medical and educational action, Belo Lisboa gave lectures on morality and hygiene to the employees on Saturdays, after pay. The interventions on the health and education of the workers aimed to promote the "social elevation" of the rural population and speed up the construction work of the School (LISBOA, 1929).

The justification given by Belo Lisboa was part of the country's hygienist rhetoric and was conveyed by Belisário Pena on the national scene, who appealed to Brazilian engineers for the participation of medical science in the execution of works "so that they can move forward quickly and save lives and money" (PENA, 1923, p. 56). Extending these services to family members would allow workers to be protected against infectious diseases, protecting construction works, and also allowing these benefits to be extended to a larger portion of the rural population.

These interventions on rural workers were explored more extensively by Milagres (2022), and represent a conformity of Belo Lisboa's actions with the hygienist assumptions circulating in Brazil. The engineer's actions from a sanitation perspective occurred not only on the workers' bodies, but also in the organization of the institution's facilities. Starting with the facilities on the land to take advantage of the resources present, seven culverts were built to drain and pass water, which would allow the course of the streams that ran through or near the land to be rationed. The construction of the buildings followed the route of the main stream – Córrego dos Barbados –, which was surrounded by bridges and culverts for the passage of roads (BORGES; SABIONI; MAGALHÃES, 2000; TRECHO..., 1951), as shown in Figure 3.

In order to capture water, three dams were created to impound *Córrego dos Barbados* – one main stream and two others that served to supply the first – for the supply of drinking water, and were connected by means of a decantation tank. The dams that stored water for consumption and use by the School supplied the buildings through a distribution network corresponding to 4,856 meters. The dam's water collection system offered "real advantages, especially in terms of hygiene," as it allowed for frequent flushing of the tanks, "an issue that is not often put into practice in small installations" (LISBOA, 1929, p. 68).

The importance of the water supply service, which had been emphasized by P. H. Rolfs since his arrival in Brazil and which would guarantee the efficiency and success of the establishment, was reflected in the expenditure on these facilities. According to the Belo Lisboa Construction Report, with the completion of the works in 1929, expenditure on drinking water facilities represented approximately 43% (133:485$214 – one hundred and thirty-three thousand, four hundred and eighty-five thousand, two hundred and fourteen *réis*) of the total cost of the various facilities, being the largest of them (LISBOA, 1929). In addition, a road was opened to connect to the drinking water dam, which would benefit the collection service and future classes on the principles of water supply for farms (ROLFS, 1927).

[9] The health and education project was carried out through the creation of *Caixa Beneficiente* to cover the health and education expenses of workers and their families. It was funded by the collection of contributions from all workers, through salary deductions, and was supplemented by contributions from Belo Lisboa (MILGRES, 2022).

Figure 3 – *Córrego dos Barbados* Drain, ([undated]). Workers constructing the drain in a section that cuts through one of the ESAV roads

Source: Lócus UFV.

The interventions in the streams on the School's land, with the installation of drains, damming, collection and distribution of water, allowed the circulation of products, people and liquid throughout the space. This intervention carried out by the engineer was in line with that of the sanitation experts, who trusted in the circulation of water as a factor in preventing diseases. They modified the natural courses, but, on the other hand, invested in water piping for cleaning, consumption, production and disposal of waste (ALMEIDA; SANTOS, 2019; MÜLLER, 2000; VIGARELLO, 1996).

Regarding to the construction of dependencies, a total of 20 shelters were built to serve the School's activities. During their construction, attention was paid to the necessary sanitary facilities, according to the convenience of each shelter. They were served by structures for the passage of air currents and light, lavatories and bathrooms accompanied by a sewage system. In addition to the shelters, a tick-killing bathroom was built to clean large animals, with water and sewage systems (LISBOA, 1929).

In order to house some teachers and staff at the School, a total of 20 residences were built. Half of the houses, which were intended for teachers, had to have their entire layout rebuilt by Belo Lisboa. They were given a sophisticated structure and, in the sanitary facilities, they received an internal bathroom, shower and sewage system, and a sink was also added to each room (LISBOA, 1929). The other half was intended for employees and had simpler facilities (Figure 4).

Figure 4 - Three residences intended for the School's employees (1931). It is worth noting that there was no external shed for a septic tank, since the bathroom was inside the residence.

