

Botanical Gardens in the city of São Paulo at the beginning of the 20th century

Jessica Rodrigues Tiseo

Master's student in Architecture and Urbanism, FAAC - UNESP, Brazil.
jessica.tiseo@unesp.br

Marta Enokibara

Professor, FAAC - UNESP, Brazil.
marta.enokibara@unesp.br

ABSTRACT

At the beginning of the 20th century, the city of São Paulo had three Hortos: the "Horto de São Paulo", better known as Horto da Cantareira, created in 1896 by Alberto Löfgren; the Horto do Museu Paulista, which was first planted in 1898 by the Museum's director, Hermann von Ihering; and the Horto Oswaldo Cruz, created in 1917 by the botanist Frederico Carlos Hoehne. All of them no longer exist with their original functions, but they preserve, in their spaces, some built and plant elements that are testimonies of the creation of these places. In this context, this article aims to make a brief history of these gardens, their insertions in maps of the time, the investigation of the fate they had and some components that preserve their memory today. Methodologically, the research used textual, cartographic and iconographic references present in primary documents, articles, theses and dissertations, as well as in the sites that house these places, in order to assess the objectives to be achieved. Through the material collected, it was possible to visualize and understand the locations of the mentioned gardens, their current uses and remaining elements.

KEYWORDS: Botanical Garden of São Paulo. Horto do Museu Paulista. Horto Oswaldo Cruz.

1 INTRODUCTION

The Portuguese landscape architect and garden historian Professor Aurora Carapinha comments, in her thesis on the gardens of Portugal¹, that there is a close relationship between the origin of the words "horto" and "garden". The author points out that in medieval times, the word "horto" was considered synonymous with "garden" and makes use of its etymological origin to support this argument. In Indo-European *gher* and *ghort*, terms that later gave rise to the words², both represented the same nature: a secluded space destined for cultivation. These spaces were also similar in terms of the idea of enjoyment, contemplation and permanence amidst the vegetated space, as

[...] they express, in their origin, the same reality. They only arrive in Portugal by different paths. The second [garden] is imposed by a desire to match, to copy foreign models, as a symbol of Europeanization. It is, after all, and no more than that, the renaming of an existing situation, a new outfit, without producing changes in its essence and in the Mediterranean tradition that the garden contained" (CARAPINHA, 1995. p.33) – author's translation.

We then had two words that referred to the same practice and synthesized the same use of space. But while the garden had its essence in the "reproduction of a Europeanized model", the word "horto" was based on the simple production of plant specimens, in a "traditional" way. The horto was seen as "a fenced plot of land, of small extension, equivalent to the backyard, where vegetables, ornamental plants and fruit trees are cultivated, subject to an intensive production technique" (CARAPINHA, 1995. p.34). Carapinha (1995) also points out that in the mid-15th century, the so-called "recreation hortos" appeared, which would be the predecessors of the Portuguese historical gardens.

¹ CARAPINHA, Aurora da Conceição Parreira. Da essência do jardim português. Volume 1. 425f. Thesis (Doctorate in Landscape Arts and Technique). University of Évora, Évora. 1995.

² According to the author, the Indo European word "*ghort*" later evolved into the Greek "*chortos*" and Latin "*hortus*", derivations originating from the word "horto". Likewise, the word of similar meaning, "*gher*" has also undergone derivations: for Old Irish "*gard*", Germanic "*geard*", English "*yard*", and Frankish "*gart*", which are terminologies that originated the word "garden".

This synonymy between the words horto and garden, in Portugal, is still maintained in current Portuguese Language dictionaries³. In Brazil, the word “horto” names spaces with functions different from those of gardens, but the initial idea present in the meaning of the word in Portugal, of a place destined to the production of plant species linked to the use (consumption or ornamental), remains, which, generically, could also lead to an approximation of the terms, in Brazil.

Transposing this idea of similarity in the use of terms, when reviewing the bibliography referring to the creation of Botanical Gardens in Brazil, we came across the use of the word horto in the foundation of spaces for the study of flora, with functions similar to those of botanical gardens (ROCHA ; CAVALHEIRO, 2001; ZAHER; COSTA, 2016)⁴.

From the data mentioned above, there are two aspects to the nomenclatures. The first refers to the use of the term “botanical horto” as a synonym for “botanical garden”, considering the proximity in the linguistic terminology adopted in Portuguese from Portugal or an approximation or lack of differentiation in the functions of these places, given the time of their use. The second theory suggests that, at first, these spaces were created on an experimental basis, showing an intensive form of production, and that is why they were called hortos.

In the present article, with regard to the use of the term “botanical horto”, we tend towards the first theory, that at the time when the Brazilian botanical gardens appeared, there was an approximation in the designation of the terms “botanical horto” and “botanical garden” or the lack of differentiation of the functions of these places.

Rocha and Cavaleiro (2001) date the first occurrence of a botanical garden in Brazilian lands in the mid-17th century, under the initiative of Maurício de Nassau, when he created a garden next to the Friburgo Palace, in Recife⁵. The authors also comment that other botanical gardens were effectively created following direct instructions from the Portuguese crown at the end of the 18th century. The first of them was established in Pará, with the name of Horto Botânico de Belém, made official by the Royal Charter of November 4, 1796, which determined the creation of botanical gardens in Brazil (ROCHA; CAVALHEIRO, 2001). This initiative evidenced the interest of the Portuguese in getting to know the colony's flora and fauna better, as a means of leveraging the exchange of species and investigating ways of replacing the production of spices from the East (SEGAWA, 1996).

In São Paulo, in 1799, in response to what was ordered by the Royal Charter of

³ According to the Online Dictionary of the Porto Editora Group called “Infopédia.pt”, the current meaning of garden, in Portugal, would be: 1. Place where seeds and garden and garden plants are grown and/or sold; 2. Small vegetable garden; 3. Garden. In Brazil, according to the Online Michaelis Dictionary (2015), the word garden is taken to mean: 1 Small space of land where ornamental plants are grown; 2 Small vegetable garden; 3 Place of torment (alluding to the Garden of Olives, where Jesus suffered).

⁴ In the case of the mentioned references, both Rocha and Cavaleiro (2001) and Zaher and Costa (2016) point out that the botanical hortos created in the city of São Paulo, appear under the name of botanical horto, but refer to attempts to create botanical gardens.

⁵ According to Almeida (2011), this garden is recognized as the first zoobotanical horto in Brazil and one of the first European-style hortos in the Americas. It opened in 1637 and was in operation until 1644.

November 19, 1798⁶, the creation of the “Horto Botânico da Luz” was determined in the neighborhood of Guaré (KLIASS, 1993). In order to acclimate “exotic and native species to reproduce and distribute them among farmers, with a view to commercial production” (DIAS; OHTAKE, 2011. p.24), Horto da Luz is considered by Rocha and Cavalheiro (DIAS; OHTAKE, 2011. p.24). 2001), as the city's first Botanical Garden. Open to the public in 1825, the space also held recreational activities. In 1838, it began to function as a Public Garden, since the public recreation function stood out in relation to botany (KLIASS, 1993; MINODA, 2018).

Subsequently, in São Paulo, at the end of the 19th and beginning of the 20th century, we will have three other initiatives to establish botanical hortos: the Horto Botânico da Cantareira, the Horto do Museu Paulista and the Horto Oswaldo Cruz. Currently, these institutions no longer function as botanical gardens and their spaces now have other uses. (ROCHA; CAVALHEIRO, 2001).

2 OBJECTIVES

In order to investigate the existing elements that preserve the memory of these places, this article aims at the rescue of the history of the botanical hortos present in the city of São Paulo at the beginning of the 20th century, locating them from maps and floor plans and verify the different functions they had when botanical hortos. It is also intended to assess the fates they had when they stopped playing this role. It also intends to reveal some elements of the time that remain today and recall their existence and their original functions, in the present time.

3 METHODOLOGY

The first stage of the work was the bibliographic review of the theme. To this end, works were collected, analyzed and synthesized that made the historical rescue of the botanical gardens present in the beginning of the 20th century. The general approach used the texts of Kliass (1993), Carapinha (1995), Segawa (1996) and Rocha and Cavalheiro (2001), as a parameter to construct the scenario of the studied botanical gardens. For the foundation and study of the gardens, specific references were used for each one. In this way, we have as main sources for the study of Horto da Cantareira, the dissertation by Romero (2019); for the Horto do Museu Paulista, the dissertation by Goes (2021) and the *Álbum da Secção de Botânica do Museu Paulista*⁷; and for Horto Oswaldo Cruz, also the *Álbum da Secção de Botânica* together with articles by Zaher and Costa (2016) and Bocchi and Pataca (2019).

⁶ The document established the creation of botanical hortos, similar to the one created in Belém, in the captaincies of Pernambuco, Bahia, Minas Gerais and São Paulo. (KLIASS, 1993; SEGAWA, 1996; ROCHA E CAVALHEIRO, 2001; ROMERO, 2019).

⁷ Here he refers to the publication entitled “*Álbum da Secção de Botânica do Museu Paulista e suas dependências, etc.*”, dated 1925, authored by Frederico Carlos Hoehne. The document addresses the history of the institutions linked to the Botany Section, during the period in which it was in charge of the Museu Paulista.