Source: Lócus UFV.

In 1927, Rolfs informed the Secretary of Agriculture of Minas Gerais about the state of the works, warning that, during the construction of the employees' housing, "it has not yet been possible to achieve any sanitary conveniences" and he feared the consequences that could arise from the lack of sanitary infrastructure, since "the land on which the houses are located will be completely impregnated with anklystonia [sic] eggs, making the place very unhealthy" (ROLFS, 1927c, p. 6). Belo Lisboa's work as chief engineer, committed to ensuring hygienic structures in the homes, demonstrated his interest in preventing the spread of the disease condemned by hygienists in the backlands. To this end, Pena (1923) raised awareness about the correct disposal of waste through sewage systems, connected to latrines and with a water supply. The ESAV engineer responded to this preventive action in the organization of the space, justifying it in favor of the community and warning, in the absence of the indicated structure, of the risk of contamination of the land.

This made it possible for the employees' houses to be equipped with an internal bathroom, a shower and adequate sewage system when construction was completed (LISBOA, 1929). The new homes contrasted with the dwellings where some of the workers lived, which were made of adobe (Figure 5), providing them with healthy living conditions, in order to prevent the School from getting sick.

Figure 5 - Housing of the workers who built the School, made of adobe and *pau-a-pique* (1922). The presence of septic tanks can be seen in both the front and back huts.

Source: Lócus UFV.

Regarding the residences, two others were built for the principal and vice-principal. They had a superior architecture to the others, and their sanitary organization was certainly similar to that of the professors' residences.

The two major works that stood out were the students' dormitory and the main building. The dormitory had 124 rooms with ceiling heights of 4.30 and 3.90 meters, good lighting, showers distributed by section with hot and cold water[10], and sanitary installations. The dormitory also had a kitchen that would serve the cafeteria and was modified from the original plan, with five sinks, a washbasin, a shower and sanitary installations. The main building, in turn, had to undergo modifications that led to the change, on the outside, from a "very luxurious" façade to four façades in a noble and simple style, much to Belo Lisboa's dismay. Internally, changes were made for sanitary purposes, "in order to avoid narrow corridors, stairs obstructing the corridors, sanitary installations without direct light and air, dark deposits, etc." (LISBOA, 1929, p. 6). In general, the central building had the highest ceiling height of all the buildings (five meters), large windows that would allow good ventilation and lighting, bathrooms on both floors and in the basement, with sanitary installations and an independent sewage system (LISBOA, 1929).

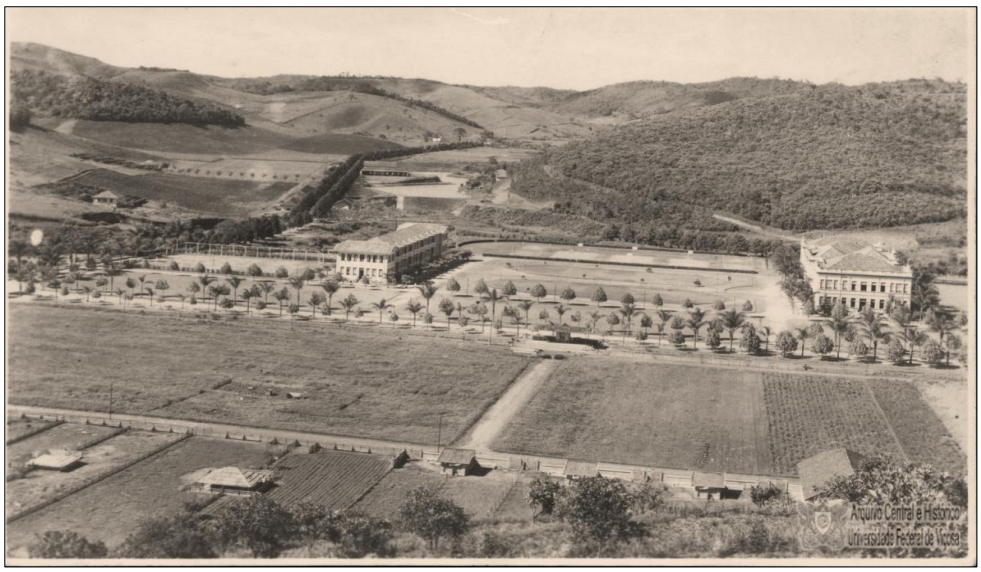
The changes to the initial plan, which were promoted by Belo Lisboa, brought it closer to the way in which sanitary engineers worked. For Müller (2000, p. 33), the work of sanitary engineers was adapted to the logic of fluids and circulation, in order to draw "the first lines of the design taking into account the sanitary system, through the water drainage scheme, air circulation and penetration of sunlight, leaving the other aspects subordinate to these". Belo