The second stage of the work consisted of identifying the hortos in the existing cartography of the city of São Paulo and approaching them spatially through their floor plans and images. For cartographic studies, old maps of the city of São Paulo were used, present in state and municipal collections, such as the Museu Paulista Collection and the Public Archive of the State of São Paulo. For iconographic studies, data and documents present in the works collected in the previous step were used.

The third and final stage consisted in the search for information about the current situation of the original spaces of Hortos da Cantareira, Museu Paulista and Oswaldo Cruz, through images and data collected from the administration and websites of the respective hortos.

4 RESULTS

4.1 The Botanical Gardens in the city of São Paulo at the beginning of the 20th century

The years of the end of the 19th century and the beginning of the 20th century marked a period of intense growth in the city of São Paulo. With the expansion of the coffee economy and the railway network, the city experienced a huge population increase and considerable expansion of its territory (MATOS, 1955; OLIVA; FONSECA, 2016; ENOKIBARA, 2016). The capital became the “center of coffee business, concentrating banking establishments and farmer residences, who also began to diversify their activities, becoming urbanized” (KLIASS, 1993. p.34 – author’s translation). The intensification and expansion of coffee production with the implementation of railways and the arrival of immigrants, led to occupation towards the western portion of the state (KLIASS, 1993; ENOKIBARA, 2016; OLIVA; FONSECA, 2016).

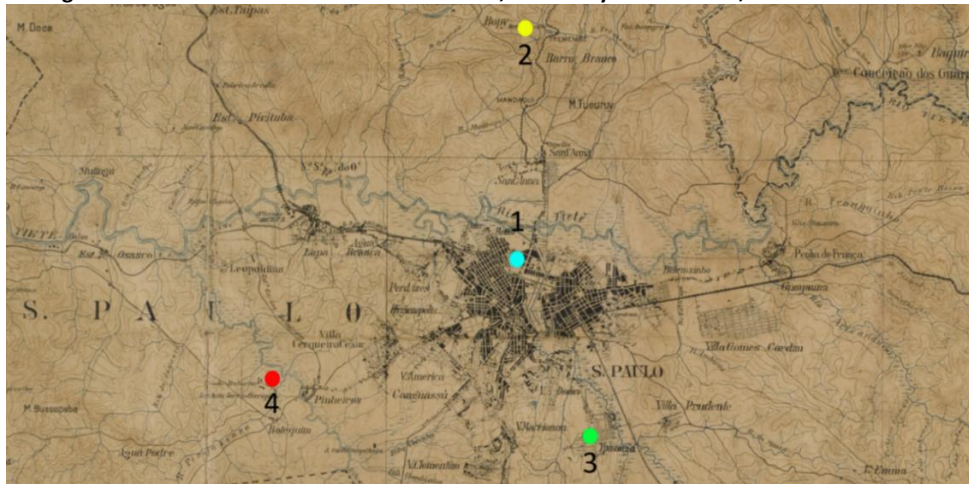
In the field of science, the period was also one of changes and novelties. The end of the 19th century was marked by the hiring, by the government of São Paulo, of several renowned foreign scientists to “direct newly created institutions, aiming at the recognition of still unexplored territories” (ENOKIBARA, 2016. p.114 – author’s translation) and “a better use of the of natural resources” (BOCCHI; PATACA, 2019. p. 355 – author’s translation). There was a concern to seek solutions to issues arising from the occupation of urban land, with the discussion of hygienist and sanitary policies (BOCCHI; PATACA, 2019), but also in the rural sphere, in the face of the need for diversification of agriculture, with the crisis of super coffee production (as occurred in 1900), and reforestation, given the level of deforestation caused not only by extensive cultivation, but mainly by the supply of raw material (firewood) for the operation of steam locomotives (ENOKIBARA, 2016).

In this way, the gardens that emerged at that time in the city of São Paulo sought to resolve more general issues (diversification and testing of new “useful”⁸ species for the State - the case of Horto da Cantareira) and specific ones (raising awareness of our flora and fauna). – case of Horto do Museu Paulista, and research on new medicinal species – case of Horto

⁸ Useful plants are considered to be “plants that could be of use or interest in medicine, industries, farming, horticulture or gardening” (Lavoura e Commercio, 1898 *apud* ENOKIBARA; ROMERO, 2017).

Oswaldo Cruz). Each one with its utility, all had in common the function of experimentation and were located in different areas of the city, but bordering the urban limits, as we can see in the map of the period from 1904 to 1908⁹ (Figure 1). Close to the city center, we had the old Horto da Luz, already named Jardim da Luz; to the north, the Horto da Cantareira, adjacent to the Mountain area of the same name; further south, near the Tamanduateí River, in the Ipiranga neighborhood, we had the Horto do Museu Paulista and within the Instituto Butantã, on the banks of the Pinheiros River, the Horto Oswaldo Cruz.

Figure 1 – Horto's locations and Jardim da Luz, in the city of São Paulo, from 1904 to 1908.



Legend: (1) Horto da Luz, (2) Horto da Cantareira, (3) Horto do Museu Paulista and (4) Horto Oswaldo Cruz.

Source: Special Publication for the Secretaria da Justiça e Segurança Pública. João Baptista de Campos Aguirra Collection from the Museu Paulista. Authors' interventions (2021).

4.2 Horto da Cantareira (1896-1911)

In 1896, under the leadership of Alberto Löfgren¹⁰, then head of the Botany and Meteorology Section of the Comissão Geográfica e Geológica of the State of São Paulo (CGG-SP), the Horto Botânico de São Paulo, better known such as Horto da Cantareira, on land expropriated by the government, close to Serra da Cantareira¹¹ (Figure 2), aiming at the

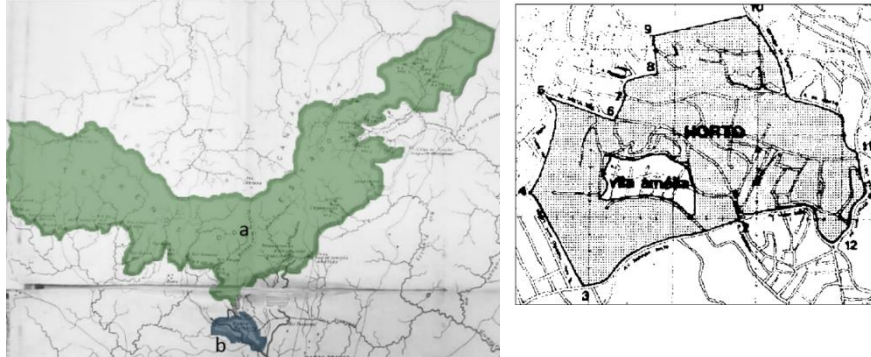
⁹ The image referred to refers to one of the maps present in the João Baptista de Campos Aguirra Collection of the Museu Paulista Collection. The document does not have an exact date, but it was possible to limit the period to which it refers because of one of the inscriptions present in its description: "During the presidential period of Dr. Jorge Tibiriçá, with the Secretary of Justice and Public Security being Dr. Washington Luiz". According to Beloch and Abreu (2010), Jorge Tibiriçá was president of the State of São Paulo between 1904 and 1908. Therefore, it appears that the map referred to is from that period.

¹⁰ Alberto Löfgren, was a Swedish naturalist botanist, who came to Brazil in 1874. He had a relevant role in the Geographical and Geological Commission of the State of São Paulo (CGG-SP), where he prepared several technical reports on the flora of São Paulo (ENOKIBARA; ROMERO, 2017).

¹¹ According to the website of the Secretaria de Infraestrutura e Meio Ambiente do Estado de São Paulo, the land mentioned was from the former Engenho Pedra Branca, a coffee and sugarcane farm.

restoration and preservation of forests and river sources and the constitution of a botanical garden (Figure 3) (ROCHA; CAVALHEIRO, 2001; ROMERO, 2019).

Figures 2 and 3 – Location of Horto da Cantareira and the land expropriated by the government.



Legend: (a) Land expropriated by the government for the preservation of native forest, (b) Horto da Cantareira.
Sources: (Figure 2) SACOP Report, 1909 *apud* ROMERO (2019). Authors' interventions, 2021. (Figure 3) Diário Oficial do Estado de São Paulo, 1983 *apud* ROMERO (2019).

From the Map of the City of São Paulo, from the beginning of the 20th century (Figure 1), it can be identified that Horto was located to the north of the Sant'Anna neighborhood and was within a radius of approximately 8 km from the urban network, at the time, practically limited to the left bank of the Tietê River¹². It had about 174 hectares (ROCHA; CAVALHEIRO, 2001) and could be accessed through the roads that led to Serra da Cantareira where it is located and, after 1905, through the use of the Tranway da Cantareira¹³.

The creation of the Horto had the objective of botanical systematics – with the classification, cataloguing, collection and preparation of vegetables for herbariums – and experimentation, with the cultivation of “useful” plants. It was still up to Horto to study the activities of consciously extracting wood, its uses and properties, the repopulation of state forests (ROMERO, 2019) and, together with the Instituto Agrônomo do Estado – IAE¹⁴, to produce and distribute seedlings and seeds to public and private agencies (ROMERO; ENOKIBARA, 2018), through the Serviço de Distribuição de Mudanças e Sementes (SDMS) of the State Government (ROMERO, 2019).

Not much information was found about the configuration of the botanical garden space in its early days. From the photos present in the Reports of the Secretaria de Agricultura,

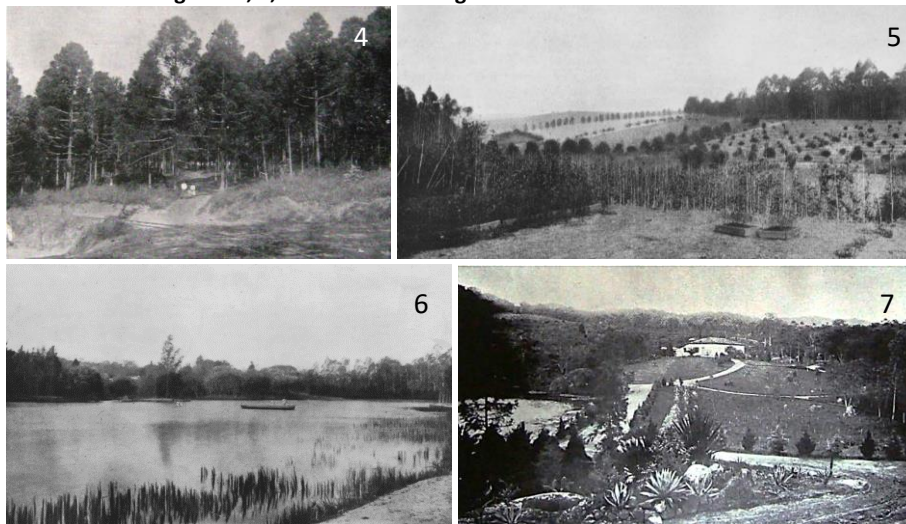
¹² In the image, it can be seen that, on the right bank of the Tietê River, only the neighborhood of Sant'Anna had open streets.

¹³ The Cantareira Tranway refers to the train line, created in 1893, to assist in the works of capturing water from the springs present in the Serra da Cantareira region and which, later, in 1894, ended up being used as a means of transport connecting the center of São Paulo to the neighborhoods of the North Zone (SILVA, 2018). Romero (2019) points out that the 1905 SACOP Report states that a detour would be created on the branch to also serve passengers who wished to visit Horto, making it more accessible to the public.

¹⁴ Agricultural institution founded in 1886, by Emperor Dom Pedro II, under the name of Estação Agrônoma de Campinas. It passed to the State Government in 1892, being called Instituto Agrônomo do Estado – IAE and later Instituto Agrônomo de Campinas – IAC (ROMERO; ENOKIBARA, 2018).

Comércio e Obras Públicas (SACOP) and magazines of the time, we were able to get to know the main elements that constituted it, such as the lake, forests and cultivation areas. In the 1930s, two buildings were built, the Museu Florestal Octávio Vecchi and a building to house the Forest Service administrator's residence, which in 1949 was transformed into the head of state's summer residence. Currently, the building houses the administration of the area open to the public (SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE, 2015).

Figures 4, 5, 6 and 7 – Old images of Horto da Cantareira.



Legend: (4) Araucaria Forest; (5) Partial view of the nurseries; (6) Lake of Horto; (7) Horto entry. Sources: (4) Revista O Fazendeiro (1911); (5 and 6) Report. SACOP 1919; (7) Report SACOP 1910/11 apud ROMERO (2019).

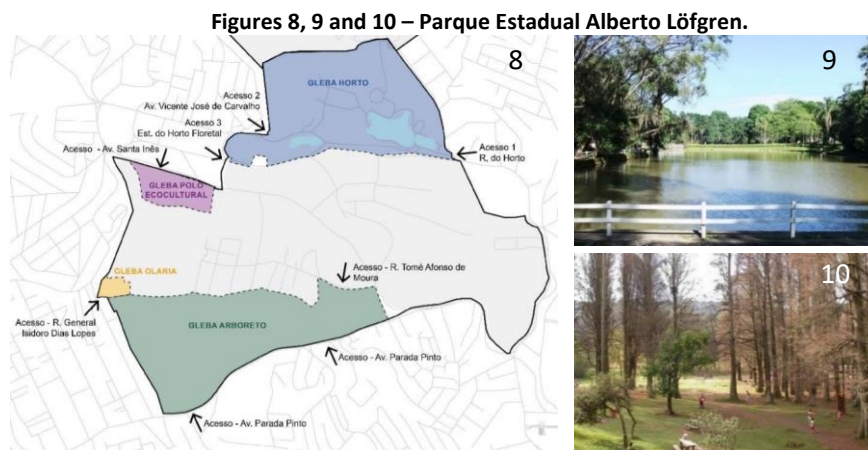
Regarding the dissemination of what was produced in Horto, the publication of its founder and director, the Swedish botanist Alberto Löfgren, entitled “Notas sobre as plantas exóticas introduzidas no Estado de São Paulo” (1906), reporting the which was being tested not only in the fields of Horto da Cantareira, but also in the Instituto Agrônômico do Estado. Romero (2019) comments that among the activities, the sowing and cultivation of hundreds of varieties of exotic fruit, forest and ornamental trees, such as Eucalipto¹⁵ and Pinus (for reforestation), Plátano and o Jacarandá (used in urban afforestation); but also native ones, such as Cedro Rosa, Guarantã, Pau-brasil and Araucárias (ROMERO, 2019).

In 1907, Horto separated from CGG-SP and began to report to the Board of SACOP, directing the services provided to the forestry sector. In 1909, its nomenclature was changed to Horto Botânico e Florestal, dissociating theoretical activities from practices and focusing on the production and supply of seedlings (ROMERO, 2019). In 1911, together with the creation of the State Forest Service, it was called Horto Florestal, separating itself from other services of a “purely scientific nature” (RELATÓRIO SACOP, 1910/1911, p.8 apud ROMERO, 2019, p.13). The then Horto Florestal continued with its attributions focused on forestry and seedling distribution and, in 1970, its nomenclature was changed again, being called Instituto Florestal (INSTITUTO FLORESTAL, 2011).

¹⁵ This 1906 publication contains the test of 56 species of Eucalipitos (eucalyptus), wood that will later be chosen to be used in reforestation aiming at the supply of wood (firewood) for steam locomotives, in addition to its use in lighting poles and dorments for the railroad.

In 1963, together with the region of Mata da Serra da Cantareira, the area of Horto Florestal was considered a Conservation Unit and received the designation of State Park, from the enactment of State Decree nº 41.626¹⁶ (INSTITUTO FLORESTAL, 2021b). In 1983, both areas were considered cultural heritage sites in São Paulo and listed by CONDEPHAAT (COORDENADORIA DE PARQUES E PARTNERIAS, 2021a). In 1993, they were recognized as an integral part of the Biosphere Reserve of the Green Belt of the City of São Paulo, by the United Nations Educational, Scientific and Cultural Organization – UNESCO (INSTITUTO FLORESTAL, 2021a).

Currently called Parque Estadual Alberto Löfgren¹⁷ (Alberto Löfgren State Park), the Horto area became a Conservation Unit independent of the Parque Estadual da Cantareira and has conservation and research areas, sports and leisure activities. Its space has a total of 187 hectares, 35 ha of which are open to the public, and is divided into five areas (Figure 8): Instituto Florestal (highlighted in gray in the image), Horto Florestal (blue), Polo Ecocultural (purple), Olaria (yellow) and Arboretum (green). Among these, only the area of the Institute has restricted access (SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE, 2021a).



Legend: (8) Park Sectorization Map; (9) Main lake; (10) Public use area in Horto Florestal. Sources: (8) Secretaria de Infraestrutura e Meio Ambiente, 2021a; (9) Secretaria de Infraestrutura e Meio Ambiente (2021b); (10) Coordenadoria de Parques e Parcerias (2021a).

The core of Horto Florestal concentrates equipment for leisure, recreation and sports, such as courts, playground, outdoor gym, trails, Museu Florestal Octávio Vecchi and the Palácio de Verão do Governador (COORDENADORIA DE PARQUES E PARCERIAS, 2021b). Regarding natural aspects, in this portion of the park are also lakes¹⁸, plant species remaining from the Mata Atlântica such as Araucária (Figure 11), and exotic species from the Horto Botânico period, such as Pinheiro- do-brejo (*Taxodium distichum*) (Figure 12) and Eucalipto (ÁREAS VERDES DAS

¹⁶The Decree regulates the implementation of Law nº 6884/62, which states that all areas of natural forests in the State should be considered State Parks or Forests (SÃO PAULO, 1963).

¹⁷ It was named as such in 1993, and refers to the scientist of the same name, creator of Horto (COORDENADORIA DE PARQUES E PARCERIAS, 2021a).

¹⁸ The Park has 4 natural lakes supplied by water bodies from the Pedra Branca microbasin, present in the region. Next to the entrance (Rua do Horto), we have the main lake and a smaller one adjacent to it. To the left of these, we have the Capivaras lake and the Museu Florestal lake (INSTITUTO FLORESTAL, 2021b).

CIDADES, 2021). It is also possible to see some species that were present in the period of the Horto Botânico in the Arboreto Vila Amália nucleus, which has native and exotic species amidst the trails and forests (SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE, 2021a; INSTITUTO FLORESTAL, 2021b). The Olaria and Polo Ecocultural centers are composed of forest areas and leisure equipment, such as sports courts, playground, gazebo and gym (COORDENADORIA DE PARQUES E PARCERIAS, 2021). The core Polo Ecocultural also includes socio-environmental activities with the participation of volunteers (SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE, 2021a).