[10] The use of water at different temperatures occupied an important place in the debate of European hygienists during the 18th and 19th centuries, having social insertion. According to Vigarello (1996), water temperature had therapeutic functions linked to the tonicity of the organism, such as strengthening internal defenses, contraction and distension of muscle fibers and skin, in addition to the function of cleaning dirt from the body's envelope. Medeiros and Quitzau (2018) demonstrate that, in Brazil, this differentiation of water temperature gained space in hygienist prescriptions linked to nature. Its use gained a scientific character in the cure of illnesses, surpassing the simple use of the shower for temporary satisfaction and popular practices (MEDEIROS; QUITZAU, 2018).

Lisboa sought to incorporate these elements into the initial layout of the buildings, promoting their internal restructuring in favor of health.

According to the sanitation experts, projects should be designed primarily from the perspective of health, followed by circulation, without neglecting aesthetics (MÜLLER, 2000). The first two points were met by Belo Lisboa, which, in addition to ensuring healthy conditions in the buildings and shelters, promoted a rationalization of the watercourse that would allow the circulation of fluids and people. Aesthetics were combined with health, with the organization of large open and wooded spaces (Figure 6). The main avenue and some roads were planted with coconut trees (*Cocus plumosa*) and Paraná pine (*Araucaria brasiliensis*), and the spaces and buildings were decorated, which served to attract attention to the institution and "also to constantly inspire the students" (ROLFS, 1927a, p. 30).

Figure 6 - Partial view of ESAV ([undated]). The main building and the students' dormitory are highlighted, with the sports square in the center. The organization of the space occupied by the School can be seen, with the delimitation of the experimental fields, the ornamentation around the central building and the dormitory, as well as the afforestation of the Main Avenue (horizontally) and the *Avenida da Agronomia* (vertically)



Source: Lócus UFV.

In parallel with the structuring of the School and the beautification of the space, the land was cleaned by combating leafcutter ants. As Rolfs (1927a) notes, the region of Viçosa was so infested by "this plague" that, without its extensive combat, agriculture would not be as economical. According to Rolfs (1927c, p. 14), the purchase of the land chosen for the construction of the School in Viçosa, which totaled 453 hectares, was privately advised against by "some well-intentioned men" in the city, who warned that the land "was only suitable for the growth of leafcutter ants and *aroeira*." Even so, the purchase was secured by the "technical choice" of P. H. Rolfs who, upon expropriating the land, confirmed the precarious state of the soil, stating: "As for the leafcutter ants, it was clear that the land was admirably suited to their production" (ROLFS, 1927b, p. 14).

At the time, the insect was the target of criticism from the writer and intellectual hygienist Monteiro Lobato. Along with the health campaigns, the fight against leafcutter ants represented another major propaganda campaign for cleaning up the country (LIMA; HOCHMAN, 2000). According to Silva (2010), leafcutter ants occupied a symbolic space in Brazilian agriculture of the struggle between "man" and the natural world, and their proliferation in rural areas was representative of the indolence of the *caboclos*. Thus, the ant, as a symbolic element, "gathered around itself the evils that plagued agriculture" (SILVA, 2010, p. 567). Combating it would correspond to the victory of science over the pests of the field – the indolent *caboclo* and the *saúva* – in ensuring a clean and productive space (SILVA, 2010; LIMA; HOCHMAN, 2000).