Figures 11 and 12 – Centenary vegetation, implanted or already present at the time of the Horto botânico.



Legend: (11) trunk and crowns of Araucárias amid other trees - Photo by Ricardo Cardim; (12) Pinheiros-do-brejo on a small island in one of the lakes – Photo by Rodrigo Cedro. Sources: (a) *Árvores de São Paulo* (2011); (b) Website of the Governo do Estado de São Paulo, page of Instituto Florestal (2021).

4.3 Horto do Museu Paulista (1898-1928)

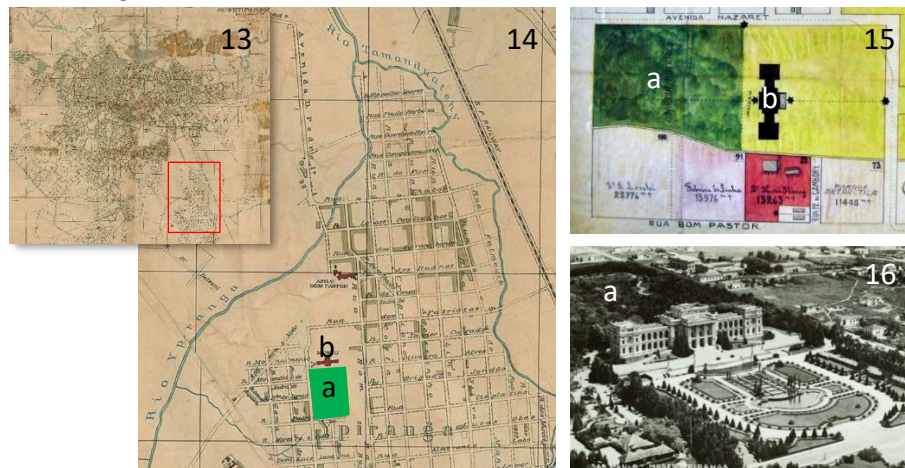
The Horto do Museu Paulista was created at the end of the 19th century from the initiative of Herman Friedrich Albrecht von Ihering¹⁹ with the aim of exhibiting selected species of Brazilian and São Paulo flora (ROCHA; CAVALHEIRO, 2001; GUARALDO, 2002, GOES; ENOKIBARA, 2019). The intention of adding a wing of studies and botanical collection to the Museum's collection referred to the European practice of creating Natural Sciences Museums and brought the Museu Paulista closer to its Brazilian counterparts, such as the Museu Nacional in Rio de Janeiro, and the Museu Emílio Goeldi in Pará (GUARALDO, 2002; GOES; ENOKIBARA, 2019; ENOKIBARA et al, 2020; GOES, 2021). In the proposal presented by Ihering, the specimens from the Horto would serve as a natural and living complement to the material exposed in the Museum's herbarium (ENOKIBARA et al, 2020).

The Horto do Museu Paulista was located in the southern portion of the city of São Paulo, close to the meeting of the waters of the Ipiranga and Tamanduateí Rivers (Figure 13), about 5.5 km from the center (GOES, 2021). It had its first plantations in 1898, with the implantation of specimens of Embaúbas by Ihering, but it actually developed from 1906, when the opening of paths began and passed to the care of Herman Luederwaldt, the Museum's zoology assistant and also responsible for the garden (GOES; ENOKIBARA, 2019; GOES, 2021). At the time, the area of the garden was equivalent to approximately 4 hectares and its location, according to Luederwaldt, was not suitable for the implantation of a vegetable garden, as it was

¹⁹German zoologist and museum director from 1894 to 1916 (ROCHA; CAVALHEIRO, 2001; GOES, 2020).

located on high, flat, uncovered land, far from lakes and in a region with little rainfall. and weather conditions (strong winds and frost) (GOES; ENOKIBARA, 2019; GOES, 2021).

Figures 13, 14, 15 and 16 – Location of the Museu Paulista and Horto Botânico.



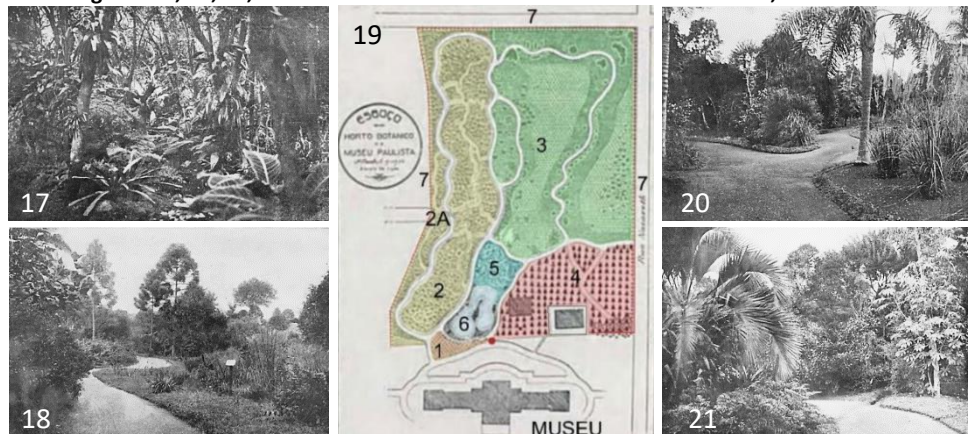
Legend: (a) Horto Botânico; (b) Museu Paulista; (13) Map of the city of São Paulo (1916) with signs of the area enlarged in red; (14) Expansion of the Ipiranga neighborhood and positions of the Museum and Horto Botânico; (15) Ground plan for /Museu Paulista and surroundings; (16) General view of the Museum and surroundings, undated. Sources: (13 and 14) Secret. of State Econ. and Planning Instituto Geográfico e Cartográfico. Collection – Tombo 1356; Authors' interventions, 2021; (15) Collection of the Museu Paulista *apud* GOES, 2021; (16) Collection of the Museu Paulista

In 1917, under the direction of the engineer and historian Afonso d'Escragnolle Taunay, the Museum had its focus restructured, and began to portray particularly the historical aspects of São Paulo. To manage the Seção de Botânica of the Museum, the Brazilian botanist Frederico Carlos Hoehne was hired, who continued the activities of the Horto, together with Luederwaldt. Goes and Enokibara (2019), based on a written report made in 1917 by Luederwaldt, on the arrangement of flower beds in the Horto, transpose the information described by the zoology assistant into a floor plan prepared by J. Toledo at Hoehne's request. With the overlapping of data, it was possible to identify the structuring of space in the 6 mentioned sectors (Figure 19).

Hoehne (1925), when commenting on the Horto do Museu Paulista in the “Álbum da Seção de Botânica do Museu Paulista e suas dependências”²⁰, illustrated the different types of vegetation and formations in each of the sectors pointed out by Luederwaldt (Figures 17, 18, 20 and 21). The images highlight the particularities of each area and portray the diversity in plant types present in the place, such as trees, palm trees, foliage, vines, grasses, forages, grasses, flowering shrubs and aquatic or marshy species. Among them, we can highlight the Embaúba planted in 1898 by von Ihering, the Palmito Juçara, Erythrinas, Cassias, Aroeiras, Araucarias, all native species and of great occurrence in the region of São Paulo. We can also highlight the presence of some exotic species, such as Bamboo, used in the perimeter of the Horto as a natural barrier to the winds (GOES; ENOKIBARA, 2019; ENOKIBARA et al, 2020; GOES, 2021).

²⁰ The “Álbum da Seção de Botânica do Museu Paulista e suas dependências” was written by Hoehne in 1925, as a commemoration of the eighth anniversary of the Seção de Botânica. In the publication, the botanist presents descriptive data from the institutions linked to the Seção de Botânica in 1925: Horto Oswaldo Cruz, Horto do Museu Paulista (between 1922 and 1924) and the Estação Biológica do Alto da Serra.

Figures 17, 18, 19, 20 and 21 – Floor Plano of Horto do Museu Paulista, in 1925.



Legend: (1) Plantas úteis no Brasil, (2) Região das “Mattas”, (3) Região dos “Campos”, (4) Pinheiral e “Madeiras Legítimas”, (5) “Várzea Artificial” ou “Prado”, (6) “Lagoa Artificial”, (7) perimeter with “Bambus Exóticos”, (17) Foto da região das Matas, (18) Região da Várzea - species positioned in the lower right corner of the photo; (20) Transition area between Mata on the left and Campo on the right; (21) Transition area with *Embaúba* in the right corner of the image. Sources: (17, 18, 20 e 21) HOEHNE (1925, p. 133, 140, 137 e 150); (19) HOEHNE, 1925. p.128 *apud* GOES, 2021.

Despite having well-demarcated sections, as indicated in the floor plan, the paths were not previously prepared with a plan or project, they were made according to Luderwaldt's intention, as well as the choice of planting location for each species (GOES, 2021). Also under his initiative, a shed was set up to be used as a storage for materials, and small cemented tanks for planting aquatic species in the “várzea” area, forming a marsh or swamp region (GOES, 2021).

In addition to the garden space, the Seção de Botânica was also responsible for the exsiccata present in the herbarium, in the upper part of the Museum. And, despite the intention that the Horto species complement this material, which was open to the public, the Horto remained with restricted access, as it was considered a space dedicated to study and instruction, being visited, to which it could be measured, specifically by scientists (GOES, 2021).

In 1927, the Seção de Botânica was transferred to the Instituto Biológico de Defesa Agrícola e Animal (BOCCHI, 2020) and, in 1928, the Horto Botânico was deactivated (GUARALDO, 2002; GOES, 2021). Transformed into a forest, the area received other uses, becoming the recreational function of the population (GOES, 2021). Goes and Enokibara (2019) point out that, later, the area that housed the Horto was de-characterized and suffered interference with the implementation of the Fire Department and Zoology Museum.

Currently, the forest has about 32,000 m² and serves recreational and sports activities. It is an integral part of Parque da Independência, which together with Museu Paulista, Museu de Zoologia, Monumento à Independência, Casa do Grito and Capela do Bom Jesus do Horto, constitute the Conjunto do Ipiranga (Figure 22). The 161,300 m² complex was transformed into a public park in 1989, and is considered a green area of great importance in the city of São Paulo (SÃO PAULO, 2009). The Complex is listed as historical, cultural and environmental heritage in three instances: municipal, state and federal (GOES, 2021).

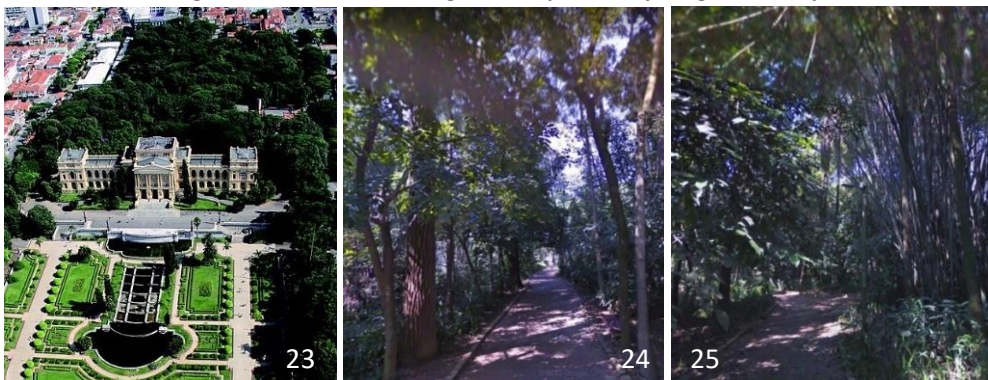
Figure 22 – Map of Conjunto do Ipiranga.



Legend: (A) Museu de Zoologia, (B) Bosque, (C) Museu Paulista (D) Arsène Puttemans Garden, (E) Casa do Grito, (F) Bom Jesus do Horto Chapel, (G) Monument, (H) Creek. Source: Museu Paulista website (no date).

With regard to the original layout and plant repertoire of the forest, some paths were maintained. However, we can notice some interventions in the area close to the Museum, such as the creation of a central axis, in addition to the spaces that were occupied by the Zoology Museum and the area of the Fire Department. Currently, it is not possible to identify the sectors made by Luederwaldt, since the aspect of the vegetation itself is quite different from what was described by him and by Hoehne. However, some species described at the time are still present at the site, such as massive Bambus, Embaúbas (*Cecropia glaziovii* Snethl.), Palmito-jussara (*Euterpe edulis* Mart.) and Cedro-rosa (*Cedrela fissilis* Vell.), listed in the Flora Inventory of Parque da Independência, carried out in 2021 (SECRETARIA DO VERDE E DO MEIO AMBIENTE, 2021).

Figures 23, 24 and 25 – Images of Conjunto do Ipiranga and Bosque.



Legend: (23) View of the Museu Paulista and the Bosque nowadays, (24) View of the path/track of the Bosque (25) View of the Bosque where a bamboo mass can be seen.

Source: (23) Wikimedia Commons, 2018; (24 and 25) Google Street View, 2011.

4.4 Horto Oswaldo Cruz (1917-1924)

Horto Oswaldo Cruz was created in 1917 as an annex of the Instituto Sôrotherapico (currently Instituto Butantan), an institution responsible for the production of serums and vaccines for diseases and stings of venomous animals (INSTITUTO, s/d). At the request of Arthur Neiva, then Head of the State's Sanitarium Service, botanist Frederico Carlos Hoehne founded the Seção de Botânica²¹, in the place, which would be responsible for the activities carried out

²¹ Here we are not referring to the Seção de Botânica of the CGG-SP or the Museu Paulista, but to another entity created by Hoehne to respond to the activities of Horto Oswaldo Cruz.

at Horto. Its main objective was the study and cultivation of toxic and medicinal plant species (BOCCHI; PATACA, 2019), but it also aimed to “enrich the therapeutic heritage, provide information and resources to medicine, guide the public in the art of curing diseases” (HOEHNE, 1925, p.39).

Figures 26 and 27 – Location of Instituto Butantan and Horto Oswaldo Cruz.



Legend: (26) Small farms and farms in São Paulo, undated; (27) Plan of Instituto Butantan/ based on SARA (1930); (a) Downtown São Paulo; (b) Limits of the Butantan farm; (c) Instituto Butantan; (d) Horto Oswaldo Cruz. Sources: (26) Museu Paulista Collection. Authors' intervention, 2021; (27) Arquivo do Estado *apud* SÁ, 2019. Authors' intervention, 2021.

Located on the left bank of the Pinheiros River, where the Butantã neighborhood²² is now located, the space chosen for the implementation of the Horto consisted of an irregular floodplain area, with a slightly sloping relief, in front of the building of the Instituto Sôrotherapico²³ (HOEHNE, 1925). The perimeter was delimited by the Pirajussara stream, Vital Brasil Avenue and the street bordering the coach house and Instituto de Veterinária (Figures 26, 27 and 28). Totaling 150,000 m² (15 hectares), the garden area had fertile soils and both the topography and the proximity to water bodies made the space suitable for cultivation (HOEHNE, 1925).

Hoehne accompanied the services of topographic survey, soil preparation and helped in the preparation of the floor plan (Figure 28) and general plan of the new Horto (HOEHNE, 1925).

For the design conception, the botanist points to the Dahlem Botanical Garden, in Berlin, as a model, and states that, “according to the most modern processes and methods of aesthetics, we arranged the plan in such a way as to make curved lines predominate” (HOEHNE, 1925, p.41). From Hoehne's reports present in the “Álbum da Secção de Botânica do Museu Paulista e suas dependências”, it is possible to infer that the beds had been designed and

²² In the early years of the institution, the Instituto Sôrotherapico was located on land acquired by the government from the former Butantã Farm, which had an area of approximately 400,000 hectares and had as its main activity the production of milk and crops of different cultures (SÁ, 2019).

²³ Current Vital Brasil Building or Central Building.

dimensioned according to the needs and priorities of the species to be produced in the Horto and also, that the products from the cultivation would serve both scientific and scenographic purposes. The

“lawns and forests alternating with larger groups of species that should be produced on a larger scale, to obtain the oils and active principles, would make a very pleasant set to the eye and that would be useful in all aspects.” (HOEHNE, 1925. P.41 – author’s translation).

The botanist showed equal attention to the dimensions and aspects of the streets that were “lined with 'Alfeneiros', 'Tipus', 'Congonheiros', 'Coração negro', 'Suinans', 'Ipês', 'Canelleiras', etc. and are about six meters wide and framed with 'Pello de urso' lawn fillets” (HOEHNE, 1925. p. 49 – author’s translation).

Figures 28 and 29 – Floor plan and general view of the location of Horto Oswaldo Cruz.

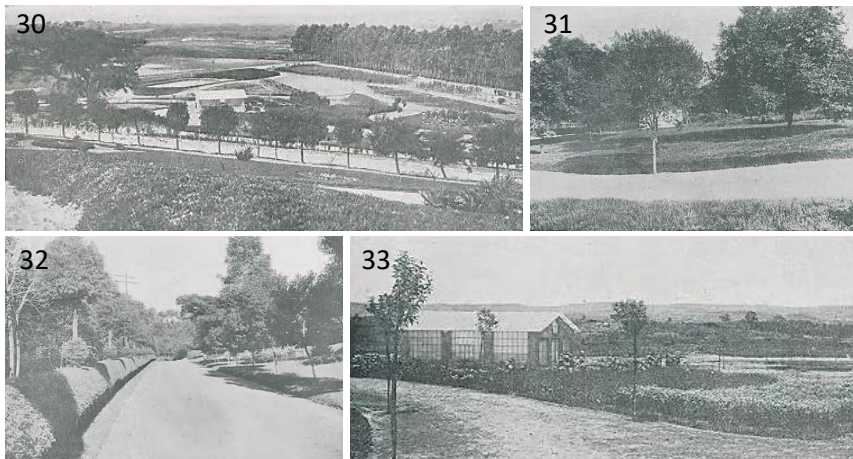


Legend: (28) Floor plan of the Horto, 1917; (29) Overview of the Instituto Butantan and Horto area in 1939-40; (a) Building of the Instituto Butantan; (b) Stable at the Instituto Butantan; (c) Porch; (d) Greenhouse; (e) Doorman's house; (f) Offices of the Instituto de Medicamentos Officiais do Estado; (g) Pavilion of the Seção de Botânica; (h) Chemical laboratory; (i) Glass storage. Sources: (28) Hoehne (1925, p42). Authors' intervention, 2021. (29) São Paulo em foco. Authors' intervention, 2021.