In order for the School to be established on a sanitized land, it was necessary to invest in practices to combat saúvas, initially under the leadership of P. H. Rolfs. The work to combat the insect began in 1922, with the creation of the "ant extinction service", and in that same year, more than 2 thousand anthills were destroyed along the main avenue (ESAV, 1939). The tasks were carried out continuously and, over the course of five years, more than 200 kilos of products to combat leafcutter ants had been used — "powdered arsenic and sulphur" (ROLFS, 1927b). With the start of classes in 1927, the work to combat leafcutter ants included the participation of students who, as a practical part of the Economic Entomology course, fought nests on the school grounds under the supervision of Professor Diogo Alves de Mello. Through the course, the students carried out a biological study of leafcutter ants and the economic ways to combat the insect (ROLFS, 1927a; LISBOA, 1935).

From 1929 onwards, the "ant extinction service" was extended to farms near the school, including soil cleaning and instruction on how to combat leafcutter ants as part of the extension services. As a result, in 1935, when the National Campaign against Leaf-cutter Saúva was declared (SILVA, 2010), the school grounds and their surroundings were considered to be clean and were merely under surveillance, while intense work continued to educate students and assist farmers in the state (LISBOA, 1935).

Thus, the efforts of Belo Lisboa and P. H. Rolfs focused on building and cleaning activities – of workers and of the soil – in order to dispel the image of backwardness characteristic of the countryside and to establish the school on sanitary and scientific foundations. These actions helped to reinforce the modern representation of the institution, desired by Arthur Bernardes, which was favored, in particular, by the participation of hygiene.

The inauguration of the main building took place on August 28, 1926, one year before the starting classes[11], and represented the convergence of the interests of these three actors, permeated by the educational work being carried out in the interior of Minas Gerais (Figure 7).

[11] The arrival of students after the inauguration was due to delays in the construction works. The first classes – Elementary and High – only arrived in August 1927, and the boarding students were housed in the basement of the main building. The works were only completed in 1929, which was also the year in which Belo Lisboa ended his position as chief engineer and was promoted from vice-director to the position of Director of ESAV (MILAGRES, 2022).

Figure 6 - Open-air mass at the inauguration of the main building[12], in 1926. Religious ceremony led by Archbishop Dom Helvécio, in front of the central building.

Source: Lócus UFV.

Starting with the date, the early inauguration corresponded to the last year of Arthur Bernardes' term as president of the Republic (1922-1926). This allowed the nationalist and first creator of ESAV, in possession of the highest political office, to see his work of improving the countryside come to fruition. Also participating in the ceremony were the founder and first director, P. H. Rolfs, the chief engineer Belo Lisboa, the Archbishop of Mariana, Dom Helvécio, several political authorities of the state and farmers. As detailed by Borges, Sabioni and Magalhães (2000, p. 8):

> After the open-air mass, with the altar placed on the building's staircase, on the west side, the building was blessed and a solemn session was held in the Main Hall, with speeches by the President of the Republic, the Secretary of Agriculture and the Chief Engineer. The following afternoon, Rolfs hoisted the national flag at the establishment for the first time.

The ceremony marked the beginning of the undertakings surrounding the institutional task of "improving man, animal and seed"[13]. The inauguration of the work was blessed by the Catholic Church, by Dom Helvécio, and by the then President of the Republic and founder of the School, Arthur Bernardes. The institution's commitment to building the nation was signaled in the image of P. H. Rolfs, an American scientist who had hoisted the national flag. Finally, Belo Lisboa also spoke at the inauguration, marking, amidst sanitation undertakings, his place in the construction of the institution.

[12] Currently, the building is named Edifício Arthur Bernardes, in honor of the institution's mentor and creator.

[13] This axiom demarcated the institutional mission of ESAV and appeared frequently in institutional magazines that appeared between the end of the 1930s and the beginning of the 1940s. In an excerpt from Ceres magazine, mentioned by Azevedo (2005), it is noted that the motto of "Improvement of man, animal and seed" was a "synthesis of an ideal trilogy", which summarized the institutional mission outlined by P. H. Rolfs and Belo Lisboa. Milagres, Oliveira and Baía (2021) indicate that this same axiom appears prominently in *Revista Seiva*, a student and institutional journal that began to circulate in the 1940s and disseminated hygienic knowledge and practices inside and outside the institution.

The engineer, who became a great enthusiast of P. H. Rolfs' ideas, brought together different interests in his patriotic and Christian image. He was "willing to serve the rural cause" (LISBOA, 1941, [n/p]) and wanted to promote the growth and improvement of man, a fact that led him to become, together with P. H. Rolfs, the consolidator of ESAV (AZEVEDO, 2005; BORGES; SABIONI; MAGALHÃES, 2000; GOMIDE, 1996).