Inaugurated in January 1918, in addition to the area destined for the cultivation of plants²⁴, the Horto space housed a greenhouse (Figure 33), a porch for drying and depositing seeds, a glass deposit, a chemical laboratory, the Headquarters Pavilion of the Seção de Botânica and the facilities of the “Instituto de Medicamentos Officiaes do Estado”, created for the development and testing of medicines (HOEHNE, 1925; BOCCHI; PATACA, 2019).

²⁴ Although the floor plan prepared in 1917 points out the delimited areas for a total of 33 vegetation pages, in the *Álbum da Seção de Botânica do Museu Paulista* (1925), Hoehne points out that only 18 of them were “complete and preserved”. He also points out that the groups indicated by the numbers 19 to 33 were not executed. (Information taken from the image caption on page 42 of the aforementioned Album).

Figures 30, 31, 32 and 33 – Images of Horto Oswaldo Cruz’s facilities.



Legend: (30) Horto Oswaldo Cruz seen from the Instituto Butantan building; (31) Horto Oswaldo Cruz Site; (32) Tree-lined street and massifs alternating between lawn and cultivation area (on the left); (33) Flower beds and greenhouse. Source: Hoehne (1925, p.36, 47, 57 and 67).

Regarding the plant repertoire of Horto Oswaldo Cruz, it can be said that several plants for medicinal purposes were studied and acclimatized in the place, such as species of the genera *Chenopodium* and *Mentha*, of anthelmintic character. But the Horto space also experienced native and exotic specimens of other natures (HOEHNE, 1925; BOCCHI; PATACA, 2019), such as forage, ornamental and species for urban afforestation, in addition to herbs and other plants used in food, production and production. and fabric dyeing, covering the scope of the so-called “useful plants” (ZAHER; COSTA, 2016).

When analyzing the species produced and studied in Horto, and described by Hoehne in the “Catálogo do Herbário e das espécies cultivadas no Horto Oswaldo Cruz”²⁵, Zaher and Costa (2016) point out that 37% of the plants originally cultivated in the area (60 species), did not fit the classification of “toxic and medicinal plant” and that most of them could be identified as having great landscape potential. In another study, Bocchi and Pataca (2019) mention that the choice of species cultivated in the Horto was linked to three situations: requests from government institutions, requests from interlocutors²⁶ and those guided by Hoehne’s own interests, suggesting intentions that went beyond the toxic-medicinal universe.

In 1922, at the suggestion of the then director of the Instituto Butantan, Dr. Rudolf Kraus, the Seção de Botânica separated its activities from the Institute and became an integral part of the Museu Paulista²⁷ (ROCHA, CAVALHEIRO, 2001; OLIVEIRA *et al.*, 2005). Even with the

²⁵ Originally, the list of species cultivated at the HOC was presented as part of the institution's Annual Report for 1918. However, Hoehne published the material in a reprint in 1919, a document used by ZAHER and COSTA to assess the Horto's repertoire. This list is attached to the article prepared by the authors in 2016.

²⁶ The term refers to the network of people, scientists or the general public, who were in contact with Horto, whether to send seedlings for identification, to exchange species or information.

²⁷ The staff, the herbarium and the library were transferred to the Horto do Museu Paulista, which was under the direction of Hoehne until 1928, when there was a transition to the Instituto Biológico de Defesa Agrícola e Animal (ROCHA; CAVALHEIRO, 2021).

transfer, the fields of culture at Horto Oswaldo Cruz remained in the care of Hoehne and the Seção de Botânica until 1924, during his stay at the Museu Paulista. In 1925, it was detached from the Seção de Botânica and became the responsibility of the Instituto Butantan (TEIXEIRA, 1988; BOCCHI; PATACA, 2019). After that date, the HOC area underwent several functional and physical changes.

In 1992, after the restoration financed by Unibanco Ecologia, it was reopened to the public with activities aimed at environmental education for a short period (OLIVEIRA et al., 2005). Linked to the Museu Biológico do Instituto Butantan, it maintained activities focused on research and environmental education (ZAHER; COSTA, 2016). With restricted access, scheduled visits and classes, today it houses trails and areas where visitors can have direct contact with animals and vegetation in their natural environment (SÃO PAULO, 2008; CASTRO, 2017).

Despite keeping the name of Horto, currently it no longer performs this function. Its limits were drastically reduced and today it has only 3.69 hectares in area and about 8,000 trees, including Cedro-rosa (*Cedrela fissilis*), Jatobá (*Hymenaea courbaril*) and Paineira-rosa (*Ceiba speciosa*) (OFFICIAL BUTANTAN, 2020). The Greenhouse and the Porch are remnants from the period of operation of the Horto Botânico, which, despite their lack of character, are still part of the landscape of the Horto, but with other uses (SÃO PAULO, 2008).

Figures 34, 35 and 36 – Horto Oswaldo Cruz today.



Legend: (34) Current location map of Horto Oswaldo Cruz; (a) Cidade Universitária – USP; (b) Butantan Institute; (c) Current area of Horto (35) HOC entrance; (36) Garden of the Senses and the old Greenhouse building in the background. Sources: (34) Google Maps, 2021. Authors' interventions, 2021; (35 and 36). Twitter Instituto Butantan Oficial, 2020.

5 CONCLUSION

At the beginning of the 20th century, the city of São Paulo had three “Botanical Hortos”: Horto da Cantareira, Horto do Museu Paulista and Horto Oswaldo Cruz, which despite having the same name had different functions and activities. Both were created and idealized by important names in Brazilian botany (Alberto Löfgren and Frederico Carlos Hoehne) and zoology (Herman von Ihering). The systematic studies, tests and productions carried out in these

²⁷ The term refers to the network of people, scientists or the general public, who were in contact with Horto, whether to send seedlings for identification, to exchange species or information.

²⁷ The staff, the herbarium and the library were transferred to the Horto do Museu Paulista, which was under the direction of Hoehne until 1928, when there was a transition to the Instituto Biológico de Defesa Agrícola e Animal (ROCHA; CAVALHEIRO, 2021).

institutions were of great contribution in terms of knowledge and appreciation of the native flora, acclimatization and use of species and seedling distribution.

The Horto da Cantareira (1896-1911) emerged with the intention of restoring and conserving the forests and river sources, botanical systematics, experimentation and cultivation of plants for different uses, in addition to having been of paramount importance for the production and distribution of seedlings in the state of São Paulo. Having directed the focus of its work to forestry, in 1911 it was transformed into Horto Florestal. Currently called Parque Estadual Alberto Löfgren, it is constituted as a unit of environmental conservation and cultural heritage of São Paulo, listed by CONDEPHAAT. It is also recognized as an integral part of UNESCO's São Paulo City Green Belt Biosphere Reserve. Among the 187 hectares of its area, 35 are open to the public for sports and leisure activities. In the extension of the Park it is still possible to find plant species remaining from the Mata Atlântica, such as the Araucárias, and exotic species from the Horto Botânico period, such as the Pinheiro-do-brejo and the Eucalipto.

The Horto do Museu Paulista (1898-1928), created with the aim of exhibiting selected species of Brazilian and São Paulo flora, was located at the back of the Museum of the same name. The vegetation of the Horto, considered a living example of the one present in the collection of the Museum's herbarium, was intended to be the visualization of nature in its natural state. Today transformed into a forest, it has about 32,000 m² and is used as an area for leisure and sports activities. As an integral part of the Conjunto do Ipiranga, it is listed by the municipal, state and federal authorities and, even with the interventions made before the listing, the area still maintains some specimens of its original plant repertoire, such as some bamboo clumps, the Embaúbas, Palmito-jussara and Cedro-rosa, present in the Inventory of the Park's Flora carried out in 2021.

The Horto Oswaldo Cruz (1917-1924), located on the premises of the Instituto Butantan, had as its objectives the study and cultivation of plants of medicinal importance and to provide subsidies for the production of new medicines. However, in the years in which the Seção de Botânica was in charge of the institution and under Hoehne's guidelines, its activities transposed the toxic-medicinal universe and exotic and native species of other natures, considered "useful", were also experimented with. Its space, designed primarily to perform the functions for which it was created, had tree-lined streets and flower beds alternating with lawns, demonstrating, in addition to the scientific purpose, the ornamental concern. After the dissociation between the Seção de Botânica and the Instituto Butantan, the space lost its original function and among the many transformations that took place, today it covers only about 25% of its initial land. It works as an annex to the Museu Biológico of the Instituto Butantan and offers activities aimed at research and environmental education. The greenhouse and the porch are remnants of the time, but used for other purposes.

In general, the results obtained, in addition to registering the permanence of part of the areas of the old Hortos Botânicos of the city of São Paulo from the beginning of the 20th century, rescued the nuances of their creation, functions, location and spatialization. He highlighted the remaining elements, which preserve the memory of these spaces and, finally, drew temporal parallels, elucidating what they have become: places that no longer perform their original function - as a botanical garden, but which essentially remain with the use they have always shared, recreational use.

ACKNOWLEDGMENT

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) – Finance Code 001.

REFERENCES

- AKINAGA, P. et al. Paisagem recriada: projeto de descaracterização das barragens da Mina da Cachoeira. **Revista Eletrônica LabVerde**, n.1, p.117-133, 2010. DOI: <https://doi.org/10.11606/issn.2179-2275.v0i1p117-133>
- ALMEIDA, A. V. de; OLIVEIRA, M. A. B. de; MEUNIER, I. M. J. Animais e plantas do horto-zoo-botânico do palácio de Friburgo (1639-1645) construído por Maurício de Nassau no Recife. **Revista Filosofia e História da Biologia**, v.6, n.1, p.19-35, 2011. Disponível em: <http://www.abfhib.org/FHB/FHB-06-1/FHB-6-1-02-Argus-Vasconcelos-de-Almeida_MAB-Oliveira_IMJ-Meunier.pdf>. Acesso em: 05 out.2021.
- ÁREAS VERDES DAS CIDADES. **Horto Florestal ou Parque Estadual Alberto Löfgren em São Paulo (SP)**. 2021. Disponível em: <<https://www.areasverdesdascidades.com.br/2012/06/parque-estadual-alfredo-lofgren-antigo.html>>. Acesso em: 11 out. 2021.
- BELOCH, I.; ABREU, A. A. Tibiriçá, Jorge. **Dicionário Histórico-Biográfico Brasileiro**. Centro de Pesquisa e Documentação de História Contemporânea. Fundação Getúlio Vargas, 2010. Disponível em: <<http://cpdoc.fgv.br/sites/default/files/verbetes/primeira-republica/TIBIRI%C3%87%C3%81,%20Jorge.pdf>>. Acesso em: 06 out 2021.
- BOCCHI, L. A.; PATACA, E. M. Frederico Carlos Hoehne e o Horto Oswaldo Cruz. **Desenvolvimento e Meio Ambiente**, v.51, p. 350-369, Ago. 2019. DOI 10.5380/dma.v51i0.61635. e-ISSN 2176-9109.
- BOCCHI, L. A. **Frederico Carlos Hoehne e a Seção de Botânica: caminhos cruzados entre as ciências, os cientistas e as instituições (1917-1938)**. Tese (Doutorado em Educação) – Faculdade de Educação, Universidade de São Paulo. São Paulo, 2020.
- BUTANTAN OFICIAL. Twitter do Instituto Butantan. São Paulo, 2020. Disponível em: <<https://mobile.twitter.com/butantanoficial/status/1327338978136223746/photo/1>>. Acesso em: 15 out. 2021.
- CARAPINHA, A. C. P. **Da essência do jardim portugueses**. Volume 1. 425f. Tese (Doutorado em Artes e Técnica da Paisagem). Universidade de Évora, Évora. 1995.
- CARDIM, R. **Árvores do Horto Florestal em São Paulo**. Árvores de São Paulo, 2011. Disponível em: <<https://arvoresdesaopaulo.wordpress.com/2011/05/02/arvores-do-horto-florestal-em-sao-paulo/>>. Acesso em: 11 out. 2021.
- CASTRO, P. D. Suspiro Verde no horizonte cinza. **Boletim Biota Highlights**. 2017. Disponível em: <<https://www.biota.org.br/suspiro-verde-no-horizonte-cinza/>>. Acesso em: 15 out.2021
- COORDENADORIA DE PARQUES E PARCERIAS. Parque Estadual Alberto Löfgren Horto Florestal. **Secretaria de Infraestrutura e Meio Ambiente**. Governo do Estado de São Paulo. 2021a. Disponível em: <<https://www.infraestruturameioambiente.sp.gov.br/cpp/pe-alberto-lofgren/>>. Acesso em: 11 out. 2021.
- COORDENADORIA DE PARQUES E PARCERIAS. Mapa do Parque. Parque Estadual Alberto Löfgren, Polo Ecocultural Pedra Branca. **Secretaria de Infraestrutura e Meio Ambiente**. Governo do Estado de São Paulo. São Paulo, 2021b. Disponível em: <<https://smastr20.blob.core.windows.net/parques/2019/10/2019-08-23-horto-mapa-atual-gov.png>>. Acesso em: 11 out. 2021.
- DIAS, C.; OHTAKE, R. **Jardim da Luz: Um museu a céu aberto – História e restauro**. Edições Sesc. São Paulo: Editora Senac São Paulo, 2011. 240p.
- HORTO. In: DICIONÁRIO infopédia da Língua Portuguesa. Porto: Porto Editora. Disponível em: <<https://www.infopedia.pt/dicionarios/lingua-portuguesa/horto>>. Acesso em: 07 out. 2021.

HORTO. In: DICIONÁRIO Michaelis. Editora Merolhamentos, 2015. Disponível em:
<<https://michaelis.uol.com.br/busca?r=0&f=0&t=0&palavra=horto>>. Acesso em: 07 out. 2021.

HOEHNE, F. C. **Álbum da seção de botânica do Museu Paulista e suas dependências, etc.** São Paulo: Imprensa Methodista, 1925.

ENOKIBARA, M. As ciências e a arte dos jardins no Brasil (século XIX). In: FONTES, M. S. G. C.; FARIA, O. B.; SALCEDO, R. F. B. (org.). **Pesquisa em arquitetura e urbanismo: fundamentação teórica e métodos.** São Paulo: Cultura Acadêmica, 2016. p.107-120.

ENOKIBARA, M.; GOES, R. N.; SANTOS, M. F. N. S. O repertório vegetal dos primeiros anos de implantação do Horto Botânico do Museu Paulista (1898 a 1918). **Revista Nacional de Gerenciamento de Cidades** v.08, n.54, 2020.

SEGAWA, H. **Ao amor do público: jardins no Brasil.** São Paulo: Studio Nobel, 1996.

ENOKIBARA, M.; ROMERO, L. B. Alberto Løfgren e o Estudo sobre os nomes populares das plantas “indígenas” do Estado de São Paulo (1984). In: CONSTANTINO, N. R. T.; ROSIN, J. A. R. G.; BENINI, S. M. (org.). Paisagem: natureza, cultura e o imaginário. Tupã: ANAP, 2017. p.89-112.

GUARALDO, E. **Repertório e Identidade: Espaços Públicos em São Paulo, 1890–1930.** Tese (Doutorado em Paisagem e Ambiente) – Faculdade de Arquitetura, Universidade de São Paulo. São Paulo, 2002.

GOES, R. N.; ENOKIBARA, M. Os Primeiros Anos de Implantação do Horto Botânico do Museu Paulista (1898 a 1917). In: MAGAGNIN, R. C.; CONSTANTINO, N. R. T.; BENINI, S. M. (org.). **Cidade, história e patrimônio.** Tupã: ANAP, 2019. p.59-78.

GOES, R. N. **O Horto do Museu Paulista (1898-1928).** Dissertação (Mestrado em Arquitetura e Urbanismo) – Faculdade de Arquitetura, Artes, Comunicação e Design, Universidade Estadual Paulista. Bauru, 2021.

INSTITUTO FLORESTAL. Instituto Florestal: 125 anos. **Informativo do Instituto Florestal.** Secretaria de Infraestrutura e Meio Ambiente. Governo do Estado de São Paulo. São Paulo, v. 3, n. 10, 2011. Disponível em <https://www.infraestruturameioambiente.sp.gov.br/institutoflorestal/wp-content/uploads/sites/234/2013/05/IF_noticias_n10.pdf>. Acesso em: 13 out. 2021

INSTITUTO FLORESTAL. Histórico da pesquisa no Instituto Florestal. Secretaria de Infraestrutura e Meio Ambiente, Governo do Estado de São Paulo. 2021^a. Disponível em:
<<https://www.infraestruturameioambiente.sp.gov.br/institutoflorestal/pesquisa/>> Acesso em: 13 out. 2021.

INSTITUTO FLORESTAL. Ficha resumo de Área Protegida. Secretaria do Meio Ambiente, 2021b. Disponível em:
<<https://smastr16.blob.core.windows.net/iflorestal/2018/09/PE-Alberto-Lofgren.pdf>>. Acesso em: 13 out. 2021.

INSTITUTO Serumterapico do Estado de São Paulo. **Dicionário Histórico-Biográfico das Ciências da Saúde no Brasil (1832-1930).** Disponível em <<http://www.dichistoriasaude.coc.fiocruz.br/iah/pt/verbetes/instsorsp.htm>>. Acesso em 14 out. 2021.

KLIASS, R. G. **Parques Urbanos de São Paulo e sua evolução na cidade.** São Paulo: Pini, 1993.

MATOS, Odilon Nogueira de. A cidade de São Paulo no século XIX. **Revista de História:** revista do Departamento de História da Faculdade de Filosofia, Letras e Ciências Humanas da USP, São Paulo, v. 10, n.21-22, 1955. DOI: <https://doi.org/10.11606/issn.2316-9141.v10i21-22p89-125>

OLIVA, J. T.; FONSECA, F. P. O “modelo São Paulo”: uma descompactação antiurbanidade na gênese da metrópole. **Revista do Instituto de Estudos Brasileiros da USP,** São Paulo, n. 65, p. 20-56, 2016. DOI: <https://doi.org/10.11606/issn.2316-901X.v0i65p20-56>

MINODA, Thais Klarge. **Artefatos no Jardim da Luz: usos e funções sociais (1870-1930).** Dissertação (Mestrado em História) – Faculdade de Filosofia, Letras e Ciências Humanas da Universidade de São Paulo. São Paulo, 2018. Dissertação de Mestrado Faculdade de Filosofia, Letras e Ciências Humanas da Universidade de São Paulo.