The figure of the three institutional authorities who starred in the inauguration of the main building — a nationalist politician, a scientist and an archbishop[14] — represented the educational project based on hygiene that was consolidating in the country, privileged, in the School, by the Belo Lisboa's presence and sanitary action. According to Abreu Júnior and Carvalho (2012), educational discourses were based on a joint action of moral, hygiene and patriotic principles. In Brazil, the rapprochement between the Catholic Church and education was well-known and emphasized moral conduct, producing a context of subjection to norms based on principles of Medicine and Psychology, amalgamated with religious dogmas (ABREU JÚNIOR; CARVALHO, 2012).

Therefore, the inauguration of the central building sealed the different interests that marked the institution, which took place on August 1, 1927. To this end, the construction efforts aimed to equip the establishment with hygienic and sanitary structures, aiming to educate the habits of rural people. Internal sewage systems, manholes and dams were installed to manage water circulation, and the buildings were structured to allow the entry of light and air. Showers, toilets with sewage systems and sinks were also installed so that the people could clean themselves, and the tick-killing toilet would be used to care for the large animals. Furthermore, some investments in the space, such as planting trees, ornamentation and cleaning up leaf-cutting ants, would allow for a hygienic organization of the countryside that would serve as an example for rural residences. Thus, investments in the planning and construction of the ESAV in a hygienic and sanitary manner were essential for its institutional task of enhancing the rural areas of Minas Gerais and Brazil.

Final considerations

Since its inception, the ESAV has been guided by the intention of modernizing the countryside. To this end, the American Agronomist P. H. Rolfs was hired, who defined the scientific nature of the institution in the design and mobilized hygienic criteria to guide the construction site of the School. However, it was only after the arrival of the engineer Belo Lisboa that hygiene was highlighted in the construction of the establishment, occupying, together with the modern and scientific brand, the pillars that would guide the organization of the institution. The pillar of hygiene would represent the desire to legitimize a Modern Agricultural Education establishment in rural areas, seen by Brazilian hygienists as a place of neglect and backwardness.

Thus, the hygienic interventions promoted by Belo Lisboa focused on the rural workers, the watercourse on the land and the plans for the School's buildings and shelters, initially planned by P. H. Rolfs. For the chief engineer, the workers should have their diseases eradicated, be instructed in morals and hygiene and, together with their families, be assisted by modern medicine in order to ensure the smooth running of the works. The water, in turn, had to be dammed and purified, so that it could be collected for consumption, production and cleaning by the School's staff. With this, the Barbados Stream was dammed and a distribution network was built to all buildings and shelters for the circulation of drinking water.

[14] It is worth noting that the presence of the Catholic Church in the School was not occasional; it remained close to the institution through visits and regular contact with the establishment, contributing to internal discipline. The Archbishop of Mariana had prestige with the institution's management and was respected by Belo Lisboa, who described him as "a dear and respectable person [...], the affectionate pastor and progressive patriot, who understands the sanctity of the soul as well as the intellectual and physical improvement of the population" (LISBOA, 1935, p. 6).

The School's facilities were built respecting the watercourse on the land and drains and bridges were installed, which facilitated the circulation of water, people and goods. The healthiness of the buildings and shelters was emphasized, and modifications were made to the initial plans in order to allow for good circulation of light and air, in addition to the installation of sewage systems.

Finally, in parallel with the construction work, it was necessary to combat leafcutter ants, to promote soil health. In addition to cleaning and fertilizing the land, combating ants would allow the removal of a symbol of rural backwardness from the School. Initially, the work was undertaken by P. H. Rolfs, who came to integrate the training process of ESAV students, for the benefit of the institution.

Therefore, the construction work was guided by hygienic assumptions, aiming to promote a sanitary structuring of the School and combat the two plagues of the countryside: rural diseases and leafcutter ants. Finally, we consider that Belo Lisboa's work as a sanitary engineer was essential for hygiene to become a guiding pillar of the ESAV constructions, characterizing the modern environment of the Agricultural School in the countryside and shaping its educational project.

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