MUSEU PAULISTA. **Mapa do Parque da Independência.** São Paulo, s/d. Disponível em:
<<http://www.mp.usp.br/como-chegar/mapa-do-parque>>. Acesso em: 12 out. 2021.

MUSEU PAULISTA. **Publicação Especial para a Secretaria da Justiça e Segurança Pública Comissão Geographica e Geologica Publicada no Periodico Presidencial de Dr. Jorge Tibiriçá.** Acervo do Museu Paulista da USP. São Paulo, s/d. Disponível em:

<[https://commons.wikimedia.org/wiki/File:Publica%C3%A7%C3%A3o_Especial_para_a_Secretaria_da_Justi%C3%A7a_e_Seguran%C3%A7a_Publica_Commiss%C3%A3o_Geographica_e_Geologica_Publicada_no_Periodo_Presidencial_de_Dr._Jorge_Tibiri%C3%A7%C3%A1_\(...\)_-1,_Acervo_do_Museu_Paulista_da_USP.jpg](https://commons.wikimedia.org/wiki/File:Publica%C3%A7%C3%A3o_Especial_para_a_Secretaria_da_Justi%C3%A7a_e_Seguran%C3%A7a_Publica_Commiss%C3%A3o_Geographica_e_Geologica_Publicada_no_Periodo_Presidencial_de_Dr._Jorge_Tibiri%C3%A7%C3%A1_(...)_-1,_Acervo_do_Museu_Paulista_da_USP.jpg)>. Acesso em: 10 out. 2021.

OLIVEIRA, A. D. de *et al.* Horto Oswaldo Cruz: histórico e projetos futuros. **Cadernos de História da Ciência**, 1(1), 82-90, 2005. Disponível em: <http://periodicos.ses.sp.bvs.br/scielo.php?script=sci_arttext&pid=S1809-76342005000100007&lng=en&tlng=pt>. Acesso em 15 out. 2021.

ROCHA, Y. T.; CAVALHEIRO, F. Aspectos Históricos do Jardim Botânico de São Paulo. **Brazilian Journal of Botany**, São Paulo, v.24, n.4, p.577-586, 2001. DOI: <https://doi.org/10.1590/S0100-84042001000500013>.

ROMERO, Laís Bim; ENOKIBARA, Marta. Repertório vegetal da arborização urbana do Estado de São Paulo no início do Século XX. **Revista Nacional de Gerenciamento de Cidades**, v.6, n.39, p. 76-94, 2018. DOI: <https://doi.org/10.17271/2318847263920181786>

ROMERO, L. B. **O Serviço de Distribuição de Mudanças e Sementes e o fomento à arborização urbana do Estado de São Paulo no início do século XX.** Dissertação (mestrado em Arquitetura e Urbanismo) – Faculdade de Arquitetura, Artes, Comunicação e Design, Universidade Estadual Paulista. Bauru, 2019.

SÁ, A. L. F. **Preservação do patrimônio arquitetônico no Instituto Butantan.** Dissertação (Mestrado em Ciências) – Faculdade de Arquitetura e Urbanismo da Universidade de São Paulo. São Paulo, 2019. Disponível em: <https://teses.usp.br/teses/disponiveis/16/16133/tde-31072019-145734/publico/MEANDERSONLUIZFELIXDESA_rev.pdf>. Acesso em 15 out. 2021.

SACOP. Relatório da Agricultura. **Arquivo Público do Estado de São Paulo.** Repositório Digital. São Paulo, 1919. Disponível em: <http://200.144.6.120/uploads/acervo/periodicos/relatorios_agricultura/RSA19190000.pdf>. Acesso em: 08 out. 2021.

SÃO PAULO (Cidade). Mapa da Cidade de São Paulo de 1916. **Histórico demográfico do município de São Paulo.** s/d. Disponível em: <http://smul.prefeitura.sp.gov.br/historico_demografico/1900.php>. Acesso em: 4 out. 2021.

SÃO PAULO (Cidade). **Folheto Trilhas Urbanas Parque da Independência.** Secretaria do Verde e do Meio Ambiente da Cidade de São Paulo. São Paulo: 2009. Disponível em: <https://www.prefeitura.sp.gov.br/cidade/secretarias/upload/Independencia_frente_1253909046.pdf>. Acesso em: 12 out. 2021.

SÃO PAULO (Estado). **Descubra o Horto Oswaldo Cruz, uma das atrações do Instituto Butantan.** 2008. Disponível em: <<https://www.saopaulo.sp.gov.br/ultimas-noticias/descubra-o-horto-oswaldo-cruz-uma-das-atracoes-do-butantan-1/>> Acesso em: 15 out. 2021.

SÃO PAULO (Estado). Decreto Estadual nº 335, de 10 de Fevereiro de 1896. Declara de utilidade pública para ser desapropriado, o terreno necessário à instalação de um Horto Botânico com Campos de Experiência e Serviço Florestal, no lugar denominado Pedra Branca, na Serra da Cantareira. Assembléia Legislativa do Estado de São Paulo, 1896. Disponível em: <<https://www.al.sp.gov.br/repositorio/legislacao/decreto/1896/decreto-335-10.02.1896.html>>. Acesso em: 15 out. 2021.

SÃO PAULO (Estado). Decreto Estadual nº 41.626, 30 de Janeiro de 1963. Regulamenta a execução da Lei n. 6884, de 29 de agosto de 1963 que dispõe sobre os parques, florestas e monumentos naturais e dá outras providências. Assembléia Legislativa do Estado de São Paulo, 1963. Disponível em: <<https://www.al.sp.gov.br/repositorio/legislacao/decreto/1963/decreto-41626-30.01.1963.html>>. Acesso em: 15 out. 2021.

SÃO PAULO (Estado). Lei nº 10.228, de 24 de setembro de 1968. Dispõe sobre a criação do Parque Estadual Turístico da Cantareira. Assembléia Legislativa do Estado de São Paulo, 1968. Disponível em: <<https://sigam.ambiente.sp.gov.br/sigam3/repositorio/524/documentos/lei-10228-24.09.1968.pdf>>. Acesso em: 15 out. 2021.

SÃO PAULO (Estado). **Instituto Florestal**. Governo do Estado de São Paulo. São Paulo, 2021. Disponível em: <<https://www.saopaulo.sp.gov.br/conhecasp/parques-e-reservas-naturais/instituto-florestal/>>. Acesso em: 16 out. 2021.

SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE. **Palácio do Horto traz histórias sobre governadores de São Paulo**. Governo do Estado de São Paulo. São Paulo, 2015. Disponível em: <<https://www.infraestruturameioambiente.sp.gov.br/2015/04/palacio-do-horto-traz-historias-sobre-governadores-de-sao-paulo/>>. Acesso em: 16 out. 2021.

SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE. **Anexo I – Área da Concessão**. Governo do Estado de São Paulo. São Paulo, 2021a. Disponível em: <https://smastr16.blob.core.windows.net/home/2021/01/01_anexo_i_area_da_concessao_pec.peal_cp_vf.pdf>. Acesso em: 16 out. 2021.

SECRETARIA DE INFRAESTRUTURA E MEIO AMBIENTE. **Horto Florestal: 125 anos de lazer e preservação da natureza. Governo do Estado de São Paulo**. São Paulo, 2021b. Disponível em: <<https://www.infraestruturameioambiente.sp.gov.br/2021/02/horto-florestal-125-anos-de-lazer-e-preservacao-a-natureza/>>. Acesso em: 16 out. 2021.

SECRETARIA DO VERDE E DO MEIO AMBIENTE. **Independência**. Prefeitura da Cidade de São Paulo. 2021a. Disponível em: <https://www.prefeitura.sp.gov.br/cidade/secretarias/meio_ambiente/parques/regiao_sul/index.php?p=5747>. Acesso em 14 out. 2021.

SECRETARIA DO VERDE E DO MEIO AMBIENTE. **Inventário de flora 2021: Parque da Independência**. Prefeitura da Cidade de São Paulo. 2021b. Disponível em: <https://www.prefeitura.sp.gov.br/cidade/secretarias/upload/meio_ambiente/Parque%20Independ%C3%Aancia.pdf>. Acesso em 14 out. 2021.

SILVA, S. P. R. **O tranway da Cantareira e sua relação com o desenvolvimento local: infraestrutura urbana e transporte de passageiros (1893-1965)**. Tese (Doutorado em Ciências) – Faculdade de Filosofia, Letras e Ciências Humanas da Universidade de São Paulo. São Paulo, 2018. Disponível em: <https://teses.usp.br/teses/disponiveis/8/8137/tde-22102018-141355/publico/2018_St StanleyPlacidoDaRosaSilva_VCorr.pdf>. Acesso em: 10 out. 2021.

TEIXEIRA, A. R. Resenha histórica do Instituto de Botânica de São Paulo. **Revista Ciência e Cultura**, v. 40, n. 11, p. 1045-1054, 1988.

ZAHER, E. H.; COSTA, L. T. Raízes do paisagismo no Butantan: o Horto Oswaldo Cruz e a contribuição de F C Hoehne. *In*: ENOKIBARA, M.; GHIRARDELLO, N.; SALCEDO, R. F. B. (Org.). **Patrimônio, Paisagem e Cidade**. Tupã: ANAP, p. 101-127, 2016.